



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 2022

Carson Engineering Center, Room 334
202 W. Boyd Street, Norman, OK 73019
Phone: (405) 325-5913
cees@ou.edu
www.cees.ou.edu

Table of Contents

	Page
1.0 ACADEMIC PROGRAM PLANNING	4
1.1 Accelerated BS/MS Degree	5
1.2 Minor in Environmental Science	5
1.3 Minor in Water and Sanitation for Health and Sustainable Development.....	6
1.4 Williams Student Services Center (FH 112)	7
1.5 Transfer Students	7
1.6 Graduating Seniors	7
2.0 STUDENT ADVISING AND ADVANCE REGISTRATION.....	7
3.0 PROFESSIONAL ELECTIVES	10
3.1 Architectural Engineering (Table 1)	10
3.2 Civil Engineering Electives (Table 2).....	11
3.2.1 <i>Geotechnical Engineering Emphasis</i>	11
3.2.2 <i>Environmental/Water Resources Emphasis</i>	11
3.2.3 <i>Structural Engineering Emphasis</i>	12
3.3 Environmental Engineering Electives (Table 3)	12
3.4 Professional Electives Outside of CEES.....	17
4.0 PREMEDICAL OPTION	17
5.0 REQUIRED SOCIAL SCIENCE AND HUMANITIES COURSES.....	17
5.1 Foreign Language Requirements	18
6.0 SCHOLARSHIPS AND FINANCIAL AID.....	21
7.0 FUNDAMENTALS OF ENGINEERING EXAMINATION	21
8.0 STUDENT ACTIVITIES	22
8.1 Architectural Engineering Institute (AEI)	22
8.2 American Society of Civil Engineers (ASCE)	22
8.3 Chi Epsilon.....	22
8.4 Environmental Science Student Association (ESSA).....	23
8.5 Engineers' Club.....	23
8.6 Society of Black Engineers (SBE)	23
8.7 Society of Women Engineers (SWE)	23
8.8 Sooners Without Borders (SWB).....	23
9.0 CURRICULA.....	24

CEES Faculty

Director—Randall L. Kolar (CEC 334B)

ENVIRONMENTAL ENGINEERING/SCIENCE		GEOTECHNICAL ENGINEERING	
Jeffery B. Basara jbasara@ou.edu	NWC 5238	Amy Cerato acerato@ou.edu	CEC 450C
Ngoc Bui ngoctbui@ou.edu	SEC T-313	Kianoosh Hatami kianoosh@ou.edu	CEC 450B
Elizabeth C. Butler ecbutler@ou.edu	CEC 305	Gerald A. Miller gamiller@ou.edu	CEC 332A
Yang Hong yanghong@ou.edu	NWC 4610	K.K. Muraleetharan muralee@ou.edu	CEC 332B
Tohren C.G. Kibbey kibbey@ou.edu	CEC 331	Arif Sadri sadri@ou.edu	CEC 450A
Pierre Emmanuel Kirstetter pierre-emmanuel.kirstetter@ou.edu	NWC 4616	Musharraf Zaman zaman@ou.edu	CEC 213B
Robert C. Knox rknox@ou.edu	CEC 301A	STRUCTURAL ENGINEERING	
Randall L. Kolar kolar@ou.edu	CEC 334B	Royce Floyd rfloyd@ou.edu	CEC 327F
Robert W. Nairn nairn@ou.edu	CEC 301C	Scott Harvey harvey@ou.edu	CEC 414
Mark A. Nanny nanny@ou.edu	CEC 304A	Jin-Song Pei jspei@ou.edu	CEC 327E
Keith A. Strevett strevett@ou.edu	CEC 327D	Katerina Kyprioti akypriot@ou.edu	CEC 427
Jason Vogel jason.vogel@ou.edu	CEC 304	Shreya Vemuganti svemugan@ou.edu	CEC 424
Tiantian Yang tiantian.yang@ou.edu	CEC 427	Jeff Volz volz@ou.edu	CEC 423

AEI Student Chapter Advisor – Jeffery S. Volz
ASCE Student Chapter Advisor – Jeffery S. Volz
Chi Epsilon Advisor – P. Scott Harvey
ESSA Advisor – Robert Nairn
SWB Advisor – David Sabatini

The Engineering Accreditation Commission (EAC) of ABET requires accredited engineering programs to publish their Mission Statement, Student Outcomes and Program Educational Objectives. The architectural engineering, civil engineering and environmental engineering programs are accredited by the Engineering Accreditation Commission of ABET, www.abet.org

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.

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

Program Educational Objectives Program educational objectives (PEOs) are broad statements that describe what graduates are expected to attain within a few years of graduation. Program educational objectives are based on the needs of the program's constituencies. The PEOs for CEES engineering graduates are:

Program Educational Objective 1: CEES alumni will have embarked on successful careers in areas associated with the development, implementation, and management of architectural, civil, or environmental engineering systems.

Program Educational Objective 2: CEES alumni will advance in their careers and continue their professional development through continuing education and lifelong learning.

1.0 ACADEMIC PROGRAM PLANNING

When you enroll in CEES, we will appoint a faculty member to serve as your faculty advisor. They can help you prepare an academic program plan, select courses, and offer advice on other matters. If you have a question regarding a specialty area within the school, you are encouraged to discuss the matter with a faculty member in that discipline. You should assume the primary responsibility for planning a coherent academic program that achieves your educational objectives and satisfies the requirements for graduation. A list of 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, you must successfully complete semester hours noted with a minimum retention grade point average of 2.00 in all University of Oklahoma courses, all courses taken anywhere, all major (at OU & combined) courses and all courses required for the bachelor of science degree. In addition, you must have a minimum C grade in every course offered for your degree.

You must be admitted to the Gallogly College of Engineering to enroll in all ENGR and CEES courses numbered 3XXX 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 your responsibility as a student to follow the course requirements for graduation, but your advisor will help you based on their knowledge at the time of each advising conference. Advisors can assist you in optimizing your 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. Your advisor has the authority to withhold their approval if your selection of courses is 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 two professional elective courses (six credit hours) to simultaneously satisfy the requirements of both the BS and MS degrees. With proper planning in the final year, students can initiate the thesis research option or the coursework only option in their senior undergraduate year 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 their eligibility with their faculty advisor. It is suggested that the application process be completed within the first two weeks of the first semester of the Junior year. To download the application, visit: www.ou.edu/coe/cees/undergrad_programs/accelerated_mastersprogram

1.2 Minor in Environmental Science

The School of CEES offers a Minor in Environmental Science. We believe that 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 hours are required to complete the minor, including the following CEES courses:

CEES 2313 Water Quality Fundamentals (Fall only)

CEES 2323 Environmental Transport and Fate Processes (Spring only)

CEES 4263G Hazardous and Solid Waste Management (Fall only)

CEES 4114/5114 Aquatic Chemistry or CEES 4324/5324 Environmental Biology and Ecology (Fall only)

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

CEES 4243 Water Technologies for Emerging Regions (Spring only)

ENGR 4513 Introduction to Sustainable Engineering (Spring only)

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 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 you 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 your degree. Please contact an advisor in WSSC for the correct procedure to request a review.

