

**UNIVERSITY OF RHODE ISLAND**  
**The Graduate School**

**Curricular Report from the Graduate Council to the Faculty Senate**  
**Report No. 2007 – 2008 - 6A**  
**Ocean Engineering Professional Practice Degree**

At Meeting No. 426 held on 28 March 2008, the Graduate Council approved the following proposal that is now submitted to the Faculty Senate.

SECTION I

BACKGROUND INFORMATION

ABSTRACT

The Graduate Council approved a proposal from the Department of Ocean Engineering for a new program leading to an Ocean Engineering Professional Practice Degree. The proposed program is an accelerated BS and MS degree that meets all requirements for the BS and MS degrees in Ocean Engineering with additional required courses in the area of specialization. The Department anticipates that three to five students per year will enter the program and that after three years the program will have a total enrollment of nine to fifteen students. The Graduate Council recommends approval of the proposal in the class of programs that require no new resources.

BACKGROUND

From the proposal:

It is clear from these two reports [from the National Academy of Engineering] that the professional engineering societies are strongly in favor of a professional engineering degree to allow graduates to fully enter into the real practice of engineering upon graduation. Internationally the five-year program is the standard for professional practice in the field.

The proposed program addresses this need for a five-year degree program that will fully prepare students for professional practice. The program represents a natural extension of the department's undergraduate and MS degree programs to meet the need for educating the practicing engineer for the next decade.

The Council of Deans enthusiastically and unanimously endorsed the proposal. The Budget Office reviewed the proposal with the understanding that no additional budgetary resources will be required for its implementation. Comments and recommendations are on file in the Graduate School.

SECTION II

RECOMMENDATION

The Graduate Council approved the proposal for the Ocean Engineering Professional Practice Degree (Accelerated BS and MS Degrees in Ocean Engineering) program at its meeting number 426 held on 28 March 2008, and forwards it to the Faculty Senate with a recommendation for approval in the class of programs that require no new resources.

## Professional Practice Degree in Ocean Engineering

**A. Program Information:** General descriptive information should be provided for the program.

**1.Name of institution.** University of Rhode Island

**2.Name of department, division, school or college.** Ocean Engineering

**3.Title of program and federal Classification of Instructional Programs (CIP) code.**

N/A

**4.Intended initiation date of program change and anticipated date for granting first degrees or certificates.**

Program start date: September 2008, First degrees granted: May 2011

**5.Intended location of program.** University of Rhode Island, Narragansett Bay Campus

**6.Description of institutional review and approval process.**

	DATE APPROVED
Department(s)/Committee(s)/Group(s)	October 2007
College(s) Engineering	November 2007
Faculty Senate Committee/Graduate Council	March 2008
Faculty Senate	
President of the University	

**7.Summary description (not to exceed 2 pages) of the proposed program.**

Goal: Use existing BS and MS degree programs and degree requirements as basis for Professional Practice Degree in Ocean Engineering

Ocean Engineering Professional Practice Degree  
(Accelerated BS and MS Degrees in Ocean Engineering)

*Admission requirements:* Junior standing in Ocean Engineering, grade point average of 3.0, or higher, overall and 3.2 in engineering courses.

*Program requirements:* Meet all degree requirements for BS and MS in Ocean Engineering plus the following: OCE 491 or 492 (3 credits) focused on a research project lead by a faculty member; OCE 500 Ocean Engineering Design Studies (6 credits) (topic areas must be different from MS thesis project) , ISE 500 (3 credits), OCE/ELE 550 (3 credits); and pass the

Fundamentals in Engineering (FE) offered twice annually by the RI Board of Professional Engineers.

### **8. Signature of President**

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**Robert L. Carothers, President**

### **9. Statement that no new or additional resources will be required, if appropriate.**

No new resources or courses required

### **10. Name of Person(s) to contact during the review:**

**Name:** Malcolm L. Spaulding

**Title:** Professor, Ocean Engineering

**Telephone:** 401-874-6666

**E-Mail:** Spaulding@oce.uri.edu

### **11. Signed agreements for any cooperative arrangements made with other institutions/agencies in support of the program.**

None

**B. Rationale:** There should be a demonstrable purpose and documented need for the program.

#### **1. State the program objectives.**

Goal: Use existing BS and MS degree programs and degree requirements as basis for Professional Practice Degree in Ocean Engineering

#### **2. Explain the needs addressed by this program, and present evidence that the program fulfills these needs.**

The National Academy of Engineering (NAE) has recently been engaged in the **Engineer of 2020 Project** with a goal to envision the future two decades from now and to use this knowledge in an attempt to predict the roles engineers will play in the future and to position engineering education in the US for what lies ahead. Two reports outlining this effort have been published. The first, *The Engineer of 2020: Visions of Engineering in the New Century* provides the questions, observations, and background for the second, *Adapting Engineering Education to the New Century*, which presents a series of recommendations (abbreviated below):

