



PennState

Civil *and* Environmental

Educating
World-Class
Engineers

E N G I N E E R I N G

FALL 2019/SPRING 2020



U N D E R G R A D U A T E H A N D B O O K

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Quick Advising Reference

Advising notes FA19/SP20:

- Program (curriculum) change:
- Spring only capstones: All of our "W" courses are spring only! Plan ahead.
- Late Drop Policy: Students may now late drop as many times as needed; however, they may only repeat -- includes registering -- for a course three times. See references to this policy on page 16.

Determine which courses will fulfill degree requirements?

Log in to LionPath >Self-Service >Student Center. Click on Degree Planning and Progress button. Click on My Academic Requirements. Review each line for down arrows (not met) and collapsed arrows (requirements met). Do not use the "What-if" tool for degree requirements!

Get into a class that is full?

Students cannot be added to classrooms that are filled to room capacity. If enrollment does not exceed the room capacity, students should add the course to their waitlist. The waitlist will automatically register the next student in line for the course as space becomes available.

Counseling

Students under stress may need some additional resources. Penn State's Counseling and Psychological Services (CAPS) provides assistance in counseling with personal concerns. Go to <http://studentaffairs.psu.edu/counseling/> to learn more.

Are students allowed to take a class without the prerequisites? (Policy 34-60: Prerequisites, Co- and Recommend)

Our prerequisites have been determined by the undergraduate committee in CEE and students need to adhere to these prerequisites. This is important for our ABET accreditation. Acceptable exceptions for prerequisites include:

- Taking courses as credit by exam/portfolio/AP, etc. that are determined to fulfill the prerequisite.
- Taking a direct equivalent or similar class at a commonwealth campus or another university. (e.g. CE360 and EME303 are both fluid mechanics courses).
- Following a discussion with the student, the faculty instructor believes that the student will be successful in the class if the prerequisite is taken concurrently and the student has been advised of the challenges that they might face.

What do students petition and how do they petition adjustments? (<https://coursesub.psu.edu>) Reference page 18.

- Taking a 3/6/9: in Arts, Humanities and Social and Behavioral Sciences.
- First year seminar: petition for missing credit.
- EMCH 210 instead of EMCH 211 + EMCH 213: Substitution petition; be aware of student needing additional credit.
- IE 424 instead of STAT 401: Substitution petition; IE 424 cannot be used as a technical elective.
- ROTC: petition 3 cr for ME and 3 cr for GHA; must have 18 credits in the program before petitioning.
- Technical Electives: petition anything not on the approved list.
- Transfer credits: general transferred credits that don't automatically count as direct transfers.

Faculty / Staff Directory

Faculty	Sackett Room#	Email	Phone	Title	Area
Brennan, Rachel	231K	rab44@psu.edu	865-9428	Associate	Environmental
Burgos, William	115	wdb3@psu.edu	863-0578	Professor	Environmental
Cannon, Fred	225	fsc1@psu.edu	863-8754	Professor	Environmental
Chen, Pinlei	215C	pzc216@psu.edu	863-4026	Assistant	Structures
Donnell, Eric	231N	ettd104@psu.edu	863-7053	Professor	Transportation
Fox, Patrick	212	pjfl4@psu.edu	863-3084	Dept Head	GeoMat
Gayah, Vikash	231L	vvg104@psu.edu	865-4014	Associate	Transportation
Gorski, Christopher	231F	cag981@psu.edu	865-5673	Associate	Environmental
Grady, Caitlin	226C	cag81@psu.edu	865-9434	Assistant	Water Resources
Guler, Ilgin	221B	sig123@psu.edu	867-6210	Assistant	Transportation
Hillman, Michael	224A	mzh226@psu.edu	863-0623	Assistant	Structures
Johnson, Peggy		paj6@psu.edu		Dean, SHC	Water Resources
Laman, Jeffrey	231J	jal17@psu.edu	863-0523	Professor	Structures
Li, Li	221A	lxl35@psu.edu	867-0151	Associate	Environmental
Liu, Xiaofeng	223B	xzl123@psu.edu	863-2940	Associate/Cyber	Water Resources
Logan, Bruce	231Q	bel3@psu.edu	863-7908	Kappe Professor	Environmental
McPhillips, Lauren	226B	lxm500@psu.edu	865-4564	Assistant	Water Resources
Mejia, Alfonso	215B	aim127@psu.edu	865-0639	Associate	Water Resources
Memari, Ali	222	amm7@psu.edu	863-9788	Hankin Chair	Structures
Naberezny, Brian	223A	bjn108@psu.edu	865-9433	Lecturer	Surveying
Paleti, Rajesh	226A	rzp303@psu.edu	863-4291	Assistant	Transportation
Papakonstantinou, Kostas	213C	kup31@psu.edu	863-4010	Assistant	Structures
Peng, Wei		pkw5116@psu.edu		Assistant	Environmental
Pietrucha, Martin	221	mtp5@psu.edu	863-7306	Professor	Transportation
Qiu, Tong	116	tuq1@psu.edu	863-7305	Associate	GeoMat
Radlinska, Aleksandra	231D	azr172@psu.edu	865-9427	Associate	GeoMat
Raj, Cibin	319 FRL	czr58@psu.edu	865-5616	Assistant	Water Resources
Rajabipour, Farshad	231M	fxr10@psu.edu	863-0601	Associate	GeoMat
Regan, John (Jay)	220	jmr41@psu.edu	865-9436	Professor	Environmental
Shen, Chaopeng	231C	cxs1024@psu.edu	863-5844	Associate	Water Resources
Skibinski, Thomas	206G	tjs36@psu.edu	863-0026	Assistant Teaching	CEM
Solaimanian, Mansour	219B	mus13@psu.edu	863-1903	Research Professor	GeoMat
Stoffels, Shelley	208	sms26@psu.edu	865-7254	Professor	GeoMat
Warn, Gordon	114	gpw1@psu.edu	863-2786	Associate	Structures
Warner, Nathaniel (Nat)	231E	nrv6@psu.edu	865-9423	Assistant/INGaR	Environmental
Xiao, Ming	231P	mzx102@psu.edu	867-0044	Associate	GeoMat

Faculty / Staff Directory

Staff	Sackett Room#	Email	Phone	Title
Boone, Sherry	212	slb31@psu.edu	863-3086	Financial Assistant
Bordas, Amy	107 CITEL	ajm114@psu.edu	865-7630	CITEL Admin Support Assistant
Dorman, Tracy	206B	tsd5@psu.edu	865-2341	PHRC Meetings/Events
Faulds, David	8B	dx105@psu.edu	865-4780	Lab Supervisor
Fawcett, Rachel	206B	rjf5092@psu.edu	863-2990	PHRC Budgets /Pubs
Fura, Dan	169-3 CITEL	dff10@psu.edu	865-9678	CITEL Lab Supervisor
Hamby, Heather	218	hqh3@psu.edu	867-0470	UG Support Assistant
Hassinger, Matt	5	hnh103@psu.edu	865-4981	Engineering Aide
Hill, Michelle	212	mvm3@psu.edu	863-3084	Dept Head Support Assistant
Hine, Christopher	206E	clh399@psu.edu	863-2366	PHRC/Housing & Land Dev Spec
Jones, David	125	dwj123@psu.edu	865-4276	Project Assistant/Logan
Klinetob-Lowe, Sarah	206D	sek175@psu.edu	865-7915	PHRC/Housing Systems Spec
Knisely, Allan	206K	ahk11@psu.edu	863-0512	Information Tech Consultant
Long, Amy	215A	alh9@psu.edu	863-3089	Administrative Coordinator
McCoy, Tammy	212	txm814@psu.edu	863-3088	Admin Support Assistant
Stringer, Scott	206H	bss12@psu.edu		IT Specialist
Weikel, Heather	206L	hnh2@psu.edu	863-6760	Logan/Staff Assistant
Wolfgang, Brian	206C	bmw5014@psu.edu	865-1226	PHRC Associate Director
Woytowich, Christine	216	cxw17@psu.edu	863-3085	GR Support Assistant

Degree Requirements

This table shows one way to complete the civil engineering program requirements in four regular academic years. However, very few students will be able to follow the program exactly as shown. There are many ways to meet these degree requirements. Please use the table of course offerings to carefully plan your program of study. You must be flexible and prepared to deal with full sections and scheduling conflicts.

