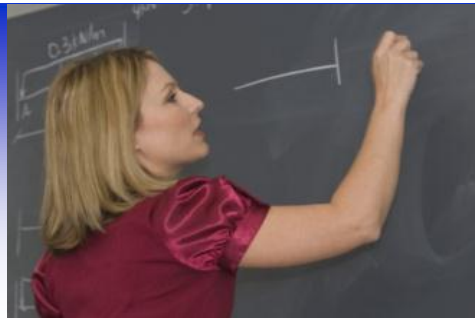




RICE

# B.S. in Civil Engineering



## Required Core

Total: 24 hours

|   |   |
|---|---|
| CEVE 101 (F) Fundamentals of CEE                        | 3 |
| CEVE 211 (F) Engineering Mechanics                      | 3 |
| CEVE 310 (F) Principles of Environmental Eng.           | 3 |
| CEVE 311 (S) Mechanics of Solids and Struct.            | 3 |
| CEVE 312 (S) Strength of Materials Lab.                 | 1 |
| CEVE 363 (F) Fluid Mechanics                            | 3 |
| CEVE 401 (F) Environmental Chem. & Lab <sup>a</sup>     | 4 |
| CEVE 470 (F) Principles Soil Mechanics <sup>b</sup>     | 4 |
| CEVE 480 (S) Senior Design <sup>c</sup>                 | 3 |
| CEVE 481 (F) Introduction to Senior Design <sup>c</sup> | 1 |

- Select 12 credit hours for your Focus Area below
- Select 6 credit hours from each of the three remaining Areas.

## Required Math & Science & Suggested Electives

(see back of flyer for more details)

### Overall Hours

|                                     |                    |
|-------------------------------------|--------------------|
| Required Core Courses               | 24 hrs             |
| Focus Area Courses                  | 18 hrs             |
| Focus Area Specialization Courses   | 12 hrs             |
| Required Math & Science Courses     | 40/41 hrs          |
| Addl. Required Distribution Courses | 18 hrs             |
| Open Electives/FWIS/LPAP***         | 21 hrs             |
| <b>Total</b>                        | <b>133/134 hrs</b> |

Note: Our B.S. required Math & Science includes 9 Distribution III courses.



### Focus Area I

(Mason Tomson\*)

#### Environmental Engineering

|   |   |
|---|---|
| CEVE 302 (F) Sustainable Design                   | 3 |
| CEVE 307 (S) Energy and the Environment           | 3 |
| CEVE 308 (S) Air Pollution Control**              | 3 |
| CEVE 404 (S) Atmospheric Particulate Matter**     | 3 |
| CEVE 406 (S) Environmental Law**                  | 3 |
| CEVE 411 (F) Atmospheric Processes                | 3 |
| CEVE 434 (F) Contaminant Fate and Transport       | 3 |
| CEVE 442 (F) Water Reuse and Resource Recovery    | 3 |
| CEVE 444 (F) Environmental Microbiology & Ecology | 3 |



### Focus Area III

(Satish Nagarajaiah\*)

#### Structural Engineering and Mechanics

|  |   |
|--|---|
| CEVE 304 (S) Structural Analysis                 | 3 |
| CEVE 400 (S) Advanced Mechanics of Materials     | 3 |
| CEVE 405 (S) Steel Design                        | 3 |
| CEVE 407 (F) Reinforced Concrete Design          | 3 |
| CEVE 408 (F) Structures Lab.                     | 1 |
| CEVE 427 (F) Computational Struct. Mech. & FEM** | 3 |
| CEVE 476 (F) Structural Dynamic Systems **       | 3 |



### Focus Area II

(Philip Bedient\*)

#### Hydrology and Water Resources

|  |   |
|--|---|
| CEVE 314 (S) Sustainable Water Purification    | 3 |
| CEVE 412 (S) Hydrology & Water Resources Eng.  | 3 |
| CEVE 418 (F) Quantitative Hydrogeology         | 3 |
| CEVE 420 (F) (520) Environmental Restoration   | 3 |
| CEVE 512 (S) Advanced Hydrology and Hydraulics | 3 |
| CEVE 518 (S) Contaminant Hydrogeology          | 3 |



### Focus Area IV

(Leonardo Dueñas-Osorio\*)

#### Urban Infrastructure, Reliability & Mngmnt

|  |   |
|--|---|
| CEVE 313 (S) Risk & Uncertainty in Urban Sys.                  | 3 |
| CEVE 424 (F) (524) Time Dependent Systems **                   | 3 |
| CEVE 452 (S) Urban Transportation Systems                      | 3 |
| CEVE 460 (F) Bridge Eng. & Extreme Events**                    | 3 |
| CEVE 479 (F) Eng. Project Management                           | 3 |
| CEVE 492 (F) (592) Modeling & Analysis of Networked Systems.** | 3 |

<sup>a</sup> For Areas I and II, CEVE 401 is required and CEVE 470 is an Area IV elective.