1.6 Graduating Seniors

Graduating seniors should visit the WSSC for TWO (2) graduation checks: one in the semester BEFORE you plan to graduate; and one EARLY in the semester you plan to graduate. In addition, you must schedule and attend an exit interview with the CEES director towards the end of your last semester.

2.0 STUDENT ADVISING AND ADVANCE REGISTRATION

If you have been admitted to the Gallogly College of Engineering, meet current retention standards, and have no unpaid fines, overdue books, or parking tickets you can participate in advance registration. Advance registration for fall and summer 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. You can view your registration window at ONE.ou.edu, under the “Academics” tab, and select the “Enrollment” heading. You can also view any holds on your 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 forfeit their opportunity to register during the advance registration period and will only be advised once freshmen begin enrolling.**

Students must sign up for a specific date and time slot using iAdvise. *Students who do not sign up through iAdvise cannot be guaranteed advisement on a walk-in basis.* Follow the steps below to schedule your advising appointment.

1. Log into <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.
4. Add your phone number and finalize your advisement appointment by selecting “Make Reservation”.
5. The next window will verify that your reservation has been saved.
6. You will be sent an email confirmation of your scheduled advising appointment.

Note: Failure to check-in during scheduled advisement time may result in loss of appointment time.

Next, follow these steps:

1. Attend a **group advising session** and visit with both a WSSC academic advisor and a CEES faculty member. Advising holds will be lifted after.
2. After attending group advising, special problems or circumstances may necessitate you scheduling an appointment with your faculty advisor. **All CEES students are assigned an individual faculty advisor who can answer questions between group advising sessions.** Please feel free to contact your faculty advisor for an appointment. A list of advising assignments can be found at www.ou.edu/coe/cees/undergrad_programs/student_resources/advising

If you need special permission for a CEES class, you must email the instructor with cc: to Laura Swan at lauraswan@ou.edu with the following information:

1. your name
2. your OU ID number
3. course number
4. section number
5. course name
6. copy and paste the error message you receive when you try enrolling

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

Before enrolling in any course, you should determine that you satisfy the course prerequisites. The CEES curriculum checksheets are located at the back of this guide and the *General Catalog* is available at ONE.ou.edu. Prerequisites are enforced for all classes. You will be administratively removed from any course you enroll in without the required pre-requisites. Remember that a minimum “C” grade is needed 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 System Design
CEES 3663	Structural Design-Steel 1
CEES 3673	Structural Design-Concrete 1
CEES 4113	Building Lighting and Electrical Systems
CEES 4333	Foundation Engineering
CEES 4991	Intro to AE Capstone

Civil Engineering

CEES 3213	Water Resources Engineering
CEES 3363	Soil Mechanics
CEES 3663	Structural Design-Steel 1 <u>OR</u> CEES 3673 Structural Design-Concrete 1
CEES 4901	Intro to CE Capstone

Environmental Engineering

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

3.0 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 you 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 person 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 baccalaureate degree. In addition, specialization can provide impressive qualifications and capabilities for graduate study.

We suggest that you carefully consider both the generalization and specialization options and consult with faculty, practicing engineers, and your advisor before deciding. Whatever path you choose, please recognize that focus in your selection of electives is desirable. There is no wisdom in a random selection of professional electives.

Professional electives are 3000-level junior, 4000-level senior and 5000-level graduate courses. These electives have, as prerequisites, required engineering or CEES core courses. Make certain that you have the appropriate course and grade prerequisites for each professional elective.

University of Oklahoma regulations and CEES policy impose certain 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 *Environmental/Water Resources 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 governmental agencies and private companies.

3.2.3 *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, architectural firms, and governmental agencies.

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	Construction
CEES 5313	CEES 4243	CEES 4253	CEES 4663	CEES 5653	CEES 3453
CEES 5343	CEES 4273G	CEES 5693	CEES 5663	CEES 5683	
CEES 5353	ENGR 4513	CEES 5773		CEES 5763	
CEES 5413		CEES 5783			
CEES 5433		CEES 5793			
CEES 5693					

Course No.	Title	Course No.	Title
CEES 3453	Introduction to Construction Management	CEES 5433	In-Situ Soil Testing
CEES 4253G	Statistics and Probability	CEES 5653	Advanced Mechanics of Materials
CEES 4273G	WaTER Technical Field Methods	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	Introduction to Finite Element Method
CEES 5343	Advanced Soil Mechanics	CEES 5773	Structural Design - Steel II
CEES 5353	Introduction 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	Introduction to Sustainable 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 4333	CEES 4114/5114	CEES 4753G	CEES 4663	CEES 5653	CEES 3453
CEES 5313	CEES 4123	CEES 5693	CEES 5663	CEES 5673	
CEES 5323	CEES 4243	CEES 5753		CEES 5763	
CEES 5333	CEES 4263	CEES 5773			
CEES 5343	CEES 4273G	CEES 5783			
CEES 5353	CEES 4373/5373				
CEES 5413	CEES 4943				
CEES 5433	CEES 5363				
CEES 5693	CEES 5283				
	CEES 5673				
	CEES 5833				
	CEES 5843				
	CEES 5853				
	CEES 5883				
	ENGR 4513				

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	Introduction to Construction Management	CEES 5363	Ecological Engineering Science
CEES 4114/5114	Aquatic Chemistry	CEES 5413	Soil-Structure Interaction
CEES 4123	Open Channel Flow	CEES 5433	In-Situ Soil Testing
CEES 4243	Water Technologies for Emerging Regions	CEES 5653	Advanced Mechanics of Materials
CEES 4273G	WaTER Technical Field Methods	CEES 5663	Structural Analysis II
CEES 4333	Foundation Engineering	CEES 5673	Colloid Surface Science
CEES 4373/5373	Water Resources Management	CEES 5673g	Dynamics of Structures
CEES 4663	Matrix Methods in Structural Analysis	CEES 5693	Structural Design of Pavement
CEES 4753G	Structural Design - Wood	CEES 5763	Introduction to Finite Element Method
CEES 4943	Air Quality	CEES 5773	Structural Design – Steel II
CEES 5283	Environmental Organic Chemistry	CEES 5793	Design of Prestressed Concrete Structures
CEES 5313	Engineering Geology	CEES 5833	Ground Water Quality Protection
CEES 5323	Geosynthetics	CEES 5843	Hydrology
CEES 5343	Advanced Soil Mechanics	ENGR 4513	Intro. to Sustainable Engineering
CEES 5353	Introduction to Soil Dynamics		