1. The BS degree should be considered as a pre-engineering or “engineer in training” degree.
2. Engineering should be accredited at both the BS and MS levels, so that the MS degree can be recognized as an engineering “professional” degree.
3. Institutions should take advantage of the flexibility in the ABET EC2000 criteria in developing the curricula and students should be introduced to the essence of engineering early in their undergraduate careers.
4. Colleges and universities should endorse research in engineering education as valued and rewarded activity for engineering faculty.
5. Institutions must teach students how to be life long learners.
6. Engineering educators should introduce interdisciplinary learning in the undergraduate curriculum and explore the use of case studies of engineering successes and failures as a learning tool.
7. Four-year schools should work with community colleges, with two-year technology programs, to develop realistic, workable articulation agreements.
8. Institutions should encourage domestic students to obtain MS and Ph D degrees.
9. The engineering community should encourage participation in efforts to improve public understanding of engineering and the technology literacy of the public and efforts to improve Science, Mathematics, Engineering and Technology (SMET) education at K-12 levels.

It is clear from these two reports that the professional engineering societies are strongly in favor of a professional engineering degree to allow graduates to fully enter into the real practice of engineering upon graduation. Internationally the five-year program is the standard for professional practice in the field.

The proposed program addresses this need for five-year degree program that will fully prepare students for professional practice.

**3.If an external advisory or steering committee was used to develop the program, identify committee members and their affiliations, and describe the committee's role.**

The program was developed by faculty in the department and reviewed by College of Engineering, Graduate and Undergraduate Curricular Affairs Committee. The program was reviewed by Departments Industrial Advisory Board and presented to the College of Engineering Advisory Council.

**C Institutional Role: The program should be clearly related to the role and mission of the institution, and be compatible with other programs and activities of the institution.**

**1.Explain how the program is consistent with the role and mission of the institution and how it is related to the institution's academic plan.**

The program is consistent with University, College and Department mission statements. It represents a natural extension of the department's undergraduate and MS degree programs to meet the need for educating the practicing engineer for the next decade.

**2.Explain the relationship of the program to other programs offered by the institution.**

The program is a minor modification of the existing BS and MS degree programs in the department.

**D. Inter-institutional Considerations:** The program should be consistent with all policies of the Board of Governors pertaining to the coordination and collaboration between public institutions of higher education.

**1. List similar programs offered in the state and region, and compare the objectives of similar programs.**

No similar programs offered either at URI or any other institution in the state.

**2. Estimate the projected impact of the program on the other higher education institutions in Rhode Island.**

No impact on other institutions of higher education.

**3. Describe any provisions for transfer students (into or out of the program) at other Rhode Island public institutions of higher education. Describe any transfer agreements with independent institutions.**

No additional provisions beyond current College of Engineering practice.

**4. Describe any cooperative arrangements with institutions offering similar programs. (Signed copies of any agreements pertaining to use of faculty, library, equipment, and facilities should be attached.)**

None

**5. If external affiliations are required, identify providing agencies. (Indicate the status of any arrangements made and append letters of agreement, if appropriate.)**

None required

**6. Indicate whether the program will be available to students under the New England Board of Higher Education (NEBHE) Regional Student Program (RSP).**

Yes

**E. Program:** The program should meet a recognized educational need and be delivered in an appropriate mode.

**1. Prepare a typical curriculum display for one program cycle for each sub-major, specialty or option, including the following information:**

Uses existing curriculum for both undergraduate and graduate programs

***a. Names of courses, departments, and catalog numbers, and brief course descriptions for new courses, preferably as these will appear in catalog.***

OCE 500 Ocean Engineering Design Studies

Off campus ocean engineering design studies. Must include significant hands on (laboratory or field) experience, use of engineering design tools, and the design, development, test and evaluation of hardware/software systems. Pre: Junior standing in Ocean Engineering and permission of department chair

***b. Required courses in area of specialization and options, if any.***

OCE 491 or 492 (3 credits) focused on a research project lead by a faculty member; OCE 500 Ocean Engineering Design Studies (6 credits) (topic areas must be different from MS thesis project), ISE 500 (3 credits), OCE/ELE 550 (3 credits); and pass the Fundamentals in Engineering (FE) offered twice annually by the RI Board of Professional Engineers.

