1

BACHELOR OF SCIENCE IN CIVIL ENGINEERING (BSCE) DEGREE

The program leading to the BS in Civil Engineering is accredited by the Engineering Accreditation Commission of ABET, <u>https://</u><u>www.abet.org</u>, under the General Criteria and the Civil and Similarly Named Engineering Program Criteria.

Program Learning Outcomes (Student Outcomes) for the BSCE Degree

Upon completing the BSCE degree, students will be able to demonstrate:

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

Program Educational Objectives for the BSCE Degree

Within 3 to 5 years of graduation, graduates with a Bachelor of Science in Civil Engineering (BSCE) degree are expected to attain the following Program Educational Objectives (PEOs):

- 1. Excel in problem-solving and communication skills.
- 2. Achieve leadership positions in technical or managerial areas.
- 3. Demonstrate initiative and innovation in professional endeavors.
- 4. Demonstrate engagement in addressing ethical, social, environmental, and global concerns.
- 5. Remain engaged in continuing learning, including advanced degrees.
- 6. Obtain a Professional Engineering license, if appropriate.

Requirements for the BSCE Degree

For general university requirements, see <u>Graduation Requirements</u> (https://ga.rice.edu/undergraduate-students/academic-policiesprocedures/graduation-requirements/). Students pursuing the BSCE degree must complete:

- A minimum of 34 courses (92 credit hours) to satisfy major requirements.
- · A minimum of 125 credit hours to satisfy degree requirements.
- A minimum of 21 courses (57 credit hours) taken at the 300-level or above.
- The requirements for one area of specialization (see below for areas of specialization). When students <u>declare the major (https://ga.rice.edu/undergraduate-students/academic-opportunities/majorsminors-certificates/#text</u>) in Civil Engineering (associated with the BSCE degree), students must additionally identify and declare one of four areas of specialization, either in:
 - <u>Area I Environmental Engineering</u> (p. 3): Air and water quality, transport theory, modeling, and energy, or
 - <u>Area II Hydrology and Water Resources</u> (p. 3): Watershed and aquifer management, flood prediction, data analysis, GIS, and hydrologic modeling, *or*
 - <u>Area III Structural Engineering and Mechanics</u> (p. 3): Structural analysis, mechanics, design, dynamics, and matrix method, *or*
 - <u>Area IV Urban Infrastructure, Reliability, and Management</u> (p. 4): Transportation systems, complex urban systems, system reliability, soil mechanics, decision theory, engineering economics, and project management.
- A minimum of 14 courses (36 credit hours) from the General Math and Science courses.
- A minimum of 11 courses (26 credit hours) from the Core Requirements.

Because of the common core requirements, it is possible for students to change their area of specialization at any time, even after initially declaring the major. To do so, please contact the <u>Office of the Registrar</u> (registrar@rice.edu).

Civil and Environmental Engineering's innovative and challenging BSCE degree's engineering curriculum is designed to provide significant flexibility to the student. Specific details and typical course layouts by semester can be found on the <u>departmental website (http://ceve.rice.edu/)</u>.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor, or where applicable, the department's Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/ officialcertifier/).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

Code	Title	Credit Hours
Total Credit Hour	s Required for the Major in Civil Engineering	92
Total Credit Hour	s Required for the BSCE Degree	125

Degree Requirements

Code	Title	Credit Hours
General Ma	th and Science Requirements ¹	
Select 1 cou	urse from the following: ²	3

