

Recommended Courses for BSCE Seniors

The following pages provide recommended coursework for BSCE seniors.

This page provides general recommendations for students, and the subsequent pages address coursework for each of the department's sub-areas: Construction, Transportation, Structures, Geotech, Hydrology/Hydrodynamics, and Environmental Engineering.

Consider these recommended courses as general guidelines. You should attend Faculty Mentoring sessions in April of your junior year to plan your senior year coursework. Your actual senior year plan should take into account your personal interests, post-graduation goals, and graduation requirements.

Students can start taking 400-level CEE course as early as the spring quarter of their junior year, as they complete the 300-level CEE courses. *Students interested in structural engineering should plan to take CEE 456 (Structural Analysis) in the spring quarter of their junior year.*

Use the CEE Projected Course Offering list (www.ce.washington.edu/current/curriculum) to identify when courses are scheduled to be offered and layout a tentative academic plan in your MyPlan.

General Civil Engineering

The practice of civil engineering requires proficiency in various areas, and civil engineers often find that their technical interests and opportunities change over the course of their careers. In view of the interdisciplinary nature of the field, students are encouraged to pursue a course of study which offers the breadth necessary for your future professional development. If you have a defined interest in one or more areas of civil engineering, you may want to select elective courses which emphasize your interest or you may want to consider pursuing them in detail at the graduate level. This choice of course work provides suitable background for general professional practice or for graduate study in any branch of civil engineering.

Required Course:

- CEE 440 Professional Practice Studio (2)
- CEE 4xx A capstone design course (CEE 441, 442, 444, or 445) (5)

Strongly Recommend Courses:

- CEE 416 Urban Transportation Planning and Design (3)
- CEE 421 Pavement Design (3)
- CEE 436 Foundation Design (3)
- CEE 451 Design of Metal Structures (3)
- CEE 452 Design of Reinforced Concrete Structures (3)
- CEE 481 Hydraulic Design for Environmental Engineering (3)
- CEE 483 Wastewater Treatment and Reuse (3)

Recommended Courses:

- CEE 404 Infrastructure Construction (4)
- CEE 410 Traffic Engineering Fundamentals (3)
- CEE 424 GIS for Civil Engineers (3)
- CEE 452 Reinforced Concrete Construction (3)
- CEE 454 Design of Timber Structures (3)
- CEE 473 Coastal Engineering (3)
- CEE 476 Physical Hydrology (3)
- CEE 477 Open Channel Engineering (3)
- CEE 484 On-Site Water Disposal (3)

Recommended Coursework for Students interested in **Construction Engineering**

Construction Engineering addresses construction of the built environment with special emphasis on sustainability. Professionally, “construction engineering” tends to describe jobs for construction contractors, as well as public/private owners and consultants that manage construction projects. Construction engineers are generally exposed to all civil engineering specialty areas in their daily work as well as scheduling, estimating, project controls, and business development. Employment can be with either large or small organizations and may address general or specialized construction. Examples of constructed facilities include buildings, highways, bridges, rail systems, energy infrastructure, dams, and airports. CEE majors are invited to take Construction Management (CM) courses; however, enrollment cannot always be guaranteed as CM majors have registration priority for CM courses.

This is a general guide. Please consult your faculty mentor for more information.

Required Course:

CEE 440 Professional Practice Studio (2)

Strongly Recommended Courses:

CEE 291 AutoCAD (2)
 CEE 404 Infrastructure Construction (4)
 CEE 410 Traffic Engineering Fundamentals (3)
 CEE 420 Engineering with Developing Communities (3)
 CEE 421 Pavement Design & Construction (4)
 CEE 424 GIS for Civil Engineers (3)
 CEE 429 Sustainability in Building Infrastructure (3)
 CEE 441 Construction/Transportation Capstone (5) - *Plan for prerequisites.*

Recommended Courses:

CEE 416 Urban Transportation Planning and Design (3)
 CEE 436 Foundation Design (3)
 CEE 451 Design of Metal Structures (3)
 CEE 452 Design of Reinforced Concrete Structures (3)
 CEE 454 Design of Timber Structures (3)
 CEE 477 Open Channel Engineering (3)
 CEE 480 Air-Quality Modeling (3)
 CM 331 Construction Estimating I (4)
 CM 332 Construction Equipment Management (3)
 CM 333 Construction Safety
 CM 411 Project Planning and Control (3)
 CM 414 Virtual Construction (3)
 CM 415 Heavy Construction Practices (3)
 CM 420 Temporary Structures (3)
 CM 421 Project Management (3)
 CM 423 Construction Law (3)
 CM 428 Heavy Construction Techniques (3)
 CM 450 Construction Project Management (5)

New! Construction Management (CM) Minor

The CM minor consists of 27 credits. Up to 12 CM minor credits may be applied toward CEE Upper Division Engineering and Science Electives. For more information about the CM minor, please contact:
 Jessica Pak, CM adviser, pakjm@uw.edu 206-685-4438 <http://cm.be.washington.edu>
 120 Architecture Building, Box 351610

Annual CM Career Fair in early November! CEE students are invited to attend.