Example Program Schedule

1st Semester

First-Year Seminar	(C E 100S or elective)	1
•CHEM 110	Chemical Principles	3
EDSGN 100	Engineering Design	3
ENGL 015 or 030	Rhetoric & Comp	3
•MATH 140/140E	Calculus I	4
GA, GH or GS course		<u>3</u>
		17

3rd Semester

CAS 100A/B	Effective Speech	3
+EMCH 211	Statics	3
GEO SC 001	Physical Geology	3
•MATH 251	Ord. & Partial Diff. Equ.	4
•PHYS 212	Electric. & Magnetism	<u>4</u>
		17

5th or 6th Semester

+CE 310	Surveying	3
+CE 332	Prof Econ & Const	3
+CE 336	C E Materials	3
+CE 340	Structural Analysis	3
+CE 360	Fluid Mechanics	3
Health & Physical Activity (GHA)		<u>1.5</u>
		16.5

7th Semester

*CE 3XX/4XX	CE Elective	3
*CE 3XX/4XX	CE Elective	3
ENGL 202C	Technical Writing	3
Technical Elective	(see dept. list)	3
GA, GH or GS course		<u>3</u>
		15

2nd Semester

CHEM 111	Experimental Chemistry	1
ECON 102 or 104 GS		3
•MATH 141/141E	Calculus II	4
•PHYS 211	Mechanics	4
GA, GH or GS course (or ENGL 15/30)		3
Health & Physical Activity (GHA)		<u>1.5</u>
		16.5

4th Semester

CMPSC 200/201	Programming	3
+EMCH 212	Dynamics	3
+EMCH 213/213D	Strength of Materials	3
Math 220	Matrices	2
STAT 401 or I E 424		3
GA, GH or GS course		<u>3</u>
		17

5th or 6th Semester

+CE 321	Highway Engineering	3
+CE 335	Mechanics of Soils	3
+CE 337	C E Materials Lab	1
+CE 370	Environmental Engineering	3
ME 201	Intro to Thermal Science	<u>3</u>
		13

8th Semester

*CE 3XX/4XX	CE Elective	3
CE 4XXW	Capstone Design	3
Technical Elective	(see dept. list)	3
Technical Elective	(see dept. list)	3
GA, GH or GS course		<u>3</u>
		15

TOTAL NUMBER OF CREDITS - 127

• Courses listed in boldface italic type require a grade of C or better for entrance into this major.

+ Courses listed in boldface type require a grade of C or better for graduation in this major.

* CE Electives must be selected from two of the following three technical areas in the program – Structures (X40), Water Resources (X60), and Environmental (X70).

A student may use a 3-credit sequence of ENGR 295, 395, 495 Cooperative Education to substitute for one 3 credit technical elective.

A student may use a 1-credit ENGR 195 Professional Internship on a case-by-case basis. See Undergraduate Program Coordinator.

Civil Engineering students may petition to use a maximum of 6 credits of ROTC (grade C or better); 3 credits may be applied to GHA and 3 credits towards ME 201 course work. No credits may be used in this manner unless the student has fulfilled all ROTC requirements.

Degree Requirements

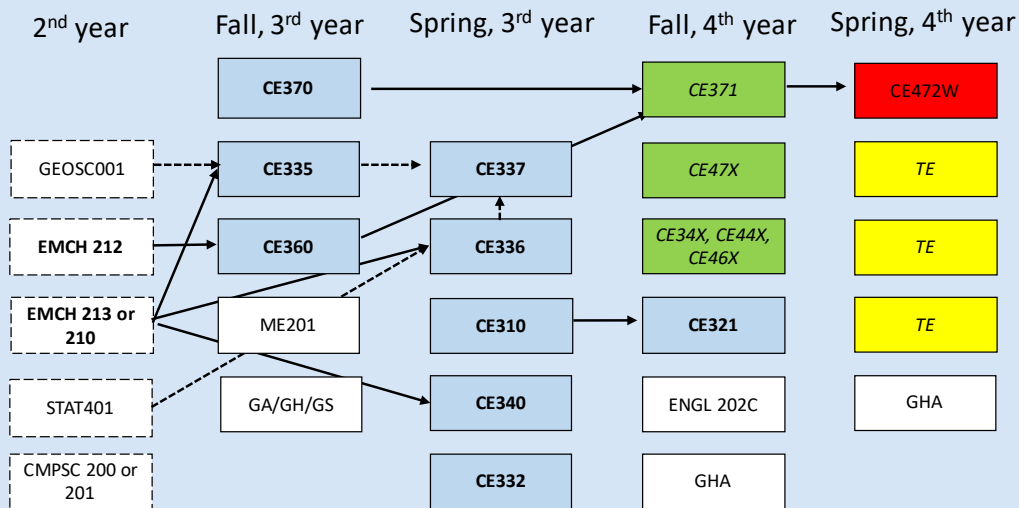
Environmental Engineering Program Schedule

Recommended Course Program for Undergraduates

(there are other course programs that may meet the requirements—discuss these options with your adviser)

Environmental engineering focuses on engineering systems that ensure a high quality of human life and protect our environmental resources. These systems include diverse areas such as water quality control; contaminated soil remediation; issues associated with atmospheric pollution; and the design, construction and operation of water supply, wastewater treatment and solid and hazardous waste treatment systems.

ENVIRONMENTAL (X7X) 5th semester CE370 CE335 (EMCH 213 or EMCH 210), (GEO SC 001) CE360 (EMCH 212) ME201 GHA or GA,GH,GS	6th semester CE337 (CE335 or CE336 or concurrent) CE336 (EMCH 213 or EMCH 210), (STAT 401) CE310 CE340 (EMCH213 or EMCH210) CE332
7th semester CE371 (CE370) [CE] CE47X [CE*]+ CE46X or CE34X or CE44X [CE] CE321 (CE310) ENGL 202C	8th semester CE472W (CE370, CE371) Technical elective [TE] Technical elective [TE] Technical elective [TE] GHA or GA,GH,GS



Courses in bold are required with a C or better.
 Dashed arrows are courses that can be taken concurrently.

Blue courses are required with a C or better.
 Green courses count towards CE elective
 Yellow courses are technical electives
 Red course is capstone
 → Solid arrows are prerequisites
 ⇨ Dashed arrows are courses that can be taken concurrently.

Degree Requirements

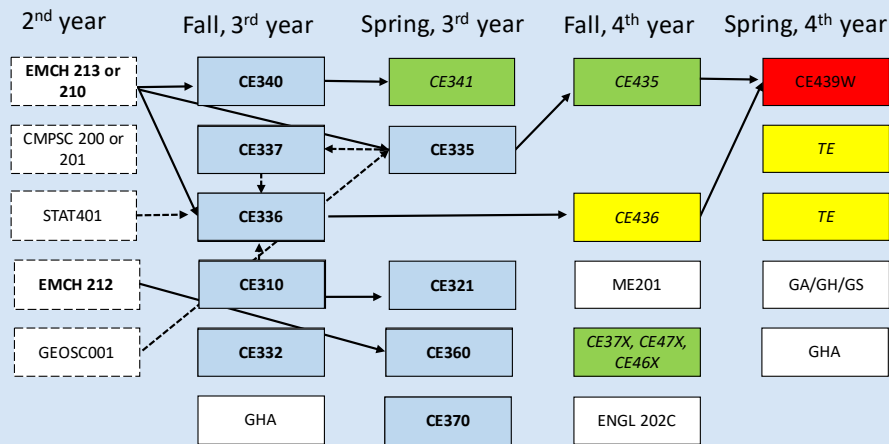
Geotechnical Engineering and Materials Program Schedule

Recommended Course Program for Undergraduates

(there are other course programs that may meet the requirements—discuss these options with your adviser)

The Geotechnical Engineering and Materials program includes several important disciplines of Civil Engineering associated with the characterization, behavior, design and management of natural particulate materials, infrastructure materials and pavements.

