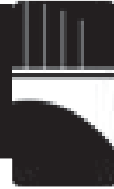


CEE

Civil and Environmental Engineering



WEB LINKS	http://ceve.rice.edu/undergrad/
FRANK ADVICE	Make a 4-year plan early on to know what the major entails; update as you go. Consult with advisors if in doubt. Don't overload your schedule in the first two semesters; try to get the prerequisites out of the way and aim to take 15-18 credits per semester. Take CEVE 101 in the freshman year to get a broad overview of courses and research in the department. Take CEVE 481 in the fall term and CEVE 480 in the spring of your senior year. Try studying in groups, after your own reviews, to enhance learning and critical discussion skills. Join and actively participate in student and professional organizations.
ADVICE FOR STUDENTS WITH AP CREDIT	With at least a 4 on AP exams, you may not need to take courses such as Physics, Chemistry, Calculus or Biology. If you feel you are ready, you can take higher level courses or honors courses. You can also get started with your master's degree in the last one to two years.
FWIS AND DISTRIBUTION	You are required to complete 24 credit hours of FWIS and distribution; this is a great opportunity to take courses in subject areas that interest you such as Art, Philosophy and Languages.
BS VERSUS BA	The BS is the only program accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org . With specialization in one of four areas: environmental engineering, hydrology and water resources, structural engineering and mechanics, and urban infrastructure, reliability and management, the BS is recommended for those interested in graduate studies or careers as licensed professional engineers. The BA offers tracks in environmental engineering and civil engineering. It is recommended for students interested in graduate studies outside of engineering such as policy, law or medicine and is a great route if you are interested in a double major or a minor, such as the one in Energy and Water Sustainability.



NOT REQUIRED BUT SUGGESTED COURSES	CEVE 304 Structural Analysis I, (required for students in the structures and mechanics specialty), CEVE 322 Engineering Economics, CEVE 313 Uncertainty and Risk in Urban Infrastructures, CAD/CAE course (CEE tutorial), and Fondren Library's Introduction to GIS.
RESEARCH	Students are encouraged to seek undergraduate research experience with CEE faculty members. All faculty hire undergraduates year round. Find out early on what research you might be interested in. Talking with professors and expressing interest in their research will give you an advantage. CEVE 101 will give you the chance to meet the faculty and learn about their research.
INTERNSHIPS	All students are encouraged to apply for summer internships. The ASCE student chapter is a great resource, as is the Center for Career Development's job fairs. Internships don't have to be with an engineering firm; any interest area is appropriate and has more leverage if related to your career focus. Approximately 70% of CEE students participate in internships.
STUDY ABROAD	For engineering majors in general, study abroad can be challenging but can be done. Some required Rice classes may not be offered at universities abroad. Plan to go abroad in the spring of the sophomore year or fall of the junior year. Consider joining Engineers without Borders, which provides the opportunity to implement engineering projects in developing countries. Approximately 30% of CEE students pursue international travel and study abroad programs.
PROFESSIONAL ORGANIZATIONS	ASCE (American Society of Civil Engineers) student chapter, EWB (Engineers without Borders), Chi Epsilon Honor Society, Earthquake Engineering Research Institute (EERI).
INTERESTING COURSES FOR NON-MAJORS	CEVE 101 Fundamentals of Civil and Environmental Engineering, CEVE 310 Principles of Environmental Engineering, CEVE 307 Energy and the Environment, CEVE 406 Intro to Environmental Law, CEVE 313 Uncertainty and Risk in Urban Infrastructures.

B.A. In Civil & Environmental Engineering

(Track E: Environmental Core Curriculum)

Specializations: Courses labeled as SPEC cover topics in which environmental engineering and other disciplines share a common interest. Take 7 courses from electives approved by an advisor assigned by the CEE Dept., including 4 from one specific focus area. Of these 7 electives, 4 must be 300 level courses or above, and 2 of these upper-division courses must be from the CEE curriculum. Examples of areas of specialization include Environmental Science and Engineering, Civil Engineering, Biology, Chemical Engineering, Chemistry, Economics or Management

Sample Degree Plan

THIS IS ONE EXAMPLE OF MANY POSSIBLE SCHEDULES.