BIOS 201 INTRODUCTORY BIOLOGY I

	SOCIETY	
Any course fro Sciences (EEP	m Earth, Environmental and Planetary S) course offerings	
CHEM 121	GENERAL CHEMISTRY I	3
or CHEM 111	AP/OTH CREDIT IN GENERAL CHEMISTRY I	
CHEM 123	GENERAL CHEMISTRY LABORATORY I	1
or CHEM 113	AP/OTH CREDIT IN GENERAL CHEMISTRY LAB I	
CMOR 220	INTRODUCTION TO ENGINEERING COMPUTATION	3
CMOR 302	MATRIX ANALYSIS	3
or MATH 355	LINEAR ALGEBRA	
or MATH 354	HONORS LINEAR ALGEBRA	
MATH 101	SINGLE VARIABLE CALCULUS I	3
or MATH 105	AP/OTH CREDIT IN CALCULUS I	
MATH 102	SINGLE VARIABLE CALCULUS II	3
or MATH 106	AP/OTH CREDIT IN CALCULUS II	
MATH 211	ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA	3
or MATH 220	HONORS ORDINARY DIFFERENTIAL EQUATIONS	
MATH 212	MULTIVARIABLE CALCULUS	3
or MATH 232	HONORS MULTIVARIABLE CALCULUS	
PHYS 101 & PHYS 103	MECHANICS (WITH LAB) and MECHANICS DISCUSSION ³	4
PHYS 102 & PHYS 104	ELECTRICITY & MAGNETISM (WITH LAB) and ELECTRICITY AND MAGNETISM DISCUSSION ⁴	4
STAT 310 / ECON 307	PROBABILITY AND STATISTICS ⁵	3
Core Requiremen	ts	
Core Requirement	ts FUNDAMENTALS OF CIVIL AND ENVIRONMENTAL ENGINEERING ⁶	2
Ceve 101 CEVE 211 / MECH 211	Its FUNDAMENTALS OF CIVIL AND ENVIRONMENTAL ENGINEERING ⁶ ENGINEERING MECHANICS ⁶	2 3
CEVE 101 CEVE 211 / MECH 211 CEVE 310	ts FUNDAMENTALS OF CIVIL AND ENVIRONMENTAL ENGINEERING ⁶ ENGINEERING MECHANICS ⁶ PRINCIPLES OF ENVIRONMENTAL ENGINEERING ⁶	2 3 3
CEVE 101 CEVE 211 / MECH 211 CEVE 310 CEVE 311 / MECH 311	tts FUNDAMENTALS OF CIVIL AND ENVIRONMENTAL ENGINEERING ⁶ ENGINEERING MECHANICS ⁶ PRINCIPLES OF ENVIRONMENTAL ENGINEERING ⁶ MECHANICS OF SOLIDS AND STRUCTURES ⁶	2 3 3 3
Ceve 101 CEVE 101 CEVE 211 / MECH 211 CEVE 310 CEVE 311 / MECH 311 CEVE 312	tts FUNDAMENTALS OF CIVIL AND ENVIRONMENTAL ENGINEERING ⁶ ENGINEERING MECHANICS ⁶ PRINCIPLES OF ENVIRONMENTAL ENGINEERING ⁶ MECHANICS OF SOLIDS AND STRUCTURES ⁶ STRENGTH OF MATERIALS LAB ⁶	2 3 3 3 1
Ceve 101 CEVE 211 / MECH 211 CEVE 310 CEVE 311 / MECH 311 CEVE 312 CEVE 315	Its FUNDAMENTALS OF CIVIL AND ENVIRONMENTAL ENGINEERING ⁶ ENGINEERING MECHANICS ⁶ PRINCIPLES OF ENVIRONMENTAL ENGINEERING ⁶ MECHANICS OF SOLIDS AND STRUCTURES ⁶ STRENGTH OF MATERIALS LAB ⁶ URBAN WATER SYSTEMS: SOURCES, TREATMENT, DISTRIBUTION, RESOURCE RECOVERY AND REUSE	2 3 3 3 1 3
Ceve 101 CEVE 101 CEVE 211 / MECH 211 CEVE 310 CEVE 311 / MECH 311 CEVE 312 CEVE 315 CEVE 363	Its FUNDAMENTALS OF CIVIL AND ENVIRONMENTAL ENGINEERING ⁶ ENGINEERING MECHANICS ⁶ PRINCIPLES OF ENVIRONMENTAL ENGINEERING ⁶ MECHANICS OF SOLIDS AND STRENGTH OF MATERIALS LAB ⁶ URBAN WATER SYSTEMS: SOURCES, TREATMENT, DISTRIBUTION, RESOURCE RECOVERY AND REUSE APPLIED FLUID MECHANICS	2 3 3 3 3 1 3 3