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 5283	CEES 4123G	CEES 5423	CEES 3453
CEES 4243G	MATH 4753G	CEES 5363	CEES 4324	CEES 5343	CEES 4453
CEES 4273G		CEES 5673	CEES 5244		
CEES 4373/5373			CEES 5624		
CEES 5833					
CEES 5843					
CEES 5853					
CEES 5873					

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 5624	Biological Waste Treatment
CEES 4243G	Water Technologies for Emerging Regions	CEES 5673	Colloid and Surface Science
CEES 4273G	WaTER Technical Field Methods	CEES 5833	Ground Water Quality Protection
CEES 4324	Environmental Biology and Ecology	CEES 5843	Hydrology
CEES 4373/5373	Water Resources Management	CEES 5853	Groundwater and Seepage
CEES 4453	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

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 your 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.

4.0 PREMEDICAL OPTION

Students who wish to fulfill medical school admission requirements must consult with the OU 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 B.S. degree in Architectural, Civil, or Environmental Engineering and also fulfill medical school admission requirements may, with their CEES advisor's approval, 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 B.S. 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 the student both breadth and depth 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, the University of Oklahoma 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 civilization and culture**; and one course (3 credits) in **non-western culture**. Furthermore, according to State Regents' ruling, one of the social science courses must be Political Science 1113 (Government of the United States) and the western civilization and culture courses must include either History 1483 (United States, 1492-1865) or History 1493 (United States, 1865-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 they consult with their advisor or the Williams Student Services Center to make certain that they are satisfying both ABET and OU General Education Requirements. Only one humanities and one social science course can be used in your curriculum.

5.1 Foreign Language Requirements

To satisfy the OU General 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 satisfied 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.

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

WESTERN CIVILIZATION AND CULTURE	HIST 1483	United States, 1492-1865, or
	HIST 1493	United States, 1865-present, and
	HIST 3483	The Life of the Mind in America Since 1877
NON-WESTERN CULTURE	HIST 2683	History of Islam, or
	HIST 3853	Japanese Civilization to 1800, or
	HIST 3863	Modern Japan Since 1800
SOCIAL SCIENCE	PSC 1113	Government of the United States, and
	GEOG 4533	Geography of Europe
ARTISTIC FORMS	AHI 1113	Understanding Art, or
	AHI 2214	General Art History Survey I, or
	ENGL 2413	Introduction to Literature

Table 5. Examples of Western Civilization Courses for Engineers

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

Table 6. Examples of Social Science Courses for Engineers

ANTH 2513	Human Evolution
ECON 1113	Principles of Economics—Macro
ECON 1123	Principles of Economics—Micro
PSY 1113	Introduction to Psychology

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 School of Civil Engineering and Environmental Science Policy on Scholarship Recipient Obligations. This policy requires written acknowledgement to the 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/content/admissions/affordability/scholarships.html

Applications for *current students* are due February 1 and can be found at www.ou.edu/sfc/cash

In addition to the scholarships offered by the School of 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 Office of Financial Aid, 731 Elm Avenue, Norman, OK 73019-0230, can provide information on the national Direct Student Loan Program, the Guaranteed Loan Program, the University Work-Study Program, and additional programs and opportunities. Whether or not they are eligible for the Work-Study Program, students can obtain assistance in finding part-time jobs on the campus by applying to the Personnel Service Office, 905 Asp Avenue, Norman, OK 73019-0420.

7.0 FUNDAMENTALS OF ENGINEERING EXAMINATION

To obtain legal status as a professional engineer you 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 open book and tests you in basic science, mathematics, engineering science and engineering economics. You are eligible to take the exam if you have completed 90 hours toward your engineering degree; however, it is recommended that you take the exam during the semester you plan to graduate. All CEES engineering students must attempt the FE examination before receiving their baccalaureate degree.

8.0 STUDENT ACTIVITIES

Student groups provide an excellent opportunity to supplement classroom education through contact with faculty, practicing engineers and fellow students.

8.1 Architectural Engineering Institute (AEI)

The Architectural Engineering Institute is a nationally affiliated technical organization new to CEES here at the University of Oklahoma. The AEI student chapter was founded in 2006 by interested architectural and civil engineering students.

The purpose of AEI is to promote and disseminate knowledge regarding the profession of architectural engineering through study, research, and discussion. AEI also provides the opportunity for interaction between students and professionals in the field through sponsored site tours, seminars, and social events.

All students interested in architectural engineering are welcome to attend all gatherings and are encouraged to become a member. For additional information, contact a student officer or the Student Chapter Faculty Advisor.

8.2 American Society of Civil Engineers (ASCE)

ASCE has established over 125 chapters in U.S. engineering colleges. The parent society keeps in touch with students and engineering education through these student chapters. Membership in the student chapter is open to all undergraduate and graduate CEES students.

ASCE meets each month, usually in the evening, and hosts speakers from the practice of engineering. In addition, they sponsor field trips, attend national, regional and local meetings of the parent organization, and coordinate the Gallogly College of Engineering Open House. For additional information, contact a student officer in the ASCE office or the Student Chapter Faculty Advisor.

8.3 Chi Epsilon

Chi Epsilon is the Civil Engineering Honor Society. It recognizes outstanding student achievements and promotes development of characteristics for a successful engineering career. The University of Oklahoma Chapter is part of a network of more than 60 chapters formed since the organization was founded at the University of Illinois in 1922. Membership in Chi Epsilon conveys both an honor and an obligation. To be eligible for membership, an undergraduate that has completed at least one-half of their coursework, must rank scholastically in the upper one-third of his or her class in a curriculum leading to a baccalaureate degree in Civil Engineering or a closely related curriculum. For more information, contact the Chapter Faculty Advisor.

8.4 Environmental Science Student Association (ESSA)

ESSA, which was established in 1992, is an independent organization of undergraduate environmental science students. Its major purpose is to invite speakers from academia, government, and industry to provide both technical perspectives on environmental problems, and career guidance. In addition, it provides networking opportunities for environmental science students, who usually do not take ES classes until their junior year, and consequently often don't meet their peers until the third year of the program. Other activities include placement of newspaper recycling bins in Carson Engineering Center, organization of the first Environmental Fair at a local mall to bring current environmental issues to area residents, and field trips to the Oklahoma Department of Environmental Quality laboratories. For more information, contact the Chapter Faculty Advisor.

8.5 Engineers' Club

The Engineers' Club fosters the high ideals of the engineering profession, stimulates interest in school and college activities and develops professional awareness and leadership qualities. Activities of the Engineers' Club include organization of OU Engineers' Week activities and Engineering Open House.

