



State of Rhode Island and Providence Plantations
Council on Postsecondary Education
OFFICE OF THE POSTSECONDARY COMMISSIONER

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Enclosure 5b1
May 25, 2016

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TO: Members of the Council on Postsecondary Education

FROM: Jim Purcell, Ed.D, Commissioner for Postsecondary Education

DATE: May 16, 2016 

RE: **Proposal for the addition of a minor in Environmental Engineering at the University of Rhode Island**

Background

The University of Rhode Island (URI) is proposing to offer a minor in Environmental Engineering in the College of Engineering (COE), Department of Civil and Environmental Engineering (CVE). Students in the Environmental Engineering minor will primarily take courses offered by CVE faculty but can also take courses in: chemistry; chemical engineering; mechanical, industrial and systems engineering, community planning, environmental economics, geosciences, natural resource science and oceanography. This interdisciplinary approach allows students to gain the skills needed to specialize in environmental engineering areas such as water and wastewater treatment, bioremediation, waste management and water-climate nexus as well as design environmental engineering systems that include considerations of risk, uncertainty, sustainability, life-cycle principles, and environmental impacts.

Rationale

The proposal states that the engineering and management of environmental resources that protect human health and systems are some of the biggest challenges facing young engineering professionals. Demand for environmental engineers is growing and expected to continue growing in the future as the environment is undergoing dramatic change, and new structures need to be built to support society.

The American Association for Engineering Education (ASEE) reports that between 2005 and 2014, the number of B.S. degrees awarded in environmental engineering nearly doubled. Currently, the Civil and Environmental Engineering Department at URI only offers a B.S. degree in civil engineering. Students interested in environmental engineering who enroll in this program cannot obtain a B.S. degree in environmental engineering. The environmental engineering minor will offer an opportunity for these students to formally specialize in this area of study.

Currently, three state universities in New England offer a B.S. degree program in environmental engineering: University of New Hampshire, University of Vermont, and University of Connecticut. The proposal states that the addition of this minor will help keep URI competitive and is likely to attract quality students from Massachusetts and Maine.

Institutional Role

The university states that this minor is consistent with the goals outlined in the URI Academic Strategic Plan 2016-2021. This minor will help: enhance student success by providing an opportunity for students to increase their competitiveness; expand research, scholarship and creative work by providing environmental engineering faculty with trained undergraduates in their field of interest; grow a global presence by increasing the leverage of environmental engineering faculty currently involved in international research and academic activities; and embrace diversity and social justice by offering a concentration in environmental engineering which attracts women at a much higher percentage compared with other engineering fields.

Interinstitutional Considerations

URI maintains that there is no projected impact to other public institutions of higher education in Rhode Island.

Program

The Environmental Engineering minor is comprised of a minimum of 18 credit hours, including two Fundamental Science courses; two Environmental Engineering Fundamentals courses, and up to four Environmental Engineering Design courses. Only engineering students may pursue this minor in environmental engineering. Students declaring this major must earn a minimum cumulative grade point average of 2.50 in courses counted toward the minor.

Requirements for this minor are:

Fundamental Sciences Courses (select two):

- MCE 341 Fundamentals of Thermodynamics
- CHM112 General Chemistry II
- CHE 212 Chemical Process Calculations
- CHM 227 Organic Chemistry Lecture 1

Environmental Engineering Fundamentals Courses (Required for non-CVE students):

- CVE 370* Hydraulic Engineering
 - CVE 374* Environmental Engineering
- *not counted toward minor for CVE students

Environmental Engineering Design Courses (select up to 4 courses):

- CVE232H Sustainable solutions for Developing Communities
- CVE 470 Water and Wastewater Transport Systems
- CVE 471 Water and Wastewater Treatment Systems
- CVE 474 Water Quality Sampling and Analyses
- CVE 475 Water in the Environment
- CVE 477 Environmental Sustainability and Green Engineering
- CVE 482 Innovative Remediation Technologies
- CVE 484 Environmental Hydrogeology - Fate and Transport of Contaminants
- CVE 491/492 Special Problems

Supporting courses (select 1 course):

- CPL/LAR 434 Introduction to Environmental Law
- CPL 485 Environmental Planning
- EEC 430 Water Resource Economics
- GEO 305 Global Climate change

- GEO 462 Aqueous Geochemistry
- GEO 483 Hydrogeology
- ISE 460 Design for the Environment
- NRS 409 Concepts in GIS and Remote Sensing
- NRS 410 Fundamentals of GIS
- NRs 412 Soil-Water Chemistry
- NRS 415 Remote Sensing of the Environment
- NRS 461 Watershed Hydrology and Management
- OCG 480 Introduction to Marine Pollution

Faculty

The program will be primarily supported by existing faculty at the Department of Civil and Environmental Engineering, with some participation from faculty in the departments of Chemistry (CHM), Chemical Engineering (CHE), Mechanical, Industrial and Systems Engineering (MCE), Community Planning (CPL), Environmental Economics (EE), Geosciences (GEO), Natural Resource Science (NRS), and Oceanography (OCG). No additional faculty or staff are required to facilitate the minor, which is completely contained within existing courses and positions.

Staff and Administration

The proposal does not detail the need for any additional staff.

Students

The proposal states that most students are expected to be drawn from Civil and Environmental Engineering and Chemical Engineering departments in the College of Engineering. Students from other engineering disciplines can also participate as long as they fulfill the requirements of the minor.

Evaluation

The measures of performance will be based on the number of students that complete the minor from inception to finish and a brief questionnaire that evaluates the program from the students' perspective.

RIOPC Review

RIOPC staff reviewed the information on the proposed addition of a minor in Environmental Engineering at URI. The academic changes presented are within the mission, role and scope of the University of Rhode Island and do not require Council approval.