Ceve 101 CEVE 101 CEVE 211 / MECH 211 CEVE 310 CEVE 311 / MECH 311 CEVE 312 CEVE 315 CEVE 363 CEVE 471	Its FUNDAMENTALS OF CIVIL AND ENVIRONMENTAL ENGINEERING ⁶ ENGINEERING MECHANICS ⁶ PRINCIPLES OF ENVIRONMENTAL ENGINEERING ⁶ MECHANICS OF SOLIDS AND STRUCTURES ⁶ STRENGTH OF MATERIALS LAB ⁶ URBAN WATER SYSTEMS: SOURCES, TREATMENT, DISTRIBUTION, RESOURCE RECOVERY AND REUSE APPLIED FLUID MECHANICS PRINCIPLES OF SOIL MECHANICS AND FOUNDATION ENGINEERING	2 3 3 3 3 1 3 3 3 3 3
Ceve 101 CEVE 101 CEVE 211 / MECH 211 CEVE 310 CEVE 310 CEVE 311 CEVE 312 CEVE 315 CEVE 363 CEVE 471 CEVE 481	Its FUNDAMENTALS OF CIVIL AND ENVIRONMENTAL ENGINEERING ⁶ ENGINEERING MECHANICS ⁶ PRINCIPLES OF ENVIRONMENTAL ENGINEERING ⁶ MECHANICS OF SOLIDS AND STRUCTURES ⁶ STRENGTH OF MATERIALS LAB ⁶ URBAN WATER SYSTEMS: SOURCES, TREATMENT, DISTRIBUTION, RESOURCE RECOVERY AND REUSE APPLIED FLUID MECHANICS PRINCIPLES OF SOIL MECHANICS AND FOUNDATION ENGINEERING INTRODUCTION TO SENIOR DESIGN	2 3 3 3 3 1 3 3 3 1
Ceve 101 CEVE 101 CEVE 211 / MECH 211 CEVE 310 CEVE 310 CEVE 311 CEVE 312 CEVE 315 CEVE 363 CEVE 481 CEVE 481 CEVE 482	Its FUNDAMENTALS OF CIVIL AND ENVIRONMENTAL ENGINEERING ⁶ ENGINEERING MECHANICS ⁶ PRINCIPLES OF ENVIRONMENTAL ENGINEERING ⁶ MECHANICS OF SOLIDS AND STRUCTURES ⁶ STRENGTH OF MATERIALS LAB ⁶ URBAN WATER SYSTEMS: SOURCES, TREATMENT, DISTRIBUTION, RESOURCE RECOVERY AND REUSE APPLIED FLUID MECHANICS PRINCIPLES OF SOIL MECHANICS AND FOUNDATION ENGINEERING INTRODUCTION TO SENIOR DESIGN SENIOR DESIGN	2 3 3 3 3 3 1 3 3 3 1 3 1 3
Ceve 101 CEVE 101 CEVE 211 / MECH 211 CEVE 310 CEVE 310 CEVE 311 / MECH 311 CEVE 312 CEVE 315 CEVE 363 CEVE 471 CEVE 481 CEVE 482 Select 1 from the 37	Its FUNDAMENTALS OF CIVIL AND ENVIRONMENTAL ENGINEERING ⁶ ENGINEERING MECHANICS ⁶ PRINCIPLES OF ENVIRONMENTAL ENGINEERING ⁶ MECHANICS OF SOLIDS AND STRUCTURES ⁶ STRENGTH OF MATERIALS LAB ⁶ URBAN WATER SYSTEMS: SOURCES, TREATMENT, DISTRIBUTION, RESOURCE RECOVERY AND REUSE APPLIED FLUID MECHANICS PRINCIPLES OF SOIL MECHANICS AND FOUNDATION ENGINEERING INTRODUCTION TO SENIOR DESIGN SENIOR DESIGN	2 3 3 3 3 3 3 3 3 1 3 3 7
Ceve 101 CEVE 101 CEVE 211 / MECH 211 CEVE 310 CEVE 310 CEVE 311 CEVE 312 CEVE 315 CEVE 363 CEVE 471 CEVE 481 CEVE 481 CEVE 482 Select 1 from the state of the st	Its FUNDAMENTALS OF CIVIL AND ENVIRONMENTAL ENGINEERING ⁶ ENGINEERING MECHANICS ⁶ PRINCIPLES OF ENVIRONMENTAL ENGINEERING ⁶ MECHANICS OF SOLIDS AND STRUCTURES ⁶ STRENGTH OF MATERIALS LAB ⁶ URBAN WATER SYSTEMS: SOURCES, TREATMENT, DISTRIBUTION, RESOURCE RECOVERY AND REUSE APPLIED FLUID MECHANICS PRINCIPLES OF SOIL MECHANICS AND FOUNDATION ENGINEERING INTRODUCTION TO SENIOR DESIGN SENIOR DESIGN URBAN WATER SYSTEMS LAB: WATER QUALITY PARAMETERS AND TREATMENT FECHNIQUES	2 3 3 3 1 3 3 3 1 3 7