Recommended Coursework for Students interested in **Transportation Engineering**

The suggested courses provide a balanced offering of transportation engineering courses and can provide a basis for entering into professional practice or continuing on to graduate school. The courses listed below were selected with the recognition that knowledge of both transportation and construction topics are required to plan, design, and construct transportation facilities; therefore, we are emphasizing that a blended program be considered.

This is a general guide. Please consult your faculty mentor for more information.

Required Courses:

CEE 440 Professional Practice Studio (2)

Strongly Recommended Courses:

CEE 410 Traffic Engineering Fundamentals (3)

CEE 412 Transportation Data Management (3)

CEE 416 Urban Transportation Planning and Design (3)

CEE 441 Transportation and Construction Capstone (5) - *Plan for prerequisites.*

Recommended Courses:

CEE 404 Infrastructure Construction (4)

CEE 405 Traffic Simulations (3)

CEE 421 Pavement Design (3)

CEE 424 GIS for Civil Engineers (3)

CEE 498 Special Topic: Geometric Design (3)

Graduate level classes are also an option for undergraduate who have completed undergraduate offerings and have a special interest in transportation. Consult with a transportation faculty member if you are interested in this option. Faculty permission and an add code is required to register for CEE 500-level classes. Submit the add code request online, note faculty permission and forward the email faculty approval to ceadvice@uw.edu.

Students can also check out the list of non-CEE courses approved for Upper-Division Electives available online at www.ce.washington.edu/current/undergrad/req/nondep.

Interested in Transportation?

- Join the Institute of Transportation Engineers (ITE) UW Student Chapter — helps promote the education and professional development of students interested in transportation engineering and planning.
Website: <http://students.washington.edu/ite/> Email: ite@uw.edu
- The CEE Department hosts a number of transportation research centers, funded by industry and government. Check out Pacific Northwest Transportation Consortium (PacTrans), Washington State Transportation Center (TRAC), and Supply Chain Transportation and Logistics (SCTL) Center for opportunities to engage in the field. For more information on these centers, visit www.ce.washington.edu/research/centers.
- Washington State Department of Transportation (WSDOT) annually hires a number of CEE for paid internships at the Traffic Management Center (TMC) in Shoreline. These are part-time positions during the academic year which often continue as full-time jobs in the summer. Interviews take place each year in early September on campus in More Hall. All CEE majors interested in transportation, except graduating seniors, may sign up for an interview. Look for announcements in late August. County and municipal DOTs throughout the State also hire CEE interns. Various internship and research opportunities are possible. Please consult with transportation faculty. Sophomores and Juniors are particularly encouraged to apply for WSDOT TMC internships.

Recommended Coursework for Students interested in Structural Engineering

The Structures and Mechanics area of emphasis deals with the strength of structures and their response to physical loads. The discipline typically leads to jobs in consulting engineering (designing building structures, bridges, etc.) or in contracting (concerned with the process and fabrication and erection rather than design of the structure). Many students also go on to study structures and mechanics at the graduate level, perhaps specializing further into earthquake engineering, long-span structures, etc.

This is a general guide. Please consult your faculty mentor for more information.

Required :

CEE 440 Professional Practice Studio (2)

Strongly Recommended:

CEE 436 Foundation Design (3)

CEE 442 Structural Geotechnical Engineering Capstone Design Project (5) - *Plan for prerequisites.*

CEE 451 Design of Metal Structures (3)

CEE 452 Design of Reinforced Concrete Structures (3)

CEE 456 Structural Analysis (5) - Essential for structural students!
(Important — Take in Spring Quarter of Junior Year)

CEE 457 Advanced Structures I (3)

Recommended Courses:

CEE 424 GIS for Civil Engineers

CEE 453 Prestressed Concrete (3)

CEE 454 Design of Timber Structures (3)

CEE 455 Design of Masonry Structures (3)

Courses of Interest:

CEE 404 Infrastructure Construction (4)

CEE 416 Urban Transportation Planning/Design (3)

CEE 421 Pavement Design (3)

CEE 437 Engineering Geology I (3)

CEE 476 Physical Hydrology (3)

CEE 477 Open-Channel Engineering (3)

CEE 481 Hydraulic Design for Environmental Engineering (3)

CEE 495 Design for Environment (3)

CEE 498 Special Topics: GeoHazards (3)

Undergraduates who intend to pursue a MSCE in Structural Engineering are invited to take some courses (such as CEE 453 and CEE 457) at the graduate level with 500-level course numbers, provided that they can satisfy BSCE degree requirements with other courses. Consult with an adviser or structures faculty member if you are interested in this option. Faculty permission and an add code is required to register for CEE 500-level classes. Submit the add code request online,