<p>GEOTECHNICAL/MATERIALS (X3X)</p> <p>5th semester</p> <p>CE340 (EMCH213 or EMCH210)</p> <p>CE337(CE335 or CE336 or concurrent)</p> <p>CE336 (EMCH 213 or EMCH 210), (STAT 401)</p> <p>CE310</p> <p>CE332</p> <p>GHA or GA,GH,GS</p>	<p>6th semester</p> <p>CE341 (CE340, co-CE336) [CE]</p> <p>CE335 (EMCH 213 or EMCH 210), (GEO SC 001)</p> <p>CE321 (CE310)</p> <p>CE360 (EMCH 212)</p> <p>CE370</p>
<p>7th semester</p> <p>CE435 (CE335, CE341-concurrent) [CE*]</p> <p>CE436 (CE336, Stat 401 or CE437 (CE336) [TE]</p> <p>ME201</p> <p>CE37X, CE47X or CE46X [CE]</p> <p>ENGL 202C</p>	<p>8th semester</p> <p>CE439W (CE435, CE436 or CE437)</p> <p>Technical elective [TE]</p> <p>Technical elective [TE]</p> <p>GHA or GA,GH,GS</p>



Courses in bold are required with a C or better.
Dashed arrows are courses that can be taken concurrently.

Blue courses are required with a C or better.
Green courses count towards CE elective
Yellow courses are technical electives
Red course is capstone
→ Solid arrows are prerequisites
⇌ Dashed arrows are courses that can be taken concurrently.

Degree Requirements

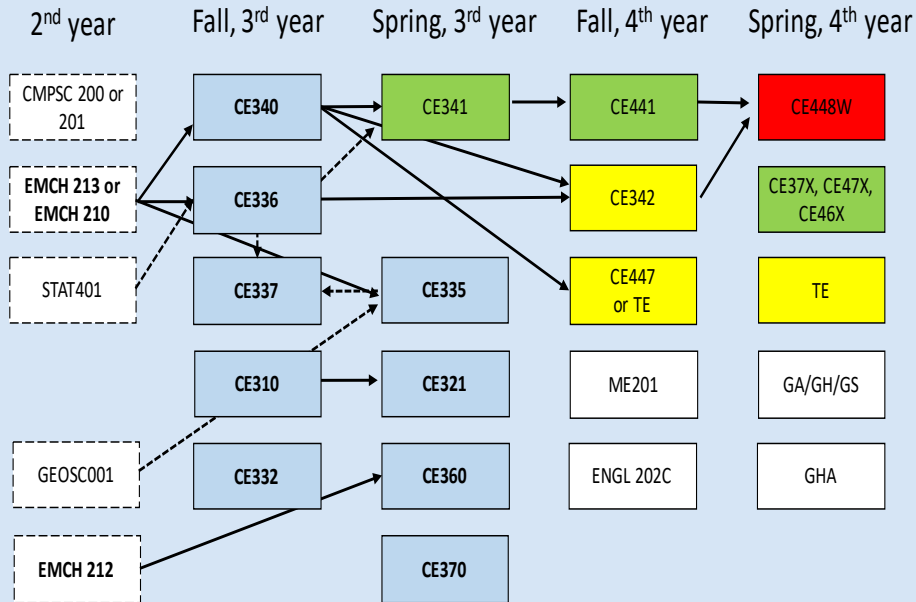
Structural Engineering Program Schedule

Recommended Course Program for Undergraduates

(there are other course programs that may meet the requirements—discuss these options with your adviser)

Structural engineering involves the analysis and design of buildings, bridges, dams, tunnels and other structures considering the loads, wind forces, earthquake shocks, and materials as well as the proposed methods of construction.

<p>STRUCTURES (X4X)</p> <p>5th semester</p> <p>CE340 (EMCH213 or EMCH210)</p> <p>CE337(CE335 or CE336 or concurrent)</p> <p>CE336 (EMCH 213 or EMCH 210), (STAT 401)</p> <p>CE310</p> <p>CE332</p> <p>GHA or GA,GH,GS</p>	<p>6th semester</p> <p>CE341 (CE340, co-CE336) [CE]</p> <p>CE335 (EMCH 213 or EMCH 210), (GEO SC 001)</p> <p>CE321 (CE310)</p> <p>CE360 (EMCH 212)</p> <p>CE370</p>
<p>7th semester</p> <p>CE441 (CE341) [TE]</p> <p>CE342 (CE340, CE336) [CE*]</p> <p>Technical elective (e.g. CE447 (CE340)) [TE]</p> <p>ME201</p> <p>ENGL202C</p>	<p>8th semester</p> <p>CE448W (CE342, CE441)</p> <p>CE37X, CE47X or CE46X [CE]</p> <p>Technical elective [TE]</p> <p>GHA or GA,GH,GS</p>



Blue courses are required with a C or better.
 Green courses count towards CE elective
 Yellow courses are technical electives
 Red course is capstone
 → Solid arrows are prerequisites
 ⇨ Dashed arrows are courses that can be taken concurrently.

Degree Requirements

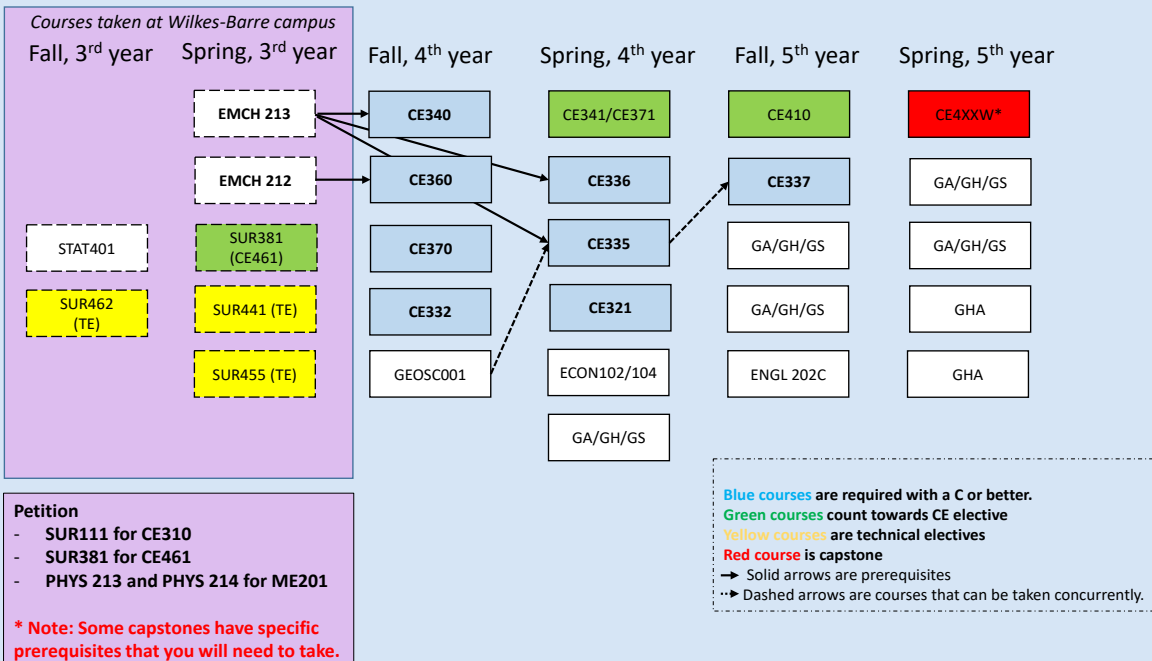
Surveying/Civil Engineering Program Schedule

Recommended Course Program for Undergraduates

(there are other course programs that may meet the requirements—discuss these options with your adviser)

The College of Engineering at Penn State University has recently approved a new concurrent Surveying and Civil Engineering degree. This 5-year program will allow students to earn a bachelor of science degree in Surveying and Civil Engineering. Its graduates can become licensed both as a professional land surveyor and professional engineer in all fifty states. Students enrolled in this program will spend three years at Penn State Wilkes-Barre, and finish their final two years at the University Park Campus. The Wilkes-Barre campus has offered the 4-year degree in surveying since 1994. Their graduates are highly sought after and, in the last ten years the campus has boasted a 100% job placement rate for surveying graduates. For more information, call the Penn State Wilkes-Barre Admissions Office at 570-675-9238 or e-mail: wbadmissions@psu.edu.