Area of Specialization

0
2
2
1
5
or

such as the Analyzing Diversity (AD) requirement, or some of the student's declared major, minor, or certificate requirements. <u>Additional Credit Hours to Complete Degree Requirements</u> include general electives, coursework completed as upper-level, residency (hours taken at Rice), and/or any other additional academic program requirements.

Or an equivalent approved course

1

² Students may substitute EEPS 110 with any departmental Earth, Environmental, and Planetary Sciences (EEPS) course offering.

- ³ The Civil and Environmental Engineering department has determined that credit awarded for PHYS 141 *CONCEPTS IN PHYSICS I* is not eligible for meeting the requirements of the Civil Engineering major.
- ⁴ The Civil and Environmental Engineering department has determined that credit awarded for PHYS 142 CONCEPTS IN PHYSICS II is not eligible for meeting the requirements of the Civil Engineering major.
- ⁵ Students may substitute STAT 310 with any departmental (STAT) course offering at the 300-level or above with the exception of STAT 305.
- ⁶ Courses that introduce fundamentals of civil and environmental engineering primarily targeted at students with diverse science, engineering, and humanities backgrounds (CEVE 101, CEVE 211, CEVE 310, CEVE 311, CEVE 312)
- ⁷ Students following Area of Specialization I-Environmental Engineering or Area of Specialization II-Hydrology and Water Resources must take CEVE 316 as a Core Requirement. Students following Area of Specialization III-Structural Engineering and Mechanics or Area of Specialization IV-Urban Infrastructure, Reliability and Management must take CEVE 472 as a Core Requirement.
- ⁸ See also the University Graduation Requirements footnote above denoted with an *.

Areas of Specialization

To fulfill the remaining BSCE degree requirements, students must complete a total of 10 courses (30 credit hours) from the four areas of specialization as follows:

- 8 courses (24 credit hours), consisting of a minimum of 2 courses (6 credit hours) from each of the four areas of specialization as breadth.
- 2 additional courses (6 credit hours) from one of the four areas of specialization for a total of 4 courses (12 credit hours, including breadth) in that specific area as an area of specialization.

Area of Specialization: Area I - Environmental Engineering

All students must select a minimum of 2 courses (6 credit hours) from Area I. Students pursuing the Area I - Environmental Engineering area of specialization must complete:

- · 4 courses (12 credit hours) from Area I Environmental Engineering
- 2 courses (6 credit hours) from Area II Hydrology and Water Resources
- 2 courses (6 credit hours) from Area III Structural Engineering and Mechanics
- 2 courses (6 credit hours) from Area IV Urban Infrastructure, Reliability and Management

Code	Title	Credit	
		Hours	

12

CEVE 400 /

MECH 400 CEVE 427 /

MECH 427

CEVE 431

CEVE 439

CEVE 441

CEVE 445

CEVE 476

& CEVE 432

Select 4 courses from the following:

Tot	al Credit Hours		30
Sel Infr	ect 2 courses (6 astructure, Relia	credit hours) from the Area IV - Urban ability and Management Area of Specialization	6
Select 2 courses (6 credit hours) from the Area III - Structural Engineering and Mechanics Area of Specialization			6
Sel Wa	ect 2 courses (6 ter Resources A	credit hours) from the Area II - Hydrology and rea of Specialization	6
(Or any approve course from CE	d (Area I - Environmental Engineering) VE course offerings	
(CEVE 444	ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY	
(CEVE 434	FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT	
(CEVE 426	SMART MATERIALS FOR THE ENVIRONMENT	
(CEVE 411	ATMOSPHERIC CHEMISTRY AND CLIMATE	
(CEVE 406 / ENST 406	INTRODUCTION TO ENVIRONMENTAL LAW	
(CEVE 401	CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE	
(CEVE 307 / EEPS 307 / ENST 307	ENERGY AND THE ENVIRONMENT	
(CEVE 302 / ENGI 302	SUSTAINABLE DESIGN	

Area of Specialization: Area II - Hydrology and Water Resources All students must select a minimum of 2 courses (6 credit hours) from Area II. Students pursuing the Area II - Hydrology and Water Resources area of specialization must complete:

- 4 courses (12 credit hours) from Area II Hydrology and Water Resources
- · 2 courses (6 credit hours) from Area I Environmental Engineering
- 2 courses (6 credit hours) from Area III Structural Engineering and Mechanics