CONSULT A DIVISIONAL OR DEPARTMENTAL ADVISOR TO CUSTOMIZE YOUR DEGREE PLAN.

FALL			SPRING		
FRESHMAN 17 credits			FRESHMAN 17 credits		
MATH 101	Single Variable Calculus I	3	MATH 102	Single Variable Calculus II	3
PHYS 101•	Mechanics w/Lab	4	PHYS 102••	Electricity & Magnetism w/Lab	4*
CHEM 121	General Chemistry I w/Lab	4*	CHEM 122	General Chem II w/Lab	4*
CEVE 101	Fundamentals of CEE	3	OPEN	Open elective	3
FWIS/DIST	Freshman Writing	3	OPEN	Open elective	3
SOPHOMORE 15 credits			SOPHOMORE 16 credits		
CEVE 307	Energy & the Environment	3	CAAM 210	Intro to Engineering	3
DIST	Distribution elective	3	SPEC	Specialization elective	3
OPEN	Open elective	3	DIST	Distribution elective	3
OPEN	Open elective	3	DIST	Distribution elective	3
OPEN	Open elective	3	DIST	Distribution elective	3
			LPAP	Lifetime Phys Activity elective	1
JUNIOR 16 credits			JUNIOR 15 credits		
CEVE 310	Principles of Engineering	3	SPEC	Specialization elective	3
CEVE 401	Environmental Chemistry w/Lab	4*	SPEC	Specialization elective	3
CEVE 479	Eng Project Mgmt	3	DIST	Distribution elective	3
SPEC	Specialization elective	3	DIST	Distribution elective	3
DIST	Distribution elective	3	OPEN	Open elective	3
SENIOR 15 credits			SENIOR 15 credits		
SPEC	Specialization elective	3	CEVE 412	Hydrology & Water Resources Engineering	3
SPEC	Specialization elective	3			
OPEN	Open elective	3	SPEC	Specialization elective	3
OPEN	Open elective	3	OPEN	Open elective	3
OPEN	Open elective	3	OPEN	Open elective	3
			OPEN	Open elective	3

* In addition to class hours, these courses have a regularly scheduled lab and/or discussion session that must fit into your schedule.

- When registering for PHYS 101, you must also register for PHYS 103, the discussion section for 101.
- When registering for PHYS 102, you must also register for PHYS 104, the discussion section for 102.

Basic requirements	General Math & Science Courses	25
	Core Courses in Major	16
Elective requirements	Specialization Area Courses	21
	Open Electives and LPAP	36
	FWIS and Distribution Courses	24
Minimum credit required for the B.A.		122

Of the 122 credits, the BA in Civil and Environmental Engineering requires 62 credits in general math and science, core and specialization area courses.

Major Requirements

NUMBER	CREDIT	TITLE
MATH 101	3	Single Variable Calculus I
MATH 102	3	Single Variable Calculus II
PHYS 101•/111	4	Mechanics w/Lab
PHYS 102••/112	4*	Electricity and Magnetism w/Lab
CAAM 210 or 335 or COMP110/NSCI 230	3	Introduction to Engineering Computation/Matrix Analysis/ Computation in Science and Engineering/ Computation in Science and Engineering
CHEM 121	4*	General Chemistry I w/Lab
CHEM 122	4*	General Chemistry II w/Lab
CEVE 101	3	Fundamentals of Civil & Environmental Engineering
CEVE 307	3	Energy and the Environment
CEVE 310	3	Principles of Environmental Engineering
CEVE 401	4*	Environmental Chemistry and Lab
CEVE 412	3	Hydrology and Water Resources Engineering
SPEC	3	Specialization elective
SPEC	3	Specialization elective
SPEC	3	Specialization elective
SPEC	3	Specialization elective
SPEC	3	Specialization elective
SPEC	3	Specialization elective
SPEC	3	Specialization elective

* In addition to class hours, these courses have a regularly scheduled lab and/or discussion session that must fit into your schedule.