<p>SURVEYING 7th semester CE340 (EMCH213 or EMCH210) CE337(CE335 or CE336 or concurrent) CE336 (EMCH 213 or EMCH 210), (STAT 401) CE332 GEOSC 001 GHA or GA,GH,GS</p>	<p>8th semester CE341 (CE340, co-CE336) [CE] CE335 (EMCH 213 or EMCH 210), (GEOSC 001) CE321 (CE310) CE360 (EMCH 212) CE370 GHA or GA,GH,GS</p>
<p>9th semester CE441 (CE341) [TE] CE342 (CE340, CE336) [CE*] Technical elective (e.g. CE447 (CE340)) [TE] ME201 ENGL202C GHA or GA,GH,GS</p>	<p>10th semester CE448W (CE342, CE441) CE37X, CE47X or CE46X [CE] Technical elective [TE] GHA or GA,GH,GS GHA or GA,GH,GS</p>



Degree Requirements

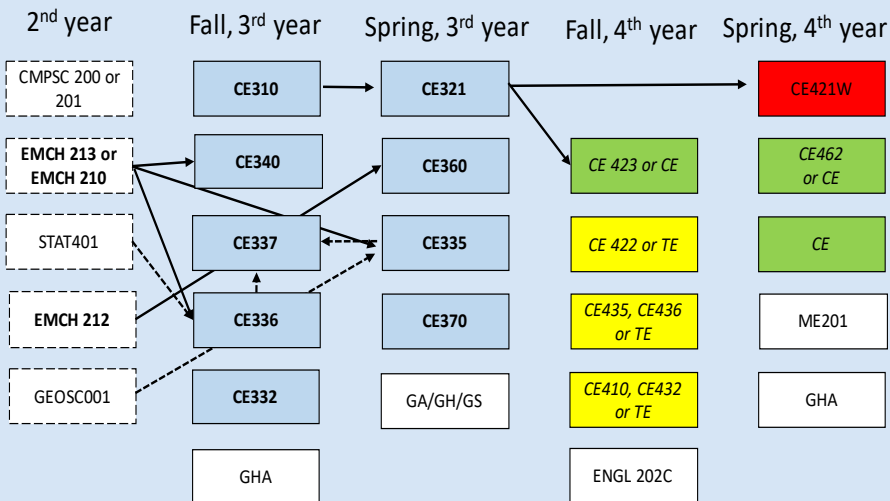
Transportation Engineering Program Schedule

Recommended Course Program for Undergraduates

(there are other course programs that may meet the requirements—discuss these options with your adviser)

Transportation engineering focuses on transportation problems related to the movement of people or goods from place to place, the control of traffic, the development of better means of transportation, the concern for greater safety at higher speeds, and the planning and design of facilities to accommodate the increased volume of people and materials. Because of the geometric nature of the layout of transportation ways, engineering measurement theory is of great importance to this division.

TRANSPORTATION (X2X) 5th semester CE310 CE332 CE337(CE335 or CE336 or concurrent) CE336 (EMCH 213 or EMCH 210), (STAT 401) CE340 (EMCH213 or EMCH210) GHA or GA,GH,GS	6th semester CE321 (CE310) CE360 (EMCH 212) CE335 (EMCH 213 or EMCH 210), (GEOSC 001) CE370 ME201
7th semester Any CE course (e.g. CE422 (Stat 401)) [CE*] Technical elective (e.g. CE423 (CE321)) [TE] Technical elective (e.g. CE435, CE436) [TE] Technical elective (e.g. CE410, CE432) [TE] ENGL202C	8th semester CE421W (CE321) CE course (e.g. CE462 (CE360)) [CE] CE course (e.g. CE37X, CE47X, CE34X or CE44X)+[CE] GHA or GA,GH,GS



Courses in bold are required with a C or better.

Dashed arrows are courses that can be taken concurrently.

Blue courses are required with a C or better.

Green courses count towards CE elective

Yellow courses are technical electives

Red course is capstone

→ Solid arrows are prerequisites

⇌ Dashed arrows are courses that can be taken concurrently.

Degree Requirements

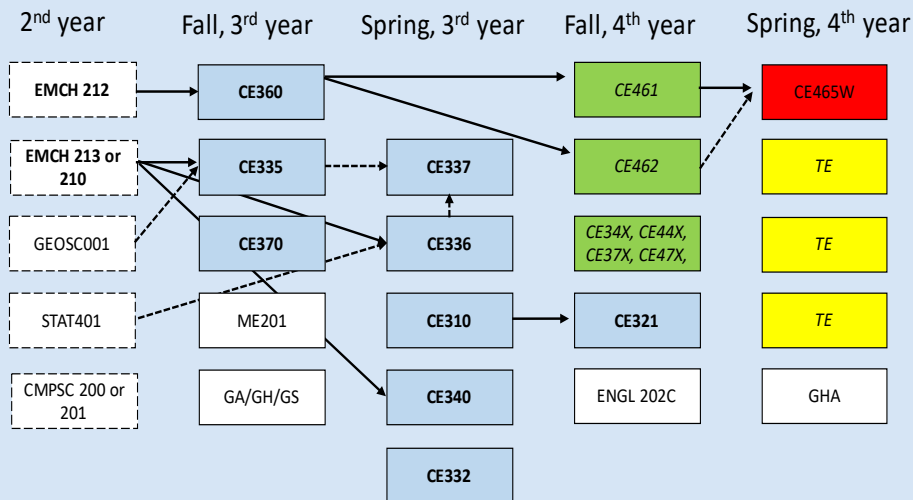
Water Resources Engineering Program Schedule

Recommended Course Program for Undergraduates

(there are other course programs that may meet the requirements—discuss these options with your adviser)

Water resources engineering involves the application of fluid mechanics to the design, analysis, and operation of hydraulic systems with an emphasis on river flow, floods, sedimentation, dams, etc. Hydraulic projects include such structures as reservoirs, dams, spillways, stilling basins, culverts, canals, pipelines, navigation locks, dikes, floodwalls and levees. Hydrology and water resources focus on the application of hydraulic principles and statistical methods in estimating water quantities due to rainfall-runoff for the design of water supply and flood control facilities. The determination of reservoir size and the capacity of storm drainage systems are also included.

WATER RESOURCES (X6X) 5th semester CE360 (EMCH 212) CE335 (EMCH 213 or EMCH 210) CE370 ME201 GHA or GA,GH,GS	6th semester CE337 (CE335 or CE336 or concurrent) CE336 (EMCH 213 or EMCH 210) CE310 CE340 (EMCH213 or EMCH210) CE332
7th semester CE461 (CE360) [CE] CE462 (CE360) [CE*] CE37X, CE47X, CE34X, CE44X [CE] CE321 (CE310) ENGL202C	8th semester CE465W (CE461, CE462-Concurrent) Technical elective [TE] Technical elective [TE] Technical elective [TE] GHA or GA,GH,GS



Courses in bold are required with a C or better.
 Dashed arrows are courses that can be taken concurrently.

Blue courses are required with a C or better.
 Green courses count towards CE elective
 Yellow courses are technical electives
 Red course is capstone
 → Solid arrows are prerequisites
 ⇨ Dashed arrows are courses that can be taken concurrently.

Degree Requirements

Capstone Design Course

One C E 400-level course must be a design course (C E 421W, 439W, 448W, 465W, and 472W.)

No substitutions are permitted. Please refer to course offerings for a brief description of these courses, as well as when they are typically offered and required prerequisites.

Departmental List Of Approved Technical Electives

A student may select 9 credits of C E 3xx or 4xx or courses not being used to meet other curricular requirements as technical electives. Alternatively, any single course or combination of courses from the following list can be used to meet the technical elective requirement.

Any 400-level course in:

ACS	Acoustics	ERM	Environmental Resource Management
AERSP	Aerospace Engineering	ESC	Engineering Science
AE	Architectural Engineering (except AE 401, AE 402, AE 403, AE 404, or AE 430)	FSC	Fuel Science
BE	Biological Engineering	GEOG	Geography
BME	Biomedical Engineering	GEOSC	Geosciences
CHE	Chemical Engineering	IE	Industrial Engineering (except IE 424)
CMPEN	Computer Engineering	MATSE	Materials Science and Engineering
CMPS	Computer Science	ME	Mechanical Engineering
CO-OP**	Complete 1 credit each of ENGR 295A/I, 395A/I, 495A/I	METEO	Meteorology
CSE	Computer Science and Engineering	MINE	Mineral Engineering
ECON	Economics	MNPR	Mineral Processing
EDSGN	Engineering Design	MNG	Mining Engineering
EE	Electrical Engineering	NUCE	Nuclear Engineering
EGEE	Energy	PNG	Petroleum and Natural Gas Engineering
EMCH	Engineering Mechanics	STAT	Statistics (except STAT 401)
EME	Energy and Mineral Engineering	SUR	Surveying
ENGR	Engineering		
ENVE	Environmental Engineering		
ENVSE	Environmental Systems		

**A student may use a 3-credit sequence of ENGR 295, 395, 495 Cooperative Education to substitute for one 3-credit technical elective.