• 2 courses (6 credit hours) from Area IV - Urban Infrastructure, Reliability and Management

Code	Title	Credit Hours	
Select 4 courses from the following: 12			
CEVE 314 / BIOE 365 / GLHT 314	SUSTAINABLE WATER PURIFICATION FOR THE DEVELOPING WORLD		
CEVE 412	HYDROLOGY AND WATER RESOURCES ENGINEERING		
CEVE 414	COASTAL HAZARDS IN A CHANGING CLIMATE		
CEVE 420	ENVIRONMENTAL REMEDIATION RESTORATION		
CEVE 421	CLIMATE RISK MANAGEMENT		
CEVE 518	ENVIRONMENTAL HYDROGEOLOGY		
Or any appro course from	oved (Area II - Hydrology or Water Resources) CEVE course offerings		
Select 2 courses Engineering Area	s (6 credit hours) from the Area I - Environmental a of Specialization	6	
Select 2 courses Engineering and	s (6 credit hours) from the Area III - Structural I Mechanics Area of Specialization	6	
Select 2 courses Infrastructure, R	s (6 credit hours) from the Area IV - Urban Reliability and Management Area of Specialization	6	
Total Credit Ho	urs	30	
Area of Speciali All students mu Area III. Student Mechanics area • 4 courses (1	zation: Area III - Structural Engineering and Mecha Ist select a minimum of 2 courses (6 credit hours ts pursuing the Area III - Structural Engineering a a of specialization must complete: 12 credit hours) from Area III - Structural Enginee	anics) from nd ring and	
Mechanics	6 credit houre) from Area L. Environmental Engine	pering	
 2 courses (6 Resources 	 2 courses (6 credit hours) from Area II - Hydrology and Water Resources 		
 2 courses (6 credit hours) from Area IV - Urban Infrastructure, Reliability and Management 			
Code	Title	Credit Hours	
Select 4 courses	s from the following:	12	
CEVE 325	STRUCTURAL ANALYSIS AND MODELING		

ADVANCED MECHANICS OF MATERIALS

PHYSICS GUIDED MACHINE LEARNING &

DESIGN AND BEHAVIOR OF CONCRETE

BUILDINGS AND BUILDING ELEMENTS

ADVANCED STRUCTURAL ANALYSIS

STEEL BUILDINGS AND BUILDING

STRUCTURAL DYNAMIC SYSTEMS

ORIGAMI ENGINEERING

and CONCRETE AND STEEL STRUCTURES

DESIGN AND BEHAVIOR OF STRUCTURAL

DATA DRIVEN MODELING FEM

LABORATORY

ELEMENTS

Тс	otal Credit Hours	6	30
Se	elect 2 courses (6	5 credit hours) from the Area IV - Urban	6
In	frastructure, Reli	ability and Management Area of Specialization	
Se	elect 2 courses (6	5 credit hours) from the Area II - Hydrology and	6
W	ater Resources A	Irea of Specialization	
Se	elect 2 courses (6	5 credit hours) from the Area I - Environmental	6
Er	ngineering Area o	f Specialization	
	Or any approve Mechanics) co	d (Area III Structural Engineering and urse from CEVE/MECH course offerings	
	CEVE 496 / MECH 466	SYSTEM IDENTIFICATION OF DYNAMIC SYSTEMS WITH MACHINE LEARNING	

Area of Specialization: Area IV - Urban Infrastructure, Reliability and Management

All students must select a minimum of 2 courses (6 credit hours) from Area IV. Students pursuing the Area IV - Urban Infrastructure, Reliability and Management area of specialization must complete:

- 4 courses (12 credit hours) from Area IV Urban Infrastructure, Reliability and Management
- · 2 courses (6 credit hours) from Area I Environmental Engineering
- 2 courses (6 credit hours) from Area II Hydrology and Water Resources
- 2 courses (6 credit hours) from Area III Structural Engineering and Mechanics

Code	Title	Credit
		Hours

Select 4 courses from the following:

Total Credit Hours	3	30
Select 2 courses (6 Engineering and M	o credit hours) from the Area III - Structural lechanics Area of Specialization	6
Select 2 courses (6 Water Resources A	5 credit hours) from the Area II - Hydrology and Area of Specialization	6
Select 2 courses (6 Engineering Area c	o credit hours) from the Area I - Environmental of Specialization	6
Or any approve and Managemo MGMT/STAT c	d (Area IV - Urban Infrastructure, Reliability ant) course from CEVE/CMOR/ECON/ ourse offerings	
CEVE 492	MODELING AND ANALYSIS OF NETWORKED SYSTEMS ¹	
CEVE 460	BRIDGE ENGINEERING AND EXTREME EVENTS ¹	
CEVE 452	URBAN TRANSPORTATION SYSTEMS	
CEVE 425	SUSTAINABLE INFRASTRUCTURE MATERIALS	
CEVE 424	TIME-DEPENDENT SYSTEM RELIABILITY METHODS AND APPLICATIONS ¹	
CEVE 320 / ENGI 320	ETHICS AND ENGINEERING LEADERSHIP	
CEVE 313 / STAT 313	UNCERTAINTY AND RISK IN URBAN INFRASTRUCTURES	
CEVE 301	ENGINEERING ECONOMICS AND PROJECT MANAGEMENT	
	-	

Footnotes and Additional Information

Offered alternative years

Suggested Ele	ctives for the BSCE Degree	
Code	Title	Credit Hours
CEVE 417 / MECH 417	FINITE ELEMENT ANALYSIS	3
CEVE 424	TIME-DEPENDENT SYSTEM RELIABILITY METHODS AND APPLICATIONS	3
CEVE 454 / BIOE 454 / MECH 454	COMPUTATIONAL FLUID MECHANICS	3
CEVE 477	SPECIAL TOPICS	1-4
CEVE 499	SPECIAL PROBLEMS	1-12
CHEM 211 & CHEM 213	ORGANIC CHEMISTRY I and ORGANIC CHEMISTRY DISCUSSION I	3
CMOR 304	DIFFERENTIAL EQUATIONS IN SCIENCE AND ENGINEERING	3
CMOR 360	INTRODUCTION TO OPERATIONS RESEARCH AND OPTIMIZATION	3
CMOR 422	NUMERICAL ANALYSIS	3
CMOR 441	LINEAR AND INTEGER PROGRAMMING	3
ECON 100	PRINCIPLES OF ECONOMICS	3
ECON 445	MANAGERIAL ECONOMICS	3
MECH 343	MODELING OF DYNAMIC SYSTEMS - LECTURE & LAB	4
MFCH 412	VIBRATIONS	3

Policies for the BSCE Degree

Program Restrictions and Exclusions

Students pursuing the BSCE degree should be aware of the following program restrictions:

- As noted in <u>Majors, Minors, and Certificates (https://ga.rice.edu/undergraduate-students/academic-opportunities/majors-minors-certificates/</u>), under <u>Declaring Majors</u>, <u>Minors and Certificates</u>, students may not obtain both a BA and a BS in the same major.
- Students pursuing the Bachelor of Science in Civil Engineering (BSCE) Degree may not additionally pursue the Bachelor of Science in Environmental Engineering (BSEnvE) Degree.
- Students pursuing the Bachelor of Science in Civil Engineering (BSCE) Degree may not additionally pursue the BA Degree with a Major in Civil and Environmental Engineering.

Transfer Credit

12

For Rice University's policy regarding transfer credit, see <u>Transfer</u> <u>Credit (https://ga.rice.edu/undergraduate-students/academic-policiesprocedures/transfer-credit/</u>). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of <u>transfer credit advisors (https:// oaa.rice.edu/advising-network/transfer-credit-advisors/</u>) on their website: <u>https://oaa.rice.edu</u>. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing the BSCE degree should be aware of the following departmental transfer credit guidelines:

 Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

Additional Information

For additional information, please see the Civil and Environmental Engineering website: <u>https://cee.rice.edu/</u>.

Opportunities for the BSCE Degree Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (https://ga.rice.edu/undergraduate-students/honors-distinctions/university/) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (https://ga.rice.edu/undergraduate-students/honors-distinctions/university/). Some departments have department-specific Honors awards or designations.