- When registering for PHYS 101, you must also register for PHYS 103, the discussion section for 101.
- When registering for PHYS 102, you must also register for PHYS 104, the discussion section for 102.

B.A. In Civil & Environmental Engineering

(Track C: Civil Core Curriculum)

Specializations: The SPEC courses cover general Civil Engineering topics. Take 7 courses from electives approved by an advisor assigned by the CEE Dept., including at least 4 with the CEVE designation. Of these 7 electives, 4 must be 300 level courses or above.

Sample Degree Plan

*THIS IS ONE EXAMPLE OF MANY POSSIBLE SCHEDULES.
CONSULT A DIVISIONAL OR DEPARTMENTAL ADVISOR TO CUSTOMIZE YOUR DEGREE PLAN.*

FALL				SPRING			
FRESHMAN		17 credits		FRESHMAN		17 credits	
MATH 101	Single Variable Calculus I	3		MATH 102	Single Variable Calculus II	3	
PHYS 101•	Mechanics w/Lab	4*		PHYS 102••	Electricity & Magnetism w/Lab	4*	
CHEM 121	General Chemistry I w/Lab	4*		CHEM 122	General Chemistry w/ Lab	4	
CEVE 101	Fundamentals of CEE	3		DIST	Distribution elective	3	
FWIS/DIST	Freshman Writing	3		OPEN	Open elective	3	
SOPHOMORE		15 credits		SOPHOMORE		16 credits	
CEVE 211	Engineering Mechanics	3		CAAM 210	Intro to Eng Computation	3*	
CEVE 310	Principles of Engineering	3		CEVE 304	Structural Analysis I	3	
OPEN	Open elective	3		CEVE 311	Mechanics of Solids & Structures	3	
OPEN	Open elective	3		CEVE 312	Strength of Materials Lab	1	
OPEN	Open elective	3		DIST	Distribution elective	3	
				OPEN	Open elective	3	
JUNIOR		15 credits		JUNIOR		15 credits	
SPEC	Specialization elective	3		SPEC	Specialization elective	3	
SPEC	Specialization elective	3		SPEC	Specialization elective	3	
SPEC	Specialization elective	3		DIST	Distribution elective	3	
DIST	Distribution elective	3		OPEN	Open elective (SPEC)	3	
OPEN	Open elective (SPEC)	3		OPEN	Open elective	3	
SENIOR		16 credits		SENIOR		15 credits	
SPEC	Specialization elective	3		SPEC	Specialization elective	3	
DIST	Distribution elective	3		DIST	Distribution elective	3	
OPEN	Open elective	3		OPEN	Open elective	3	
OPEN	Open elective (SPEC)	3		OPEN	Open elective	3	
OPEN	Open elective	3		OPEN	Open elective	3	
LPAP	Lifetime Phys Activity elective	1					

* In addition to class hours, these courses have a regularly scheduled lab and/or discussion session that must fit into your schedule.

- When registering for PHYS 101, you must also register for PHYS 103, the discussion section for 101.
- When registering for PHYS 102, you must also register for PHYS 104, the discussion section for 102.

BASIC REQUIREMENTS	General Math & Science Courses	25
	Core Courses in Major	16
ELECTIVE REQUIREMENTS	Specialization Area Courses	21
	Open Electives and LPAP	36
	FWIS and Distribution Courses	24
Minimum credit required for the B.A.		122

Of the 122 credits, the BA in Civil and Environmental Engineering requires a minimum of 62 credits in general math and science, core, and specialization area courses.