Employers in some areas of civil engineering prefer students with master's degrees for certain positions. Although not required, *geotechnical engineering, structural engineering, and other sub-areas often seek those with a master's degree for entry level positions.*

If you are interested in pursuing an advanced degree, such as a master's or Ph.D., start planning and consulting with faculty mentors and advisors as early as your junior year. *The coursework-only MSCE degree can typically be completed in approximately one year (3-4 quarters). See page 8 for more information about preparing for graduate school.*

Recommended Coursework for Students interested in **Geotechnical Engineering**

Geotechnical engineering involves the study of soil and rock as engineering materials. It is an interdisciplinary field, drawing on other disciplines such as geology, mechanics, hydrology, structural engineering, seismology, construction, and environmental engineering. Among other things, geotechnical engineers design foundations, and dams, evaluate landslides potential and earthquake hazards, and remediate contaminated sites. Geotechnical engineers work for small and large consulting firms, government agencies, and large design firms.

This is a general guide. Please consult your faculty mentor for more information.

Required:

CEE 440 Professional Practice Studio (2)

Strongly Recommended:

CEE 436 Foundation Design (3)
CEE 442 Structural Geotechnical Capstone Design Project (5)
CEE 452 Design of Reinforced Concrete Structures (3)

Recommended Courses:

CEE 421 Pavement Design (3)
CEE 456 Structural Analysis
CEE 451 Design of Metal Structures (3)
CEE 475 Analysis Techniques for Groundwater Flow (3)

Suggested Courses:

CEE 457 Advanced Structures I (3)
CEE 477 Open-Channel Engineering (3)
CEE 482 Water and Wastewater Treatment (3)
CEE 498* Special Topics: Geohazards (*New course number forthcoming)
STAT 390 Probability and Statistics for Engineers & Scientists (4)
ESS 210 Physical Geology (5) NW
ESS 326 Geomorphology (5)
See also other Earth & Space Science (ESS) courses.

Graduate level classes are also an option for undergraduate who have completed undergraduate offerings and have a special interest in geotechnical engineering. Consult with a transportation faculty member if you are interested in this option. Faculty permission and an add code is required to register for CEE 500-level classes. Submit the add code request online, note faculty permission and forward the email faculty approval to ceadvice@uw.edu.

Students can also check out the list of non-CEE courses approved for Upper-Division Electives available online at www.ce.washington.edu/current/undergrad/reg/nondep.

Recommended Coursework for Students interested in Hydrology/Hydrodynamics Engineering

Hydrology, water resources, and environmental fluid mechanics engineering encompass the planning, design, and operation of water projects. The courses listed below present information in the fields of hydraulics and fluid mechanics, surface and groundwater hydrology, coastal engineering and the computer modeling of water resource systems. Graduates with a background in these areas find employment in both the private and public sectors. The courses also provide background for graduate study.

This is a general guide. Please consult your faculty mentor for more information.

Required:

CEE 440 Professional Practice Studio (2)

Strongly Recommended:

CEE 444 Water Resources & Hydraulic Engr Capstone Design Project (5) - *Plan for prerequisites.*

CEE 476 Physical Hydrology (3)

CEE 477 Open-Channel Engineering (3)

CEE 481 Hydraulic Design fro Environmental Engineering (3)

Recommended Courses:

CEE 436 Foundation Design (3)

CEE 437 Engineering Geology I (3)

CEE 472 Introduction to Hydraulics in Water Resources (3)

CEE 473 Coastal Engineering (3)

CEE 474 Hydraulics of Sediment Transport (3)

CEE 475 Analysis Techniques for Groundwater Flow (3)

CEE 491 Deterministic Systems (3)

Suggested Courses:

CEE 452 Design of Reinforced Concrete Structures (3)

CEE 492 Stochastic Systems (3)

Suggested Courses from Outside Departments:

ECON 435 Natural Resource Economics (Prereq: ECON 200) (5)

ESS 426 Fluvial Geomorphology (5)

ESS 427 Hillslope Geomorphology (5)

Undergraduates with special interest in Hydrology/Hydrodynamics may be eligible to take some courses at the graduate level (with 500-level course numbers). Please consult with the faculty instructor for the course. Faculty permission and

Interested in Hydrology/Hydrodynamics or Environmental Engineering?

There are many UW student chapter of professional associations you may want to explore and join:

- American Public Works Association (APWA)
- American Water Resources Association (AWRA)
- American Water Works Association (AWWA)
- Pacific Northwest Clean Water Association

For other clubs and organizations, see <https://www.ce.washington.edu/current/organizations>.