8.6 Society of Black Engineers (SBE)

SBE shares many of the same goals and objectives as the Engineers' Club, while directing attention to the challenges and needs of black students.

8.7 Society of Women Engineers (SWE)

SWE is a technical society with the objective of encouraging women who have chosen to study engineering. Through speakers, discussions and field trips, members can examine professional issues and challenges particular to women. Membership is open to both men and women.

8.8 Sooners Without Borders (SWB)

The mission of Sooners Without Borders (SWB) is to promote sustainable solutions for health, education, development, and peace by engaging OU students, faculty, and staff in multi-disciplinary service projects in both local and global communities. The purpose of SWB is to aid in the organization, publicity, and coordination of both domestic and international service projects undertaken by students, faculty, and staff at the University of Oklahoma.

9.0 CURRICULA

The following checksheets are provided to help you in planning your coursework and are not intended to be exhaustive. This information presupposes that you are enrolled in a current 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, sexual orientation, genetic information, sex, 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 and educational services. For questions regarding discrimination, sexual assault, sexual misconduct, or sexual harassment, please contact the Office(s) of Institutional Equity as may be applicable -- Norman campus at (405) 325-3546/3549, the Health Sciences Center at (405) 271-2110 or the OU-Tulsa Title IX Office at (918) 660-3107. Please see www.ou.edu/eoo

Accommodations on the basis of disability are available by contacting (405) 325-5913.

REQUIREMENTS FOR THE BACHELOR OF SCIENCE

GALLOGLY COLLEGE OF ENGINEERING

THE UNIVERSITY OF OKLAHOMA

Academic Year
For Students Entering the Oklahoma State System for Higher Education Summer 2022 through Spring 2023

General Requirements	
Minimum Total Credit Hours	130
Minimum Retention/Graduation Grade Point Averages:	
Overall - Combined and OU	2.00
Major - Combined and OU	2.00
Curriculum - Combined and OU	2.00

Program
Architectural Engineering
B035
Bachelor of Science

OU encourages students to complete at least 33 hours of applicable coursework each year to have the opportunity to graduate in 4 years.

GENERAL EDUCATION AND COLLEGE REQUIREMENTS

Courses designated as Core I, II, III, IV, or V are part of the General Education curriculum. Students must complete a minimum of 40 hours of General Education courses, chosen from the approved list, including at least one upper-division Gen. Ed. course outside of the student's major. **Courses graded P/NP will not apply.**

A grade of C or better is required in each course in the curriculum, including all prerequisite courses.

UNIVERSITY-WIDE GENERAL EDUCATION (MINIMUM 40 HOURS) AND COLLEGE REQUIREMENTS

Code	Title	Credit Hours
Core Area I: Symbolic and Oral Communication		
<i>English Composition</i>		
ENGL 1113	Principles of English Composition	3
ENGL 1213	Principles of English Composition	3
or EXPO 1213	Expository Writing	
<i>Language (0-10 hours in the same language)</i>		
This requirement can be met by two years of the same language in high school:		0-10
Beginning Course (0-5 hours)		
Beginning Course, continued (0-5 hours)		
<i>Mathematics</i>		
MATH 1914	Differential and Integral Calculus I (Core I) ^{1, 2}	4
Core Area II: Natural Science (including one laboratory)		
PHYS 2514	General Physics for Engineering and Science Majors (Core II) ²	4
CHEM 1315	General Chemistry (Core II-Lab) ²	5
or CHEM 1335	General Chemistry I: Signature Course	
Core Area III: Social Science		
P SC 1113	American Federal Government	3
Choose one course ³		3
Core Area IV: Arts & Humanities		
<i>Artistic Forms</i>		
Choose one course ³		3
<i>Western Culture</i>		
HIST 1483	United States to 1865	3
or HIST 1493	United States, 1865 to the Present	
Will be satisfied in major requirements		0
ARCH 2243	History of the Built Environment I (Core IV-Western Culture)	
<i>World Culture</i>		
ANTH 4623	Approaches to Cross-Cultural Human Problems (or approved substitute Core IV-World Culture) ³	3
Core Area V: First-Year Experience		
Choose one course ³		3
Total Credit Hours		37-47

¹MATH 1823, MATH 2423, MATH 2433, and MATH 2443 sequence can be substituted for MATH 1914, MATH 2924, and MATH 2934.

²Major support requirements that also satisfy University General Education requirements.

³To be chosen from the University-Wide General Education Approved Course List. Three of these hours must be upper-division (3000-4000).

FREE ELECTIVES

Electives to bring total applicable hours to the minimum total required for the degree including a minimum of 40 upper-division hours.

ACCREDITED BY THE ENGINEERING ACCREDITATION COMMISSION OF ABET, <https://www.abet.org>

In order to progress in your curriculum in the Gallogly College of Engineering, and as a specific graduation requirement, a **grade of C** or better is required in each course in the curriculum, including all prerequisite courses.

MAJOR REQUIREMENTS

Code	Title	Credit Hours
Required Courses		
AME 2213	Thermodynamics	3
AME 3173	Heat Transfer	3
AME 4653	Air Conditioning Systems	3
ARCH 1263	Methods II - Pattern of Architecture	3
ARCH 2243	History of the Built Environment I	3
ARCH 2363	Materials and Form	3
CEES 1000	CEES Seminar (minimum of four semesters required)	0
CEES 1112	Introduction to Civil Engineering and Environmental Science	2
CEES 2113	Statics	3
CEES 2153	Mechanics of Materials	3
CEES 2213	CADD Fundamentals	3
CEES 2223	Fluid Mechanics	3
CEES 3263	Introduction to Dynamics for Architectural and Civil Engineers	3
CEES 3361	Soil Mechanics Laboratory	1
CEES 3363	Soil Mechanics	3
CEES 3403	Materials	3
CEES 3413	Structural Analysis I	3
CEES 3453	Introduction to Construction Management	3
CEES 3663	Structural Design - Steel I	3
CEES 3673	Structural Design - Concrete I	3
CEES 4113	Building Lighting and Electrical Systems	3
CEES 4333	Foundation Engineering	3
CEES 4753	Structural Design - Wood	3
CEES 4991	Introduction to AE Capstone	1
CEES 4993	Architecture Engineering Capstone	3
ENGR 2431	Electrical Circuits	1
ENGR 3401	Engineering Economics	1
Professional Elective		
Choose any 3000-level or higher course in CEES		3
Total Credit Hours		72

MAJOR SUPPORT REQUIREMENTS

Code	Title	Credit Hours
Math and Science		
MATH 2924	Differential and Integral Calculus II	4
MATH 2934	Differential and Integral Calculus III	4
MATH 3113	Introduction to Ordinary Differential Equations	3
PHYS 2524	General Physics for Engineering and Science Majors	4
Choose one of the following:		4
GEOL 1114	Physical Geology for Science and Engineering Majors (Core II-Lab)	
Basic Science Elective		
Math (calculus or above)		
Additional College Requirements		
ENGR 1410	Freshman Engineering Orientation ¹	0
ENGR 2002	Professional Development	2
Total Credit Hours		21

¹Engineering transfer students may take ENGR 3410 in place of ENGR 1410.