Major Requirements

NUMBER	CREDIT	TITLE
MATH 101	3	Single Variable Calculus I
MATH 102	3	Single Variable Calculus II
PHYS 101•/111	4	Mechanics w/Lab
PHYS 102••/112	4*	Electricity and Magnetism w/Lab
CAAM 210 or 335 or COMP 110/NSCI 230	3	Intro to Engineering Computation/Matrix Analysis/Computation in Science and Engineering/Computation in Science and Engineering
CHEM 121	4*	General Chemistry I w/Lab
CHEM 122	4	General Chemistry II w/Lab
CEVE 101	3	Fundamentals of Civil and Environmental Engineering
CEVE 211	3	Engineering Mechanics
CEVE 304	3	Structural Analysis
CEVE 310	3	Principles of Environmental Engineering
CEVE 311	3	Mechanics of Solids and Structures
CEVE 312	1	Strength of Materials Lab
CEVE 307/313/322/363/405/ 407/412/417/424/427/452/460/ 470 (4 credits)/492	12-13*	Any 4 of these civil engineering specialization courses (SPEC)
OPEN	9	At least 3 Open electives approved as SPEC for the Civil Engineering BA Track

* In addition to class hours, these courses have a regularly scheduled lab and/or discussion session that must fit into your schedule.

- When registering for PHYS 101, you must also register for PHYS 103, the discussion section for 101.
- When registering for PHYS 102, you must also register for PHYS 104, the discussion section for 102.

B.S. In Civil Engineering

Specializations: Environmental Engineering

Hydrology and Water Resources

Structural Engineering and Mechanics

Urban Infrastructure, Reliability and Management

Sample Degree Plan

THIS IS ONE GENERIC EXAMPLE OF MANY POSSIBLE SCHEDULES.

CONSULT A DIVISIONAL OR DEPARTMENTAL ADVISOR TO CUSTOMIZE YOUR DEGREE PLAN.

(SAMPLES FOR EACH OF THE SPECIALIZATION AREAS CAN BE FOUND AT [HTTP://CEVE.RICE.EDU/UNDERGRAD/](http://ceve.rice.edu/undergrad/))

FALL				SPRING			
FRESHMAN		18 credits		FRESHMAN		17 credits	
MATH 101	Single Variable Calculus I	3		MATH 102	Single Variable Calculus II	3	
PHYS 101•	Mechanics w/Lab	4*		PHYS 102••	Electricity & Magnetism w/Lab	4	
CHEM121	General Chemistry I w/Lab	4*		CHEM122	General Chemistry II w/Lab	4*	
CEVE 101	Fundamentals of CEE	3		DIST	Distribution elective	3	
FWIS	Freshman Writing	3		DIST	Distribution elective	3	
LPAP	Lifetime Phys Activity elective	1					
SOPHOMORE		18 credits		SOPHOMORE		16 credits	
MATH211	Ord Diff Eqs Algebra	3		MATH 212	Multivariable Calculus	3	
CAAM 210	Intro. To Eng. Computation	2		ESCI 321	Earth System Evol.		
CAAM 211	Intro. To Eng. Computation Lab	1			or BIOC 201/ESCI 340/ ESCI435/EBIO 325	3	
CEVE 310	Principles of Enviro Engineering	3		CEVE 311	Mechanics of Solids	3	
CEVE 211	Engineering Mechanics	3		CEVE 312	Strength of Materials Lab	1	
SPEC	Specialization elective	3		SPEC	Specialization elective	3	
DIST	Distribution elective	3		DIST	Distribution elective	3	
JUNIOR		16 credits		JUNIOR		18 credits	
CEVE 401	Enviro. Chem & Lab	4		STAT 312	Probability and Statistics	3	
CEVE 363	Applied Fluid Mechanics	3		CAAM 335	Matrix Analysis or Math 355 Linear Algebra	3	
SPEC	Specialization elective	3		SPEC	Specialization elective	3	
SPEC	Specialization elective	3		OPEN	Open elective	3	
DIST	Distribution elective	3		SPEC	Specialization elective	3	
				DIST	Distribution elective	3	
SENIOR		16 credits		SENIOR		15 credits	
CEVE 481	Intro. Senior Design	1		CEVE 480	Senior Design	3	
SPEC	Specialization elective	3		SPEC	Specialization elective	3	
SPEC	Specialization elective	3		OPEN	Open Elective	3	
SPEC	Specialization elective	3		OPEN	Open Elective	3	
OPEN	Open elective	3		OPEN	Open Elective	3	
DIST	Distribution elective	3					

* In addition to class hours, these courses have a regularly scheduled lab and/or discussion session that must fit into your schedule.