Departmental Honor, Award, and Scholarship Opportunities

- · Distinction in Research and Creative Work: The Department of Civil and Environmental Engineering will recognize graduating seniors for outstanding creative contributions with the award of Distinction in Research and Creative Work (https://ga.rice.edu/ undergraduate-students/honors-distinctions/university/). The Department recognizes this award as being a significant honor. As such, it will be awarded to no more than 20% of a graduating class (rounded up to next whole number). This award shall be given for significant contributions in research, design, and creative projects beyond class assignments (except CEVE 499). Generally, it is expected that the student recipients will have performed research/ design for a minimum of two academic segments (one segment = one academic year or one summer) during their undergraduate career (either for credit or pay). It may be given for one outstanding piece of work for consistent meaningful contributions made over the course of an undergraduate career. All majors (BA and BS) are eligible and will be considered for this distinction in the spring prior to their graduation.
- Rice Global Forum: Rice Global Forum (RGF) is an engineering and construction industry funded center which is in its second decade of operation. It was founded by Ahmad Durrani, past chair of Civil and Environmental Engineering at Rice. RGF funds and facilitates interaction with the engineering and construction industry, particularly oil and gas related work. RGF funds \$25,000 worth of scholarships every year. In addition, RGF also consistently sponsors and supports Engineers Without Borders (EWB) and has donated to other student clubs as well in addition to holding an engineering design competition every year in February during National Engineers Week.

Fifth-Year Master's Degree Option for Rice Undergraduate Students

In certain situations and with some terminal master's degree programs, Rice students have an option to pursue a master's degree by adding an additional fifth year to their four years of undergraduate studies.

Advanced Rice undergraduate students in good academic standing typically apply to the master's degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master's degree program. A plan of study will need to be approved by the student's undergraduate major advisor and the master's degree program director.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for a bachelor's degree and the master's degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
- should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
- more information on this Undergraduate Graduate Concurrent Enrollment opportunity, including specific information on the registration process can be found <u>here (https://ga.rice.edu/ undergraduate-students/academic-opportunities/undergraduategraduate-concurrent-enrollment/).</u>

Rice undergraduate students completing studies in science and engineering may have the option to pursue the Master of Civil and Environmental Engineering (MCEE) degree. For additional information, students should contact their undergraduate major advisor and the (MCEE) chair of the department graduate studies committee.

Student Organizations and Clubs

- American Society of Civil Engineers Student (ASCE): https://www.asce.org/communities/student-members">https://www.asce.org/communities/student-members/)
 ASCE seeks to promote civil and environmental engineering, expose students to real world engineering, and connect students to alumni and professionals. Throughout the year we invite speakers from the industry, visit plants and sites, and organize social events. The objectives of this Chapter are to encourage the development of a professional consciousness, to afford an opportunity for civil engineering students to become acquainted and to practice working together effectively, to promote a spirit of congeniality among them, and to provide friendly contact with the engineering profession. We also support the Concrete Canoe competition (see below) and the Seismic Design Competition of the Earthquake Engineering Research Institute (EERI).
- Chi Epsilon: https://www.chi-epsilon.org/

Chi Epsilon is dedicated to maintaining and promoting the status of civil engineering as an ideal profession. Chi Epsilon was organized to recognize the characteristics of the individual civil engineering deemed to be fundamental to the successful pursuit of an engineering career, and to aid in the development of those characteristics in the civil engineering student.

- Engineers Without Borders (EWB): https://ewb.rice.edu/ EWB partners with developing communities worldwide to design engineering solutions that will improve their standards of living. It is an important component of the Civil and Environmental Engineering program. BA students with their flexible curriculum are encouraged to participate. This exciting endeavor allows undergraduates to have an experience in a developing country, where they are able to design and build a project to help society. Students have been attracted to the EWB program in large numbers and our local chapter is one of the most successful in the United States. Some CEVE courses are EWBrelated, providing the opportunity to also obtain credit hours.
- Concrete Canoe: https://concretecanoe.rice.edu/

Rice Concrete Canoe is a student-run club that creates a functional concrete canoe to race and present at the yearly ASCE sponsored competition. Through the year, members gain engineering experience through the research, planning and constructing of a concrete canoe. By offerings members exposure to the engineering design process, small-group work, software such as Matlab and Adobe Illustrator (and possibly more starting this year), and laser cutters, Concrete Canoe offers a unique experience to students regardless of whether or not they want to become engineers.

• Society of Women Engineers: <u>https://swe.rice.edu/</u> The Society of Women Engineers aims to empower women to pursue and achieve their full potential in science and engineering related fields. We provide opportunities in professional development, academic and post-graduate planning, community outreach, and social events.

Additional Information

For additional information, please see the Civil and Environmental Engineering website: <u>https://cee.rice.edu/</u>.