Requests for other courses to count as a technical elective, outside of those listed above, will be considered by the Department Undergraduate Coordinator via an academic petition submitted through the University's Course Substitution Request System. The petition request must demonstrate the technical nature and a supporting connection to the department curriculum for the requested substitute course. Approval must be granted prior to scheduling the course.

Degree Requirements

General Education

The CE program requires that students meet the University's General Education requirements. They have the most flexibility in meeting the requirements for the Arts, Humanities, and Social Sciences (AHS) and Health and Physical Activity (GHA) requirements. Students must take 18 AHS credits; 3 of which include the required ECON course. Generally, you will need to take 6 credits in each of the 3 areas (GA, GH, and GS). General Education requirements are in the Undergraduate Degree Bulletin (<https://bulletins.psu.edu/undergraduate/general-education/baccalaureate-degree-general-education-program>). Students must complete both the US Cultures (US)(3cr) and International Cultures (IL) (3cr) requirements. These are most efficiently done by having one of the AHS courses count as both AHS and US or IL. Students must also complete Integrative Studies either by taking 6 credits of Inter-Domain courses or by taking 6 credits of Linked courses from the same linkage, in different Knowledge Domains, to fulfill the requirement.

C or Better Courses

To fulfill graduation requirements, students must earn a C grade or better in the following courses (33 credits): EMCH 211, 212, 213, and CE 310, 321, 332, 335, 336, 340, 360 and 370. In addition, they must complete these courses with a C grade or better to schedule courses for which these are prerequisites.

GPA

A cumulative GPA of 2.00 or better is required for graduation. If the cumulative GPA drops below 2.00, the student may be dropped for poor scholarship. If the student is dropped as a degree candidate, the College of Engineering requires that all deficiencies be removed before they can be re-enrolled in the major.

When half of the deficiencies are removed, the student may pursue enrolling in DUS.

Laboratory Requirement

The civil engineering curriculum requires that students complete one CE lab. Students can choose from CE 337 or CE 475 to meet this requirement.

Writing Across the Curriculum

Baccalaureate degree students must complete at least 3 credits of writing-intensive courses prior to graduation. These courses must be selected from approved writing-intensive courses offered within the major or college of enrollment.

Procedures, Policies, and Rules

All Policies and Rules are found on the Faculty Senate site at <https://senate.psu.edu/policies-and-rules-for-undergraduate-students/>

Policy 47-80: Repeating Courses

A student is limited to attempt any given course a maximum of three (3) times. Attempts are defined as earning a grade in a class or late-dropping the class. Any exceptions to the three-attempt limit must be approved by the appropriate academic official within a student's college of enrollment.

In situations where a student withdraws from the university (Policy 56-30) these courses will not be counted as one of the three allowed attempts on given courses.

A course in which a grade of C or better was obtained may only be repeated if written evidence of consultation is obtained from the student's advisor and a copy is submitted to the Office of the University Registrar. Any course repeated under this policy may be counted no more than once as a graduation requirement. Under this policy both grades are included in the computation of the grade-point average.

This policy does not apply to courses designated as "repeatable."

Policy 49-20: Academic Integrity

Definition and expectations: Academic integrity is the pursuit of scholarly activity in an open, honest and responsible manner. Academic integrity is a basic guiding principle for all academic activity at The Pennsylvania State University, and all members of the University community are expected to act in accordance with this principle. Consistent with this expectation, the University's

Code of Conduct states that all students should act with personal integrity, respect other students' dignity, rights and property, and help create and maintain an environment in which all can succeed through the fruits of their efforts.

Academic integrity includes a commitment by all members of the University community not to engage in or tolerate acts of falsification, misrepresentation or deception. Such acts of dishonesty violate the fundamental ethical principles of the University community and compromise the worth of work completed by others.

To protect the rights and maintain the trust of honest students and support appropriate behavior, faculty and administrators should regularly communicate high standards of integrity and reinforce them by taking reasonable steps to anticipate and deter acts of dishonesty in all assignments (Senate Policy 44-40: Proctoring of Examinations). At the beginning of each course, it is the responsibility of the instructor to provide students with a statement clarifying the application of University and College academic integrity policies to that course.

Committee on Academic Integrity: Each College Dean (or Campus Executive Officer as determined by College policy) shall appoint a Committee on Academic Integrity made up of faculty, students, and academic administrators with faculty being the majority. This committee shall:

1. Promote expectations for academic integrity consistent with the definition in this policy.
2. Ensure fairness and consistency in processes and outcomes. To ensure University-wide consistency, College Committees will work with the Office of Student Conduct and the Office of the Provost of the University to develop procedures for handling and sanctioning dishonesty infractions.

Procedures, Policies, and Rules

3. Review and settle all contested cases in which academic sanctions are applied. If necessary, further disciplinary action will be taken by the Office of Student Conduct..

Policy 83-80: Limitations on Source and Time

University Faculty Senate Policy 83-80 Limitations on Source and Time for Credit Acquisition requires that:

1. Every candidate for a degree shall earn as a degree candidate at least 36 of the last 60 credits required for a baccalaureate degree and at least 18 of the last 30 credits required for an associate degree in courses offered by the University or in cooperative degree programs that have been established by formal agreement and approved by the University Faculty Senate.
2. A candidate for a first baccalaureate degree shall earn the last 60 credits required for that degree within a total elapsed time of five calendar years, but an extension of time shall be granted for intervening military service.

Advising

Each student is assigned a faculty advisor in the department. The advisor is shown in LionPath, self-service, student center, blue box.

STARFISH is the University's advising software and a valuable tool to provide advising notes, early progress reports, and online scheduling of appointments. The STARFISH portal can be found at <https://psu.starfishsolutions.com/starfish-ops>.

The Academic Programs staff monitors student records. Consult Heather Hamby (hhamby@psu.edu) if you have questions about interpreting the contents of this manual, or about student records, petitions, and applications.

Academic Requirements Audits

Academic Requirements audits are used to track progress toward completion of degree requirements. The audit indicates program and graduation requirements that have been completed to date, as well as unfulfilled requirements. The department uses this audit to certify students for graduation. Students access the requirements audit online through LionPath, self-service, student center.

As a student, the ultimate responsibility for knowing and fulfilling the requirements for your degree rests with you. The educational process necessitates change; therefore, this handbook must be considered informational and non-binding on the University. The University reserves the right to change the requirements and regulations contained in this handbook and to determine whether a student has satisfactorily met their requirements for graduation.

Procedures, Policies and Rules

Petitions

Students may request exceptions to published degree requirements by filing an academic petition. The petition should contain a clear and precise statement of what type of exception they are requesting, a reasonable justification for the request, and appropriate supporting documentation. Petitions are formal requests and should be discussed and endorsed by the advisor; students should then use the on-line petition form to submit the request at <https://coursesub.psu.edu/>.

To the greatest extent possible, petitions should be filed **before** the relevant course or other action is taken. Some petitions require only departmental approval; the dean or the University Faculty Senate must approve others. Therefore, a petition may take anywhere from one week to several weeks to be evaluated for a final decision.

To avoid any last minute changes in graduation plans, petitions should be submitted prior to the semester the student applies for graduation. Petitions submitted during the semester in which they plan to graduate may not be reviewed or may be denied.

There are many reasons to file a petition. Perhaps the student took a very similar course when they were on track for another major. Or, perhaps they have transfer or AP credits that were transferred as general credit to the Penn State record. Some of the petitions commonly seen in the department include:

3-6-9 AHS Sequence. Courses need to be taken in each of the three Arts, Humanities, and Social and Behavioral Sciences categories (taking 3 credits in one category, 3 credits in another and 12 credits in the remaining category will NOT meet graduation requirements).