- When registering for PHYS 101, you must also register for PHYS 103, the discussion section for 101.
- When registering for PHYS 102, you must also register for PHYS 104, the discussion section for 102.

BASIC REQUIREMENTS	General Math & Science Courses	40-41
	Core Courses	24
	Focus Area Courses	18
	Specialization Courses	12
ELECTIVE REQUIREMENTS	Open Electives and LPAP	15
	FWIS and Distribution Courses	24
Minimum Credit required for the B.S.		133

Of the 133 credits, the BS in Civil Engineering requires a minimum of 94 credits in general math and science, core, and specialization area courses.

Major Requirements

NUMBER	CREDIT	TITLE
ESCI 301/EBIO 325 or BIOC 201	3	Introductory Biology/Earth Science Evolution and Cycles/Global Biogeochemical Cycles/Ecology
CAAM 210	3	Introduction to Engineering Comp
CAAM 335 or MATH 355 or MATH 354	3	Matrix Analysis/Linear Algebra (or approved equivalent)/Honors Linear Algebra
CHEM 121	4*	General Chemistry I w/Lab
CHEM 122	4*	General Chemistry II w/Lab
MATH 101	3	Single Variable Calculus I
MATH 102	3	Single Variable Calculus II
MATH 211	3	Ordinary Differential Equations
MATH 212	3	Multivariable Calculus
PHYS 101•	4*	Mechanics w/Lab
PHYS 102••	4*	Electricity and Magnetism w/Lab
STAT 312	3	Probability and Statistics or equivalent
CEVE 101	3	Fundamentals of Civil and Environmental Engineering
CEVE 211	3	Engineering Mechanics
CEVE 310	3	Principles of Environmental Engineering
CEVE 311	3	Mechanics of Solids and Structures
CEVE 312	1	Strength of Materials Lab
CEVE 363	3	Applied Fluid Mechanics
CEVE 401***	4	Environmental Chemistry and Lab
CEVE 470 ††	4	Principles of Soil Mechanics
CEVE 480	3	Senior Design
CEVE 481	1	Introduction to Senior Design
SPEC (CEVE)**	12	4 courses from one specialization focus area
SPEC (CEVE)**	18	6 courses (2 courses each) in 3 remaining focus areas
OPEN†	15	5 open elective courses (Dept. suggested elective courses are below)

** The Engineering Specializations are broken down into 4 focus areas.

*** For focus areas 1 and 2

• Environmental Engineering - CEVE 302, 307, 308, 404, 406, 411, 434 or other approved course.

• Hydrology and Water Resources - CEVE 412, 418, 420, 512, 518 or other approved course.

• Structural Engineering and Mechanics - CEVE 304, 400, 405, 407, 408, 427, 476 or other approved course.

• Urban Infrastructure, Reliability and Management - CEVE 313, 322, 424, 452, 460, 470, 479, 492 or other approved course.

• When registering for PHYS 101, you must also register for PHYS 103, the discussion section for 101.

•• When registering for PHYS 102, you must also register for PHYS 104, the discussion section for 102.

† List of CEVE Suggested Electives Courses (in addition to 500-level CEE courses, and select courses from MECH, CAAM, CHEM, ECON, STAT, and math or science, which are posted online at <http://ceve.rice.edu/undergrad/>): CEVE 314, 320, 417, 454, 490, 496, 499

†† For focus areas 3 and 4