More information in the catalog: (<http://ou-public.courseleaf.com/gallogly-engineering/civil-engineering-environmental-science/architectural-engineering-bachelor-science/>).

SUGGESTED SEMESTER PLAN OF STUDY

Accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>

In order to progress in your curriculum in the Gallogly College of Engineering, and as a specific graduation requirement, a grade of C or better is required in each course in the curriculum, including all prerequisite courses.

Two college-level courses in a single world language are required; this may be satisfied by successful completion of 2 years in a single world language in high school. Students who must take a language at the University will have an additional 6-10 hours of coursework.

Year	FIRST SEMESTER		Hours	SECOND SEMESTER		Hours
FRESHMAN	ENGL 1113	Principles of English Composition (Core I)	3	ENGL 1213 or EXPO 1213	Principles of English Composition (Core I) or Expository Writing	3
		Choose one of the following:	4	MATH 2924	Differential and Integral Calculus II ¹	4
	GEOL 1114	Physical Geology for Science and Engineering Majors (Core II-Lab)		PHYS 2514	General Physics for Engineering and Science Majors (Core II)	4
		MATH (calculus or above)		ARCH 1263	Methods II - Pattern of Architecture	3
		Basic Science Elective			Approved Elective: First-Year Experience (Core V) ⁶	3
	MATH 1914	Differential and Integral Calculus I (Core I) ¹	4			
	ENGR 1410	Freshman Engineering Orientation ²	0			
	CEES 1112	Introduction to Civil Engineering and Environmental Science	2			
	ARCH 2363	Materials and Form	3			
	CREDIT HOURS		16	CREDIT HOURS		17
SOPHOMORE	ARCH 2243	History of the Built Environment I (Core IV: Western Culture)	3	CHEM 1315	General Chemistry (Core II-Lab) ⁴	5
	MATH 2934	Differential and Integral Calculus III ¹	4	ENGR 2002	Professional Development	2
	PHYS 2524	General Physics for Engineering and Science Majors	4	MATH 3113	Introduction to Ordinary Differential Equations	3
	CEES 1000	CEES Seminar ³	0	CEES 1000	CEES Seminar ³	0
	CEES 2213	CADD Fundamentals	3	CEES 2153	Mechanics of Materials	3
	CEES 2113	Statics	3	CEES 2223	Fluid Mechanics	3
	CREDIT HOURS		17	CREDIT HOURS		16
JUNIOR	AME 2213	Thermodynamics	3	AME 3173	Heat Transfer	3
	CEES 1000	CEES Seminar ³	0	CEES 1000	CEES Seminar ³	0
	CEES 3263	Introduction to Dynamics for Architectural and Civil Engineers	3	CEES 3403	Materials	3
	CEES 3363	Soil Mechanics	3	CEES 3663	Structural Design - Steel I	3
	CEES 3361	Soil Mechanics Laboratory	1	CEES 4113	Building Lighting and Electrical Systems	3
	CEES 3413	Structural Analysis I	3	CEES 3453	Introduction to Construction Management	3
	ENGR 2431	Electrical Circuits	1	ENGR 3401	Engineering Economics	1
	P SC 1113	American Federal Government (Core III)	3			
	CREDIT HOURS		17	CREDIT HOURS		16
SENIOR	AME 4653	Air Conditioning Systems	3		Choose one of the following:	3
	CEES 1000	CEES Seminar ³	0	ANTH 4623	Approaches to Cross-Cultural Human Problems (Core IV-World Culture)	
	CEES 3673	Structural Design - Concrete I	3		Approved substitute (Core IV-World Culture)	
		CEES Professional Elective ⁵	3	CEES 1000	CEES Seminar ³	0
	CEES 4753	Structural Design - Wood	3	CEES 4333	Foundation Engineering	3
	CEES 4991	Introduction to AE Capstone	1	CEES 4993	Architecture Engineering Capstone	3
	HIST 1483 or HIST 1493	United States to 1865 (Core IV) or United States, 1865 to the Present	3		Approved Elective: Social Science (Core III) ⁶	3
					Approved Elective: Artistic Forms (Core IV) ⁶	3
	CREDIT HOURS		16	CREDIT HOURS		15

¹ MATH 1823, MATH 2423, MATH 2433, and MATH 2443 sequence can be substituted for MATH 1914, MATH 2924, and MATH 2934.

² Engineering transfer students may take ENGR 3410 in place of ENGR 1410.

³ Students must complete a minimum of four semesters of CEES 1000.

⁴ CHEM 1315 can be substituted with CHEM 1335 (Fall only).

⁵ Professional Elective can be chosen from any 3000-level or higher course in CEES

⁶ To be chosen from the University-Wide General Education Approved Course List. Three of these hours must be upper-division (3000-4000). See list in the Class Schedule.

Courses designated as Core I, II, III, IV, or V are part of the General Education curriculum. Students must complete a minimum of 40 hours of General Education courses, chosen from the approved list.

REQUIREMENTS FOR THE BACHELOR OF SCIENCE

GALLOGLY COLLEGE OF ENGINEERING

THE UNIVERSITY OF OKLAHOMA

Academic Year
For Students Entering the Oklahoma State System for Higher Education Summer 2022 through Spring 2023

General Requirements	
Minimum Total Credit Hours	126
Minimum Retention/Graduation Grade Point Averages:	
Overall - Combined and OU	2.00
Major - Combined and OU	2.00
Curriculum - Combined and OU	2.00

Program
Civil Engineering
B190
Bachelor of Science

OU encourages students to complete at least 32 hours of applicable coursework each year to have the opportunity to graduate in 4 years.

GENERAL EDUCATION AND COLLEGE REQUIREMENTS

Courses designated as Core I, II, III, IV, or V are part of the General Education curriculum. Students must complete a minimum of 40 hours of General Education courses, chosen from the approved list, including at least one upper-division Gen. Ed. course outside of the student's major. **Courses graded P/NP will not apply.**

A grade of C or better is required in each course in the curriculum, including all prerequisite courses.