Language Substitution. A language course at the 12th credit level or higher may be substituted for 3 credits of the AHS requirements but cannot be the only course in a category.

First Year Seminar (FYS). Students not taking a FYS must petition to have an extra credit that does not meet any other requirement satisfy the missing FYS credit.

Statistics Substitution. Students may petition to substitute IE 424 for STAT 401, but may not use IE 424 as a technical elective, even if they take STAT 401 as this would be a repeat of a course requirement.

ROTC Credits. ROTC students may petition to use a maximum of 6 credits of ROTC (grade C or better), 3 credits may be applied to the general electives (GHA) and 3 credits towards M E 201 course work, **only if they have satisfied all ROTC program requirements**; typically 18 credits.

Technical Electives. The departmental list of approved technical electives may not always be reported correctly on the degree audit. If it is listed in Other Courses, the student will need to submit a formal petition so that the department knows to adjust the degree audit.

Transfer Courses. Students may request to use transfer credits to satisfy degree requirements by using the petition process. If they would like to take courses at another institution, they should first check to see if the course can be directly transferred as a PSU equivalent. If it is not then they should complete a transfer credit evaluation form **before** attending the other school. Please check the transfer credit evaluation on-line at <http://admissions.psu.edu/academics/credit/> and with the Undergraduate Admissions Office for course equivalents and to obtain a transfer credit form.

500-Level Courses. Any senior with a 3.00 and above cumulative GPA may be admitted to a 500-level graduate course by completing the Undergraduate Student to take 500-Level Courses form, obtaining all required signatures, and returning it to the Graduate School.

CE Course Offerings, (Credits), Semester and Pre-Requisites

*Prerequisites in bold must be completed with a “C” or better before enrolling in the course.

CE 310:	SURVEYING (3) – Fundamental surveying measurements, traverse computations, coordinate geometry, mapping, GPS and GIS, circular and parabolic curves, earthwork, boundary surveys, CAD applications.
Pre-reqs:	EDSGN 100, MATH 141
CE 321:	HIGHWAY ENGINEERING (3) – Highway engineering principles, vehicle and driver characteristics; geometric and pavement design; highway drainage; traffic engineering, capacity and analysis and signal timing.
Pre-reqs:	CE 310
CE 332:	PROFESSIONALISM, ECONOMICS & CONSTRUCTION PROJECT DELIVERY (3) – Introduction to engineering management process; economic analysis; pricing; contract documents; estimating; ethics; professional practice and engineering economy.
Pre-reqs;	None
CE 335:	ENGINEERING MECHANICS OF SOILS (3) – Soil compositions, classification, subsurface exploration, ground water flow, stress analysis, compaction, soil behavior, bearing capacity, lateral earth pressure and slope stability.
Pre-reqs:	EMCH 213 or EMCH 210;
Pre-req or Concurrent:	GEOSC 001
CE 336:	MATERIALS SCIENCE FOR CIVIL ENGINEERS (3) – Introduction to civil engineering materials; their structure and behavior; relationship between structure and behavior.
Pre-reqs:	EMCH 213 or EMCH 210;
Pre-req or Concurrent:	STAT 401
CE 337:	CIVIL ENGINEERING MATERIALS LAB (1) – Materials: soils, aggregates, concrete, steel, wood and polymers.
Pre-reqs:	CE 335 or CE 336 or concurrent
CE 340:	STRUCTURAL ANALYSIS (3) – Analysis of statically determinate and indeterminate trusses, beams and frames; reactions, axial forces, shears, moments, deflections. Introduction to influence lines.
Pre-reqs:	EMCH 213 or EMCH 210
CE 341:	DESIGN OF CONCRETE STRUCTURES (3) – Design of reinforced concrete beams, slabs, and columns with emphasis on ultimate-strength methods; pre-stressed concrete; buildings and bridge applications.
Pre-reqs:	CE 340 and
Pre-req or Concurrent:	CE 336

CE Course Offerings, (Credits), Semester and Pre-Requisites

CE 342:	DESIGN OF STEEL STRUCTURES (3) – Design and analysis of structural steel tension members, beams, columns, beam-columns, composite beams and connections. Project and computer applications.
Pre-reqs:	CE 336, CE 340
CE 360:	FLUID MECHANICS (3) – Mechanics of fluids; flow in conduits and around bodies, friction and energy loss, fluid measurements.
Pre-reqs:	EMCH 212
CE 370:	INTRODUCTION TO ENVIRONMENTAL ENGINEERING (3) – Nature and scope of environmental issues; air, water, land impacts; fundamentals and processes of pollution control.
Pre-reqs:	CHEM 110; MATH 111 or MATH 141
CE 371:	WATER AND WASTEWATER TREATMENT (3) – Water treatment; water storage; design of water distribution and wastewater systems; pumping stations.
Pre-reqs:	CE 360, CE 370
CE 399:	FOREIGN STUDIES (1-12) – Courses offered in foreign countries by individual or group instruction.
Pre-reqs:	None
CE 410:	SUSTAINABLE RESIDENTIAL LAND DEVELOPMENT (3) – Residential land development design process including conservation and green design approaches; site assessment; grading and earthwork; utility design and layout; and stormwater management.
Pre-reqs:	CE 332 or AE 372; seventh semester standing in CE or AE
CE 411:	RESIDENTIAL CONSTRUCTION DESIGN PROJECT (1) – Interdisciplinary teams will develop a complete design and investment package for a real life new residential or real estate development.
Pre-reqs:	fifth semester standing or higher
CE 421W:	TRANSPORTATION DESIGN (3) – Design of streets and highway facilities; emphasis on geometric elements, intersections and interchanges, roadway drainage, and pavement design procedures.
Pre-reqs:	CE 321
CE 422:	TRANSPORTATION PLANNING (3) – Transportation systems planning, programming, and management; modeling and simulation data collection, analysis and forecasting.
Pre-reqs:	3 credits in probability or statistics
CE 423:	TRAFFIC OPERATIONS (3) – The highway capacity manual, concepts and analyses, freeway operations, signalized and unsignalized intersections, signal coordination, traffic impact studies.
Pre-reqs:	CE 321
CE 432:	CONSTRUCTION PROJECT MANAGEMENT (3) – Fundamentals of project management, construction scheduling using the CPM technique, construction project pre-planning, and control of quality, safety, and costs.
Pre-reqs:	CE 332

CE Course Offerings, (Credits), Semester and Pre-Requisites

CE 434:	GEOTECHNICAL ENGINEERING DESIGN (3) – Fundamental engineering geology, subsurface exploration including geophysical techniques, principles of shallow and deep foundation designs, slope stability, geosynthetics design, groundwater and drainage, and geotechnical earthquake engineering.
Pre-reqs:	CE 335
CE 435:	FOUNDATION ENGINEERING (3) – Bearing capacity, settlement, and structural design of shallow foundations; lateral earth pressure; design of retaining and sheet-pile walls; and an introduction to deep foundations.
Pre-reqs:	CE 335
CE 436:	CONSTRUCTION ENGINEERING MATERIALS (3) – Design, production, application, specification, and quality control of construction materials unique to civil engineering.
Pre-reqs:	CE 336; STAT 401
CE 437:	ENGINEERING MATERIALS FOR SUSTAINABILITY (3) – Environmental impact of materials; life-cycle assessment; material selection to optimize performance; design, evaluation, and production of green construction materials.
Pre-reqs:	CE 336 or equivalent
CE 438:	CONSTRUCTION ENGINEERING (3) – Construction project integrating geo-technical reports; materials specifications; quality control; equipment; estimation; scheduling; design details; excavations, foundations, retaining walls, formwork, pavements.
Pre-reqs:	CE 432 and CE 435 or CE 436
CE 439W:	GEOTECHNICAL AND MATERIALS ENGINEERING DESIGN CAPSTONE (3) – Subsurface site evaluation; integrated design of retaining walls, foundations, pavements, and materials for airports, highways, dams, or other facilities.
Pre-reqs:	CE 435 and either CE 436 or CE 437
CE 441:	STRUCTURAL DESIGN OF FOUNDATIONS (3) – Design of concentrically and eccentrically loaded square, rectangular, and combined footings; analysis and design of mat foundations; retaining walls; piles caps; flexible retaining design, and caissons.
Pre-reqs:	CE 341
CE 447:	STRUCTURAL ANALYSIS BY MATRIX METHODS (3) – Analysis of truss and frame structures using flexibility and stiffness methods of matrix analysis; computer applications.
Pre-reqs:	CE 340
CE 448W:	ADVANCED STRUCTURAL DESIGN (3) – Wind, snow, seismic, bridge loads, and building design using steel, concrete and pre-stressed concrete; advanced steel connections. Capstone project; computer applications.
Pre-reqs:	CE 342, CE 441
Pre-req or Concurrent:	ENGL 202C