<sup>b</sup> For Areas III and IV, CEVE 470 is required and CEVE 401 is an Area I elective.

<sup>c</sup> Senior Design is now over 2 semesters as 481/480.

\* Faculty that is authorized to approve required CEVE Area hours.

\*\* Offered alternating years.

\*\*\* See list of suggested electives on the back.

[HTTPS://CEVE.RICE.EDU](https://ceve.rice.edu)

Department of Civil and Environmental Engineering

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## Required Science and Math Courses

|              |   |     |
|--------------|---|-----|
| ESCI 323     | or ESCI 321/EBIO 325 or BIOC 201          | 3-4 |
| CAAM 210     | Introduction to Engineering Comp          | 3   |
| CAAM 335     | Matrix Analysis (or MATH 354 or MATH 355) | 3   |
| CHEM 121/123 | General Chemistry Laboratory I            | 3/1 |
| CHEM 122/124 | General Chemistry Laboratory II           | 3/1 |
| MATH 101     | Single Variable Calculus I                | 3   |
| MATH 102     | Single Variable Calculus II               | 3   |
| MATH 211     | Ordinary Differential Equations           | 3   |
| MATH 212     | Multivariable Calculus                    | 3   |
| PHYS 101/103 | Mechanics with Lab                        | 4   |
| PHYS 102/104 | Electricity and Magnetism with Lab        | 4   |
| STAT 310     | Probability and Statistics or equivalent  | 3   |

## Suggested Electives

Any CEVE course from Focus Areas or 500 Level Courses

|          |  |      |
|----------|--|------|
| CEVE 320 | Ethics and Engineering Leadership          | 3    |
| CEVE 417 | Finite Element Analysis                    | 3    |
| CEVE 424 | Time-dependent Reliability of Eng. Systems | 3    |
| CEVE 454 | Computational Fluid Mechanics              | 3    |
| CEVE 490 | Special Study and Research                 | 3    |
| CEVE 499 | Special Topics                             | 1-12 |
| ARCH 317 | (617) Landscape & Site Strat. Houston      | 3    |
| CHEM 211 | Organic Chemistry I                        | 3    |
| ECON 100 | Principles of Economics                    | 3    |
| ECON 445 | Managerial Economics                       | 3    |
| STAT 385 | Methods for Data Analysis                  | 3    |
| CAAM 336 | Diff Equations in Sci & Eng.               | 3    |
| CAAM 378 | Intro to O.R. and Optimization             | 3    |
| CAAM 420 | Computational Science I                    | 3    |
| CAAM 453 | Numerical Analysis I                       | 3    |
| CAAM 471 | Linear and Integer Programming             | 3    |
| MECH 343 | Modeling of Dynamic Systems                | 4    |
| MECH 412 | Vibrations                                 | 3    |

## Professional Licensure

The FE exam is generally your first step in the process to becoming a professional licensed engineer (P.E.). It is designed for recent graduates and students who are close to finishing an undergraduate engineering degree from an EAC/ABET- accredited program.

## PE vs SE Exams

The PE exam is designed to test for a minimum level of competency in a particular engineering discipline and for engineers who with a minimum of four years of work experience in their chosen engineering discipline. The SE exam is designed for engineers who practice in jurisdictions that license structural engineers separately from other professional engineers. **For more details see:** <http://ncees.org/engineering>.

## Department Centers

Our faculty lead four centers within our department in addition to their individual research groups. Most also serve on collaborative interdisciplinary research groups and centers across Rice and across the globe. Our undergraduates benefit from an ever-expanding network of resources and opportunities to develop education and skills, broaden experiences, refine career focus or expand career paths. We are excited to be part of each student's journey!

1. **Nanosystems Engineering Research Center for Nanotechnology-Enabled Water treatment (NEWT)**
2. **Severe Storm Prediction, Education, and Evacuation from disasters (SSPEED)**
3. **Brine Chemistry Consortium**
4. **China-U.S. Center for Environmental Remediation and Sustainable Development**

## Undergraduate Clubs

Our undergrads participate in department-specific clubs and Rice's many others! Be civil, stay environmental and most importantly, expand and enjoy your unique Rice experience!



1. **American Society of Civil Engineers Student**
2. **Chi Epsilon**
3. **Engineers without Borders (EWB)**
4. **Concrete Canoe Team**
5. **Earthquake Engineering Research Institute Council**
6. **Society of Women Engineers**

The program leading to the BSCE is accredited by the Engineering Accreditation Commission of ABET. Website: <http://www.abet.org>

## Program Educational Objectives for the BSCE

(Please visit <http://ceve.rice.edu> for additional information.)

1. Demonstrate strong problem-solving and communication skills
2. Achieve leadership position in a technical or managerial areas
3. Demonstrate initiative and innovative thinking in project work
4. Demonstrate keen awareness of ethical, social, environmental, and global concerns
5. Remain engaged in continuing learning, including advanced degrees
6. Obtain a Professional Engineering License



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