UNIVERSITY-WIDE GENERAL EDUCATION (MINIMUM 40 HOURS) AND COLLEGE REQUIREMENTS

Code	Title	Credit Hours
Core Area I: Symbolic and Oral Communication		
<i>English Composition</i>		
ENGL 1113	Principles of English Composition	3
ENGL 1213	Principles of English Composition	3
or EXPO 1213	Expository Writing	
<i>Language (0-10 hours in the same language)</i>		
This requirement can be met by two years of the same language in high school:		0-10
Beginning Course (0-5 hours)		
Beginning Course, continued (0-5 hours)		
<i>Mathematics</i>		
MATH 1914	Differential and Integral Calculus I (Core I) ^{1, 2}	4
Core Area II: Natural Science (including one laboratory)		
PHYS 2514	General Physics for Engineering and Science Majors (Core II) ²	4
CHEM 1315	General Chemistry (Core II-Lab) ²	5
or CHEM 1335	General Chemistry I: Signature Course	
Core Area III: Social Science		
P SC 1113	American Federal Government	3
Choose one course ³		3
Core Area IV: Arts & Humanities		
<i>Artistic Forms</i>		
Choose one course ³		3
<i>Western Culture</i>		
HIST 1483	United States to 1865	3
or HIST 1493	United States, 1865 to the Present	
HSTM 3333	Technology and Society in World History (or approved substitute Core IV-Western Culture) ³	3
<i>World Culture</i>		
ANTH 4623	Approaches to Cross-Cultural Human Problems (or approved substitute Core IV-World Culture) ³	3
Core Area V: First-Year Experience		
Choose one course ³		3
Total Credit Hours		40-50

¹MATH 1823, MATH 2423, MATH 2433, and MATH 2443 sequence can be substituted for MATH 1914, MATH 2924, and MATH 2934.

²Major support requirements that also satisfy University General Education requirements.

³To be chosen from the University-Wide General Education Approved Course List. Three of these hours must be upper-division (3000-4000). See list in the Class Schedule.

FREE ELECTIVES

Electives to bring total applicable hours to the minimum total required for the degree including a minimum of 40 upper-division hours.

Accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>

In order to progress in your curriculum in the Gallogly College of Engineering, and as a specific graduation requirement, a **grade of C** or better is required in each course in the curriculum, including all prerequisite courses.

MAJOR REQUIREMENTS

Code	Title	Credit Hours
Required Courses		
CEES 1000	CEES Seminar (a minimum of four semesters required)	0
CEES 1112	Introduction to Civil Engineering and Environmental Science	2
CEES 2113	Statics	3
CEES 2153	Mechanics of Materials	3
CEES 2213	CADD Fundamentals	3
CEES 2223	Fluid Mechanics	3
CEES 3213	Water Resources Engineering	3
CEES 3243	Water and Wastewater Treatment Design	3
CEES 3263	Introduction to Dynamics for Architectural and Civil Engineers	3
CEES 3361	Soil Mechanics Laboratory	1
CEES 3363	Soil Mechanics	3
CEES 3403	Materials	3
CEES 3413	Structural Analysis I	3
CEES 3663	Structural Design - Steel I (OR Professional Elective) ^{1, 2}	3
CEES 3673	Structural Design - Concrete I (OR Professional Elective) ^{1, 2}	3
CEES 3883	Transportation Engineering	3
CEES 4253	Statistics and Probability	3
CEES 4453	Geomatics Engineering	3
CEES 4901	Introduction to CE Capstone	1
CEES 4903	Civil Engineering Capstone	3
CEES 4951	Contemporary Topics in Professional Practice	1
Total Credit Hours		53

¹Students must take either CEES 3663 or CEES 3673 or they may take both courses if desired.

MAJOR SUPPORT REQUIREMENTS

Code	Title	Credit Hours
Math and Science		
MATH 2924	Differential and Integral Calculus II	4
MATH 2934	Differential and Integral Calculus III	4
MATH 3113	Introduction to Ordinary Differential Equations	3
CHEM 1415	General Chemistry (Continued)	5
or CHEM 1435	General Chemistry II: Signature Course	
GEOL 1114	Physical Geology for Science and Engineering Majors (or Basic Science, Core II-Lab)	4
PHYS 2524	General Physics for Engineering and Science Majors	4
Professional Electives		
Choose any two 3000-level or higher course in CEES (one three-hour professional elective can be taken outside CEES with advisor approval)		6
Additional College Requirements		
ENGR 1410	Freshman Engineering Orientation ¹	0
ENGR 2002	Professional Development	2
ENGR 3401	Engineering Economics	1
Total Credit Hours		33

¹Engineering transfer students may take ENGR 3410 in place of ENGR 1410.

More information in the catalog: (<http://ou-public.courseleaf.com/gallogly-engineering/civil-engineering-environmental-science/civil-engineering-bachelor-science/>).

SUGGESTED SEMESTER PLAN OF STUDY

Accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>

In order to progress in your curriculum in the Gallogly College of Engineering, and as a specific graduation requirement, a grade of C or better is required in each course in the curriculum, including all prerequisite courses.

Two college-level courses in a single world language are required; this may be satisfied by successful completion of 2 years in a single world language in high school. Students who must take language at the University will have an additional 6-10 hours of coursework.