CE Course Offerings, (Credits), Semester and Pre-Requisites

CE 461:	WATER-RESOURCE ENGINEERING (3) – Qualitative and quantitative description of the hydrologic cycle, flood and drought frequency analysis, climate and land use change impacts, risk analysis and uncertainty, water resource management at regional, national and global scale.
Pre-reqs:	CE 360
CE 462:	OPEN CHANNEL HYDRAULICS (3) – Open channel hydraulics for free surface flow in rivers, canals, steep chutes, transitions, and through bridges and culverts.
Pre-reqs:	CE 360
CE 465W:	WATER RESOURCES CAPSTONE DESIGN (3) – Hydraulic design of river structures and open channels including super critical and spatially varied flow; hydrologic/hydraulic computer modeling; design project.
Pre-reqs:	CE 461 and
Pre-req or Concurrent:	CE 462
CE 472W:	ENVIRONMENTAL ENGINEERING CAPSTONE DESIGN (3) – Principles and design of unit operations for water; domestic and industrial wastewater treatment, equipment selection and application.
Pre-reqs:	CE 370, CE 371
CE 475:	WATER QUALITY CHEMISTRY (4) – Chemistry applicable to the understanding and analysis of water quality, pollution and treatment.
Pre-reqs:	CE 370, CHEM 110, CHEM 111
CE 476:	SOLID AND HAZARDOUS WASTES (3) – Characteristics and treatment of solid wastes and hazardous wastes.
Pre-reqs:	CE 370, CE 371
CE 479:	ENVIRONMENTAL MICROBIOLOGY FOR ENGINEERS (3) – Introductory microbiology for engineers; microbe structure, function, and diversity; environmental ecosystems; diagnostic labs.
Pre-reqs:	CHEM 111, CE 370; 7th semester standing
CE 494/H:	SENIOR THESIS/HONORS (1-9) – Students must have approval of a thesis Adviser before scheduling this course.
CE X96:	INDEPENDENT STUDIES (1-18) – Students must have the consent and approval of the instructor before scheduling this course.
CE X97:	SPECIAL TOPICS (1-9) – Students must have the consent and approval of the instructor before scheduling this course.
CE 499:	FOREIGN STUDIES (1-12) – Courses offered in foreign countries by individual or group instruction.
Pre-reqs:	None

Environmental Engineering Minor

Environmental Engineering Minor (6 courses are required – one is CE370)

Underlined courses are required

<http://www.cee.psu.edu/academics/undergraduate/majors-minors-and-certificates.aspx>

Below are listed only some of the possible courses that will fulfill the requirements of the Environmental Engineering minor. It is recommended that students also consult the web page for the Environmental Engineering minor for a full list of available courses.

The 18 credits* required to fulfill the minor must be obtained in the following categories:

3 credits in Environmental Engineering (CE 370, required)

3 credits in Chemistry and Biological Sciences (e.g. CE 479, BE 308, CHEM202, CHEM 210)

0 - 3 credits in Process Engineering (e.g. BE 302, CHE 210, EGEE 301, MNPR 301, NUCE 430)

3 credits in Applied Fluid Mechanics (e.g. CE 371, CE 462, AERSP 308, BE 467, CHE 330, EME 303, ME 320)

6-9 credits in Environmental Sciences and Design (e.g. CE 437, CE 472W, CE 475, CE 476, CHEM 202)

*Senate Policy 59-10: At least 6 credits of the minor must be unique from the Prescribed Courses required by the student's major program.

<p>ENVIRONMENTAL (7X)</p> <p>5th semester</p> <p><u>CE370 (required for minor)</u></p> <p>CE335 (EMCH 213 or EMCH 210), (GEOSC 001)</p> <p>CE360 (EMCH 212)</p> <p>ME201</p> <p>GHA or GA,GH,GS</p>	<p>6th semester</p> <p>CE337 (CE335 or CE336 or concurrent)</p> <p>CE336 (EMCH 213 or EMCH 210), (STAT 401)</p> <p>CE310</p> <p>CE340 (EMCH213 or EMCH210)</p> <p>CE332</p>
<p>7th semester</p> <p><u>CE371 (CE370) [CE] Applied Fluids</u></p> <p><u>CE479 [CE*]+ (Chemistry and Biological science)</u></p> <p>CE46X or CE34X or CE44X [CE]</p> <p>CE321 (CE310)</p> <p>ENGL 202C</p> <p>Technical elective [TE]</p>	<p>8th semester</p> <p><u>CE472W (CE370, CE371) (Env. Science and Design)</u></p> <p><u>Env. Science and Design (see list)</u></p> <p><u>Env. Science and Design (see list)</u></p> <p>Technical elective [TE]</p> <p>Technical elective [TE]</p> <p>GHA or GA,GH,GS</p>

<p>WATER RESOURCES (6X)</p> <p>5th semester</p> <p>CE360 (EMCH 212)</p> <p>CE335 (EMCH 213 or EMCH 210), (GEOSC 001)</p> <p><u>CE370 (required for minor)</u></p> <p>ME201</p> <p>GHA or GA,GH,GS</p>	<p>6th semester</p> <p>CE337 (CE335 or CE336 or concurrent)</p> <p>CE336 (EMCH 213 or EMCH 210), (STAT 401)</p> <p>CE310</p> <p>CE340 (EMCH213 or EMCH210)</p> <p>CE332</p>
<p>7th semester</p> <p>CE461 (CE360) [CE]</p> <p><u>CE462 (CE360) [CE*] (Applied Fluids)</u></p> <p><u>CE479 [CE] (Chemistry and Biological science)</u></p> <p>Technical elective [TE]</p> <p>CE321 (CE310)</p> <p>ENGL 202C</p>	<p>8th semester</p> <p>CE465W (CE461, CE462-Concurrent)</p> <p><u>Technical elective [TE] (Env. Science and Design) (see list)</u></p> <p><u>Env. Science and Design (see list)</u></p> <p><u>Env. Science and Design (see list)</u></p> <p>Technical elective [TE]</p> <p>GHA or GA,GH,GS</p>

Residential Construction Minor

Residential Construction Minor (22 credits: 10 required and 12 additional)

<http://www.phrc.psu.edu/Student-Education/Educational-Opportunities/Residential-Construction-Minor.aspx>

This minor is to provide an opportunity for students to gain an understanding of the residential building construction topics and issues with emphasis on sustainable land development, design, and construction of residential buildings, as well as construction management of residential projects.

The minor consists of 22 credits*: 10 required credits and 12 additional credits. There are four tracks and below we list only the Civil Engineering track. A C grade or better is required for all courses in the minor.

*Senate Policy 59-10: At least 6 credits of the minor must be unique from the Prescribed Courses required by the student's major program.