Recommended Coursework for Students interested in **Environmental Engineering**

If you choose to concentrate in environmental engineering you may wish to emphasize water or air-related courses. The courses below are intended to prepare you for employment with consulting firms, public agencies, and industries, and also to provide background for graduate study. Employment is available in many related fields of pollution control, public works, environmental engineering, solid waste and hazardous wastes engineering, and water and air quality management.

This is a general guide. Please consult your faculty mentor for more information.

Required:

CEE 440 Professional Practice Studio (2)

Strongly Recommended:

CEE 445 Environmental Engineering Capstone Design Project (5) - *Plan for prerequisites.*
CEE 462 Applied Limnology and Pollutant Effects on Freshwater (3)
CEE 476 Physical Hydrology (3)
CEE 481 Hydraulic Design for Environmental Engineering (3)
CEE 482 Wastewater Treatment and Reuse (3)
CEE 483 Drinking Water Treatment (3)
CEE 490 Air Pollution Control (4)
CEE 496 Fate and Transport of Chemicals in the Environment
BIOL 180 General Biology (5)

* These courses are taught in alternating years

Recommended Courses:

CEE 474 Hydraulics of Sediment Transport (3)
CEE 475 Analysis Technology for Groundwater Flow (3)
CEE 477 Open-Channel Engineering (3)
CEE 480 Air Quality Modeling (3)
CEE 488 Hazardous Waste Engineering (3)
CHEM 162 General Chemistry (5)
A A 260 Thermodynamics

The Bachelor of Science in Environmental Engineering (BSNVE)

The CEE Department offers a separate Bachelor of Science in Environmental Engineering (BSNVE) degree, which is a more focused study of environmental engineering.

BSCe majors interested in environmental engineering may take select courses from the BSNVE curriculum provided that they have the necessary prerequisite courses or equivalents.

For more information on the BSNVE curriculum, please see www.ce.washington.edu/content/degree-requirements.

Course Scheduling Resources

Here are some helpful resources and notes:

- **Degree Audit** —Run your degree audit to check on your progress and plan for required courses. Available via MyUW.
- **MyUW** — Enter your academic plan on MyPlan. This helps us to see you plan in real time and advise better. Use MyPlan course search to look for classes (e.g., VLPA, Diversity, etc.)
- **CEE Curriculum & Course Planning Page:** www.ce.washington.edu/current/curriculum
 - Projected Course Offerings — CEE Working document that shows which courses are planned to be offered a given year, by quarter and instructor.
 - Preliminary CEE Time Schedules — CEE planning document for future quarterly time schedules.
 - **UW Time Schedule:** Actual UW published Time Schedule.
- **Online Course Descriptions. Check for required course prerequisites.** — You can read course descriptions by clicking on the course title on MyPlan or going directly to www.washington.edu/students/crscat/cee.html.
- **List of approved outside department courses to satisfy Upper-Division Engineering & Science Elective Requirement:** You can find the list of pre-approved outside department courses online at the CEE Website BSCE Degree requirements: www.ce.washington.edu/students/ugAcademics.html
- **CEE forms and resources:** Looking for BSCE forms, such as CEE 499 Request, Graduation Petition, etc? Go to the CEE Undergraduate Student Resources Page at www.ce.washington.edu/current/undergrad
- **CEE Add code request form:** <http://tinyurl.com/ceeaddcoderequest>
- **Grade Requirements:** A minimum grade of 2.0 is required for all CEE prerequisite courses, Technical Elective Core courses, and the Capstone course. Courses used to satisfy BSCE degree graduation requirements (such as IND E 315, ENGR 231, and 300-level CEE courses) must be completed with a minimum grade of 1.0. A minimum 2.0 cumulative GPA is required. Courses must be taken with a numerical grade or the Credit/No Credit (CR/NC) grading option to apply toward major, minor, or general education requirements. “S” credits earned under the Satisfactory/Non Satisfactory (S/NS) grading option may be used *only* for University general electives. For complete information on grading, see http://www.washington.edu/students/genecat/front/Grading_Sys.html

Hint! Plan ahead if you are considering pursuing a MSCE or other graduate degree.

- If you are interested in pursuing an advanced degree, such as a master’s or Ph.D., start planning and consulting with faculty mentors and advisors as early as your junior year.
- Employers in some areas of civil engineering prefer students with master’s degrees for certain positions. Although not required, *geotechnical engineering, structural engineering, and other sub-areas often* seek those with a master’s degree for entry level positions.

For more information:

- Attend a “Preparing for Graduate School Session” in spring quarter (of junior year).
- Visit CEE Graduate Programs Website: <http://www.ce.washington.edu/prospective/grads/index.html>
- Plan to take the Graduate Record Examination (GRE) up to a year in advance of your graduate school application deadlines. (UW CEE deadline is December 1 for the following autumn admission.) GRE scores are valid for 5 years.