Year	FIRST SEMESTER		Hours	SECOND SEMESTER		Hours
FRESHMAN	ENGL 1113	Principles of English Composition (Core I)	3	ENGL 1213 or EXPO 1213	Principles of English Composition (Core I) or Expository Writing	3
	CHEM 1315	General Chemistry (Core II-Lab) ¹	5	CHEM 1415	General Chemistry (Continued) (Core II-Lab) ¹	5
	MATH 1914	Differential and Integral Calculus I (Core I) ²	4	MATH 2924	Differential and Integral Calculus II ²	4
	CEES 1112	Introduction to Civil Engineering and Environmental Science	2	PHYS 2514	General Physics for Engineering and Science Majors (Core II)	4
	ENGR 1410	Freshman Engineering Orientation ³	0			
		Approved Elective: First-Year Experience (Core V) ⁷	3			
	CREDIT HOURS		17	CREDIT HOURS		16
SOPHOMORE	MATH 2934	Differential and Integral Calculus III ²	4	MATH 3113	Introduction to Ordinary Differential Equations	3
	PHYS 2524	General Physics for Engineering and Science Majors	4	CEES 1000	CEES Seminar ⁴	0
	CEES 1000	CEES Seminar ⁴	0	CEES 2153	Mechanics of Materials	3
	CEES 2213	CADD Fundamentals	3	CEES 2223	Fluid Mechanics	3
	CEES 2113	Statics	3	GEOL 1114	Physical Geology for Science and Engineering Majors (or Basic Science; Core II-Lab)	4
	ENGR 2002	Professional Development	2	HIST 1483 or HIST 1493	United States to 1865 (Core IV) or United States, 1865 to the Present	3
	CREDIT HOURS		16	CREDIT HOURS		16
JUNIOR	CEES 1000	CEES Seminar ⁴	0	CEES 1000	CEES Seminar ⁴	0
	CEES 3213	Water Resources Engineering	3	CEES 3243	Water and Wastewater Treatment Design	3
	CEES 3263	Introduction to Dynamics for Architectural and Civil Engineers	3	CEES 3403	Materials	3
	CEES 3363	Soil Mechanics	3		Choose one of the following:	3
	CEES 3361	Soil Mechanics Laboratory	1	CEES 3663	Structural Design - Steel I ⁵	
	CEES 3413	Structural Analysis I	3		Professional Elective 6	
	HSTM 3333	Technology and Society in World History (Core IV, Western Culture) (or approved substitute)	3	CEES 3883	Transportation Engineering	3
				CEES 4253	Statistics and Probability	3
	CREDIT HOURS		16	CREDIT HOURS		15
SENIOR	ANTH 4623	Approaches to Cross-Cultural Human Problems (or approved substitute) (Core IV, World Culture)	3	CEES 1000	CEES Seminar ⁴	0
	CEES 1000	CEES Seminar ⁴	0	CEES 4903	Civil Engineering Capstone	3
		Professional Elective ⁶	3		Professional Elective ⁶	3
		Choose one of the following:	3	P SC 1113	American Federal Government (Core III)	3
	CEES 3673	Structural Design - Concrete I ⁵			Approved Elective, Social Science (Core III) ⁷	3
		Professional Elective 6			Approved Elective, Artistic Forms (Core IV) ⁷	3
	CEES 4453	Geomatics Engineering	3			
	CEES 4901	Introduction to CE Capstone	1			
	CEES 4951	Contemporary Topics in Professional Practice	1			
	ENGR 3401	Engineering Economics	1			
	CREDIT HOURS		15	CREDIT HOURS		15

¹ CHEM 1315 and CHEM 1415 can be substituted with CHEM 1335 (Fall only) and CHEM 1435 (Spring only), respectively.

² MATH 1823, MATH 2423, MATH 2433, and MATH 2443 sequence can be substituted for MATH 1914, MATH 2924, and MATH 2934.

³ Engineering transfer students may take ENGR 3410 in place of ENGR 1410.

⁴ Students must complete a minimum of four semesters of CEES 1000.

⁵ Students must take at least CEES 3663 or CEES 3673. Students may take both courses if desired.

⁶ Professional electives can be chosen from any 3000-level or higher course in CEES. One three-hour professional elective can be taken outside CEES with advisor approval.

⁷ To be chosen from the University-Wide General Education Approved Course List. Three of these hours must be upper-division (3000-4000). See list in the Class Schedule.

Courses designated as Core I, II, III, IV or V are part of the General Education curriculum. Students must complete a minimum of 40 hours of General Education courses, chosen from the approved list.

REQUIREMENTS FOR THE BACHELOR OF SCIENCE

GALLOGLY COLLEGE OF ENGINEERING

THE UNIVERSITY OF OKLAHOMA

Academic Year
For Students Entering the Oklahoma State System for Higher Education Summer 2022 through Spring 2023

General Requirements	
Minimum Total Credit Hours	125
Minimum Retention/Graduation Grade Point Averages:	
Overall - Combined and OU	2.00
Major - Combined and OU	2.00
Curriculum - Combined and OU	2.00

Program
Environmental Engineering
B390
Bachelor of Science

OU encourages students to complete at least 32 hours of applicable coursework each year to have the opportunity to graduate in 4 years.

GENERAL EDUCATION AND COLLEGE REQUIREMENTS

Courses designated as Core I, II, III, IV, or V are part of the General Education curriculum. Students must complete a minimum of 40 hours of General Education courses, chosen from the approved list, including at least one upper-division Gen. Ed. course outside of the student's major. **Courses graded P/NP will not apply.**

A grade of C or better is required in each course in the curriculum, including all prerequisite courses.

UNIVERSITY-WIDE GENERAL EDUCATION (MINIMUM 40 HOURS) AND COLLEGE REQUIREMENTS

Code	Title	Credit Hours
Core Area I: Symbolic and Oral Communication		
<i>English Composition</i>		
ENGL 1113	Principles of English Composition	3
ENGL 1213	Principles of English Composition	3
or EXPO 1213	Expository Writing	
<i>Language (0-10 hours in the same language)</i>		
This requirement can be met by two years of the same language in high school:		0-10
Beginning Course (0-5 hours)		
Beginning Course, continued (0-5 hours)		
<i>Mathematics</i>		
MATH 1914	Differential and Integral Calculus I (Core I) ^{1,2}	4
Core Area II: Natural Science (including one laboratory)		
PHYS 2514	General Physics for Engineering and Science Majors (Core II) ²	4
CHEM 1315	General Chemistry (Core II-Lab) ²	5
or CHEM 1335	General Chemistry I: Signature Course	
Core Area III: Social Science		
P SC 1113	American Federal Government	3
Choose one course ³		3
Core Area IV: Arts & Humanities		
<i>Artistic Forms</i>		
Choose one course ³		3
<i>Western Culture</i>		
HIST 1483	United States to 1865	3
or HIST 1493	United States, 1865 to the Present	
HSTM 3333	Technology and Society in World History (or approved substitute Core IV-Western Culture) ³	3
<i>World Culture</i>		
ANTH 4623	Approaches to Cross-Cultural Human Problems (or approved substitute Core IV-World Culture) ³	3
Core Area V: First-Year Experience		
Choose one course ³		3
Total Credit Hours		40-50

¹MATH 1823,MATH 2423, MATH 2433, and MATH 2443 sequence can be substituted for MATH 1914, MATH 2924, andMATH 2934.

²Major support requirements that also satisfy University General Education requirements.

³To be chosen from the University-Wide General Education Approved Course List. Three of these hours must be upper-division (3000-4000). See list in the Class Schedule.

FREE ELECTIVES

Electives to bring total applicable hours to the minimum total required for the degree including a minimum of 40 upper-division hours.

ACCREDITED BY THE ENGINEERING ACCREDITATION COMMISSION OF ABET, <https://www.abet.org>

In order to progress in your curriculum in the Gallogly College of Engineering, and as a specific graduation requirement, a **grade of C** or better is required in each course in the curriculum, including all prerequisite courses.