Minor - Required Courses - ALL 10 Credits Required

AE 470 - Residential Building Design and Construction (3 credits)
 AE 471 - Construction Management of Residential Building Projects (3 credits)
 ARCH 412 - Integrative Energy and Environmental Design (3 credits)
 CE 411 - Residential Construction Design Project (1 credit)

CE Track Required Courses - Chose 12 Credits

AE 432 - Design of Masonry Structures (3 credits)
 AE 542 - Building Enclosure Science and Design (3 credits)
 BE 462 - Design of Concrete Structures (3 credits)
 CE 332 - Professionalism, Economics, & Construction Project Delivery (3 credits)
 CE 341 - Design of Concrete Structures (3 credits)
 CE 410 - Sustainable Residential Subdivision Design (3 credits)

GEOTECHNICAL/MATERIALS (3X)	
7th semester CE435 (CE335, CE341-concurrent) [CE*] CE436 (CE336, STAT 401 or CE437 (CE336) [TE] AE 470, Fall (CE332) [TE] ARCH 412, Fall [TE] CE411 Fall (1) ENGL202C	8th semester CE439W (CE435, CE436 or CE437) AE471 spring [TE] CE37X, CE47X or CE46X [CE] CE track required course (see list) CE track required course (see list) GHA or GA,GH,GS
STRUCTURES (4X)	
7th semester CE441 (CE341) [TE] CE342 (CE340, CE336) [CE*] AE 470, Fall (CE332) [TE] ARCH 412, Fall [TE] CE411 Fall (1) ENGL202C	8th semester CE448W (CE342, CE441) CE37X, CE47X or CE46X [CE] AE 471 spring [TE] CE track required course (see list) CE track required course (see list) GHA or GA,GH,GS
TRANSPORTATION (2X)	
7th semester CE 341 (CE340, co-CE336) [CE] AE470, Fall (CE332) [TE] ARCH 412, Fall [TE] CE411 Fall (1) Additional Track #1 ENGL202C	8th semester CE421W (CE321) CE course (e.g. CE462 (CE360)) [CE] Any CE course (e.g. CE422 (Stat 401)) CE] AE471, spring [TE] CE track required course (see list) CE track required course (see list) GHA or GA,GH,GS

Housing Certificate Program

Housing Certificate (12 credits: 3 required and 9 additional)

<http://www.cce.psu.edu/academics/undergraduate/majors-minors-and-certificates.aspx>

Students must be at least 5th semester standing and complete the application. Students must have a C grade or better in all courses to complete the certificate program.

Required:

AE 470

Select from three additional courses (9 credits)*:

CE 410, CE/AE 542, AE 432, BE 462, RM 303, RM 450

*With approval of the Hankin Chair, one housing-related course of at least 3 credits not included in the list of recommended additional courses (e.g., demographics, urban geography, social housing, etc.) can be substituted for one of the three additional courses.

Opportunities and Options

Here are some of the many opportunities to enhance, develop, and have fun with your education.

American Concrete Institute (ACI)

The ACI (American Concrete Institute) student club is open to any student interested in concrete structures or materials. Each semester, student teams travel to the national convention for competitions in areas such as strongest cube, FRP beam, concrete bowling ball, and concrete egg protection device. Activities also include guest speakers from the concrete profession and certification opportunities. The ACI advisor is Dr. Aleksandra Radlinska.

American Society of Civil Engineers (ASCE)

ASCE is the professional civil engineering society, with a student chapter open to freshmen and sophomores interested in the organization and all students enrolled in civil engineering. This organization was established to expand the college experience for students in civil engineering and aid in establishing the professional contacts that are so valuable to the practicing engineer. Student chapter members hold offices, secure speakers for chapter meetings, visit engineering works, attend professional meetings, present papers, and keep abreast of professional activities through ASCE publications. These activities stimulate early professional consciousness and prepare students for entry into the profession and into the American Society of Civil Engineers. The ASCE faculty advisor is Dr. Aleksandra Radlinska and the faculty practitioner advisor is Mr. Thomas Skibinski.

Chapter activities include concrete canoe races and steel bridge competitions. How do you make concrete float? Join the committee that designs the concrete mix used in making the canoe, and then designs, builds, and races the canoe. Does constructing a bridge over imaginary water interest you? Join the steel bridge team to design, construct and test the load of 2,500 pounds on the bridge. The Concrete Canoe team advisor is Mr. Thomas Skibinski and the Steel Bridge team advisor is to be determined.

The Central Pennsylvania Section of ASCE offers \$1,000 scholarships to civil engineering students. Competition is open to students who are enrolled at Penn State, Bucknell or another school with permanent residence within the boundaries of the Central Pennsylvania Section. The application can be downloaded from http://www.asce-pa.org/members_scholarships.html.

For further information concerning the Penn State chapter please visit the Jeremy Herbstritt Student Lounge, 105 Sackett, or the Penn State ASCE web page <http://www.pennstateasce.com/>.

CEE Alumni Mentoring Program

The program connects CEE Alumni mentors with current students on a one-to-one relationship for guidance, information, and networking related to the student's professional development. Registration required to match an Alumni with a student: <https://www.cee.psu.edu/alumni/mentor/index.aspx>.

Opportunities and Options

Chi Epsilon

Chi Epsilon is the national honor society for juniors and seniors enrolled in civil engineering. Membership is by invitation and is based on scholarship, character, practicality, and sociability. The purpose of this organization is to recognize and develop the fundamental characteristics of the successful civil engineer. The faculty co-advisors are Drs. Martin Pietrucha and John Regan.

Earthquake Engineering Research Institute (EERI-PSU)

The national chapter of the EERI (<http://www.eeri.org/site/>) is a “nonprofit, technical society of engineers, geoscientists, architects, planners, public officials and social scientists” with the aim of reducing earthquake risk by advancing science, improving the understanding of the impact of earthquakes on society, and advocating comprehensive and realistic measures for reducing the harmful effects of earthquakes. Dr. Gordon Warn is faculty advisor.

Engineering Cooperative Education

Students can participate in the College of Engineering’s Cooperative Education program beginning with the junior year. By alternating semesters of work and study, a year of work experience is accrued. Using the summer sessions before the junior year and during the senior years, it requires four and one-half years to earn a Bachelor of Science degree with a Certificate in Engineering Cooperative Education. Completion of three work assignments and a report for each assignment is required for certification. Continuing participation in the program is contingent upon satisfactory academic and work performance.

To obtain additional information on the Co-op program, students are encouraged to attend one of the workshops presented by the Engineering Career Resources & Employer Relations Office. The Engineering Career Resources & Employer Relations Office is located in 117 Hammond Building. (<http://www.engr.psu.edu/career>)

The cooperative education coordinator for our department is Dr. Pietrucha. The coordinator will also grade the co-op reports.

Engineers in Action

Engineers in Action - bridge program seeks to build footbridges over impassable rivers in impoverished rural areas around the globe. The organization also educates members of these communities on the methodologies used for successful bridge design, construction, and maintenance in order to provide lifelong access to essential needs. The faculty advisor is Mr. Brian Naberezny.

Opportunities and Options

Engineers Without Borders

The national chapter of the EWB-USA (<http://www.ewb-usa.org>) is an international nonprofit organization that supports community-driven development programs worldwide through the design and implementation of sustainable engineering projects, while fostering responsible leadership. The Penn State student chapter advisor is Dr. Rachel Brennan.

Institute Of Transportation Engineers (ITE)

ITE is a professional organization of students who are interested in transportation and traffic engineering. A number of meetings are held each year, with representatives of transportation firms and agencies serving as guest speakers. Meetings are posted on the ITE bulletin board on the second floor of Sackett Building. The ITE advisor is Dr. Vikash Gayah.

National Association of Home Builders (NAHB)

The National Association of Home Builders (NAHB) Student Chapter is a focus for students interested in housing, light commercial construction, and development. It provides students with the opportunity to learn more about the housing industry. Students who are in the following majors are eligible for membership in the NAHB Student Chapter: Civil and Environmental Engineering, Architectural Engineering, Architecture, Landscape Architecture and Real Estate. There are a number of benefits, professional, academic, and social, to joining the student chapter. There are a number of scholarships available to students interested in housing and/or residential construction (http://www.engr.psu.edu/cc/divisions/residential/undergraduate_scholarships.html).

Any student interested in becoming an NAHB Student Chapter member should contact Dr. Ali Memari, Hankin Chair of Residential Building Construction or Tracy Dorman in 206 B Sackett Building; 814-865-2341 or tdorman@engr.psu.edu.

Study Abroad

Studying abroad is a great way to gain international experience either with academic credit, internships or service-learning opportunities. For details on programs, applying and other opportunities of studying abroad, visit Global Penn State at <https://global.psu.edu/>. The faculty advisor is Dr. Martin Pietrucha.



Two students from the Penn State student chapter of Bridges to Prosperity, Steve Mezzacappa and Alexandra Hoffman, work on the masonry of a bridge tier as part of their summer 2015 project to build a pedestrian footbridge in the remote village of Tucuecito, Panama. The bridge will help provide steady access to education and health care to the Panamanian villagers.