MAJOR REQUIREMENTS

Code	Title	Credit Hours
Required Courses		
CEES 1000	CEES Seminar (minimum of four semesters required)	0
CEES 1112	Introduction to Civil Engineering and Environmental Science	2
CEES 2113	Statics	3
CEES 2153	Mechanics of Materials	3
CEES 2213	CADD Fundamentals	3
CEES 2223	Fluid Mechanics	3
CEES 2313	Water Quality Fundamentals	3
CEES 2323	Environmental Transport and Fate Process	3
CEES 3213	Water Resources Engineering	3
CEES 3361	Soil Mechanics Laboratory	1
CEES 3363	Soil Mechanics	3
CEES 3243	Water and Wastewater Treatment Design	3
CEES 4114	Aquatic Chemistry	4
CEES 4253	Statistics and Probability	3
CEES 4263	Hazardous and Solid Waste Management	3
CEES 4324	Environmental Biology and Ecology	4
CEES 4921	Introduction to EE Capstone	1
CEES 4951	Contemporary Topics in Professional Practice	1
CEES 4923	Environmental Engineering Capstone	3
CEES 4943	Air Quality Management	3
Total Credit Hours		52

MAJOR SUPPORT REQUIREMENTS

Code	Title	Credit Hours
Math and Science		
CHEM 1415	General Chemistry (Continued)	5
or CHEM 1435	General Chemistry II: Signature Course	
CHEM 3053	Organic Chemistry I: Biological Emphasis	3
MATH 2924	Differential and Integral Calculus II	4
MATH 2934	Differential and Integral Calculus III	4
MATH 3113	Introduction to Ordinary Differential Equations	3
PHYS 2524	General Physics for Engineering and Science Majors	4
Professional Electives		
Choose any two 3000-level or higher course in CEES (one three-hour professional elective can be taken outside CEES with advisor approval)		6
Additional College Requirements		
ENGR 1410	Freshman Engineering Orientation ¹	0
ENGR 2002	Professional Development	2
ENGR 2461	Thermodynamics	1
ENGR 3401	Engineering Economics	1
Total Credit Hours		33

¹Engineering transfer students may take ENGR 3410 in place of ENGR 1410.

More information in the catalog: (<http://ou-public.courseleaf.com/gallogly-engineering/civil-engineering-environmental-science/environmental-engineering-bachelor-science/>).

SUGGESTED SEMESTER PLAN OF STUDY

Accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>

In order to progress in your curriculum in the Gallogly College of Engineering, and as a specific graduation requirement, a grade of C or better is required in each course in the curriculum, including all prerequisite courses.

Two college-level courses in a single world language are required; this may be satisfied by successful completion of 2 years in a single world language in high school. Students who must take a language at the University will have an additional 6-10 hours of coursework.

Year	FIRST SEMESTER		Hours	SECOND SEMESTER		Hours
FRESHMAN	ENGL 1113	Principles of English Composition (Core I)	3	ENGL 1213 or EXPO 1213	Principles of English Composition (Core I) or Expository Writing	3
	CHEM 1315	General Chemistry (Core II-Lab) ¹	5	CHEM 1415	General Chemistry (Continued) (Core II-Lab) ¹	5
	MATH 1914	Differential and Integral Calculus I (Core I) ²	4	MATH 2924	Differential and Integral Calculus II ²	4
	CEES 1112	Introduction to Civil Engineering and Environmental Science	2	PHYS 2514	General Physics for Engineering and Science Majors (Core II)	4
	ENGR 1410	Freshman Engineering Orientation ³	0			
		Approved Elective: First-Year Experience (Core V) ⁶	3			
	CREDIT HOURS		17	CREDIT HOURS		16
SOPHOMORE	MATH 2934	Differential and Integral Calculus III ²	4	HIST 1483 or HIST 1493	United States to 1865 (Core IV) or United States, 1865 to the Present	3
	PHYS 2524	General Physics for Engineering and Science Majors	4	MATH 3113	Introduction to Ordinary Differential Equations	3
	CEES 1000	CEES Seminar ⁴	0	CEES 1000	CEES Seminar ⁴	0
	CEES 2213	CADD Fundamentals	3	CEES 2153	Mechanics of Materials	3
	CEES 2113	Statics	3	CEES 2223	Fluid Mechanics	3
	CEES 2313	Water Quality Fundamentals	3	CEES 2323	Environmental Transport and Fate Process	3
				ENGR 2002	Professional Development	2
	CREDIT HOURS		17	CREDIT HOURS		17
JUNIOR	CHEM 3053	Organic Chemistry I: Biological Emphasis	3	HSTM 3333	Technology and Society in World History (or approved substitute) (Core IV, Western Culture)	3
	CEES 1000	CEES Seminar ⁴	0	CEES 1000	CEES Seminar ⁴	0
	CEES 3213	Water Resources Engineering	3	CEES 3243	Water and Wastewater Treatment Design	3
	CEES 3363	Soil Mechanics	3	CEES 4253	Statistics and Probability	3
	CEES 3361	Soil Mechanics Laboratory	1	CEES 4943	Air Quality Management	3
	ENGR 3401	Engineering Economics	1		Approved Elective: Social Science (Core III) ⁶	3
		Professional Elective ⁵	3	ENGR 2461	Thermodynamics	1
	CREDIT HOURS		14	CREDIT HOURS		16
SENIOR	CEES 1000	CEES Seminar ⁴	0	ANTH 4623	Approaches to Cross-Cultural Human Problems (or approved substitute) (Core IV, World Culture)	3
	CEES 4114	Aquatic Chemistry	4	P SC 1113	American Federal Government (Core III)	3
	CEES 4263	Hazardous and Solid Waste Management	3		Professional Elective ⁵	3
	CEES 4324	Environmental Biology and Ecology	4		Approved Elective, Artistic Forms (Core IV) ⁶	3
	CEES 4921	Introduction to EE Capstone	1	CEES 1000	CEES Seminar ⁴	0
	CEES 4951	Contemporary Topics in Professional Practice	1	CEES 4923	Environmental Engineering Capstone	3
	CREDIT HOURS		13	CREDIT HOURS		15

¹ CHEM 1315 and CHEM 1415 can be substituted with CHEM 1335 (Fall only) and CHEM 1435 (Spring only), respectively.

² MATH 1823, MATH 2423, MATH 2433, and MATH 2443 sequence can be substituted for MATH 1914, MATH 2924, and MATH 2934.

³ Engineering transfer students may take ENGR 3410 in place of ENGR 1410.

⁴ Students must complete a minimum of four semesters of CEES 1000.

⁵ Professional electives can be chosen from any 3000-level or higher course in CEES. One three-hour professional elective can be taken outside CEES with advisor approval.

⁶ To be chosen from the University-Wide General Education Approved Course List. Three of these hours must be upper-division (3000-4000). See list in the Class Schedule.

Courses designated as Core I, II, III, IV or V are part of the General Education curriculum. Students must complete a minimum of 40 hours of General Education courses, chosen from the approved list.