***c. Course distribution requirements, if any, within the program, and general education requirements.***

No additional requirements

***d. Total number of free electives available after specialization and general education requirements are satisfied.***

One, as in existing BS curriculum

***e. Total number of credits required for the completion of the program or for graduation. Present evidence that the program is of appropriate length as illustrated by conformity with appropriate accrediting agency standards, applicable industry standards, or other credible measure, and comparability of lengths with similar programs in the state or region.***

As in existing degree programs: 130 credits BS and 30 credits MS, total 160 credits.

***f. Identify any courses that will be delivered or received by way of distance learning.***

None

**2. Describe certification/licensing requirements, if any, for program graduates and the degree to which completion of the required course work meets said requirements. Indicate the agencies and timetables for graduates to meet those requirements**

Program begins students on first step to licensing as a Registered Professional Engineer, namely designation as an Engineer in Training (EIT).

**F. Faculty and Staff:** The faculty and support staff for the program should be sufficient in number and demonstrate the knowledge, skills, and other attributes necessary to the success of the program.

**1. List present and proposed faculty who will be assigned to the program. The following information should be provided, where possible, for each:**

Will use existing department faculty. No additional faculty required.

**2. List anticipated support staff and indicate what functions they will perform, the percent of their time to be spent in the program, and whether these are reassignments or new positions.**

Will use existing support staff.

**3. Summarize the annual costs for faculty and support staff by indicating salaries and fringe benefits (adjusted for the proportion of time devoted to the program). For the first year, distinguish between existing resources and new resources. Specify if resources are to be provided by more than one department. (Include information in proposed budget.)**

No impact on faculty or staff support costs.

**G. Students:** The program should be designed to provide students with a course of study that will contribute to their intellectual, social and economic well-being. Students selected should have the necessary potential and commitment to complete the program successfully.

**1. Describe the potential students for the program and the primary source of these students. Indicate the extent to which the program will attract new students or will draw students from existing programs. For graduate programs, indicate which undergraduate programs would be a potential source of students.**

3 to 5 students from existing BS program selected based on application.

Will likely draw new students to Ocean Engineering degree programs.

**2. Estimate the proposed program size and provide projected annual full-time, part-time, and FTE enrollments for one complete cycle of the program.**

3 to 5 student per class, three class years, hence 9 to 15 FTE students when fully operational.

**3. List the program admission and retention requirements for students. Provide descriptions of the specific criteria and methods used to assess students' ability to benefit from the program. Describe how satisfactory academic progress will be determined.**

Admission requirements: Junior standing in Ocean Engineering, grade point average of 3.0, or higher, overall and 3.2 in engineering courses.

No retention requirements; students can move to traditional BS and MS programs if the pace of accelerated program is too fast for them.

**4. Indicate available funds for scholarships and fellowships. (Include information in proposed budget.)**

None at this time.

**H. Administration:** Administrative oversight for the program should be sufficient without endangering the existing programs.

**1. Indicate how the program will be administered, and the degree to which this work will affect the administrative structure in which it is located.**

Current administrative procedures will be used.

**2. Indicate the names and titles of the persons who will have administrative responsibility for the program, and the percent of time each will spend on the program.**

Department Chair: Stephan Grilli.

**3. Indicate additional annual administrative salaries and related costs to be associated with the program. (Include information in proposed budget.)**

None

**I. Instructional Resources:** The instructional resources should be sufficient in quantity, quality and timeliness to support a successful program.

**1. Estimate the number of relevant print, electronic and other non-print [library materials needed](#), and those available, for the program and compare with recommendations of national accrediting agencies, the standards of the Association of College and Research Libraries, and/or any other recognized measures of general library adequacy in terms of collections, staff, space and operations.**

None beyond existing resources

**2. Identify and evaluate other instructional resources and instructional support equipment (such as computers, laboratory equipment and supplies, etc.) in terms of overall capability to satisfy the needs of the program. If these instructional resources are considered insufficient or if upgrading is necessary for the development of the program, the additional needs should be detailed.**

No impact, since program simply retracts existing degree students.

**3. Estimate annual expenditures for instructional resources. The information should reflect the annual operation and maintenance of the instructional resources, recurrent costs and costs for necessary additions. (Include information in [proposed budget](#).)**

None beyond existing resources.

**J. Facilities and Capital Equipment:** Facilities and capital equipment should be sufficient in quantity, quality and timeliness to support a successful program.

1. Describe the facilities and capital equipment (e.g., classrooms, office space, laboratories, telecommunications equipment, etc.) and assess the adequacy of these resources relative to the program, and to the requirement of the Americans with Disabilities Act.

Uses existing resources.

2. If new or renovated facilities are necessary, explain in detail (e.g., requirements, costs, sources of revenue, and expected date of completion). (Include information in [proposed budget](#).)

None

**K. Financial Considerations:** Projected revenues should be sufficient to support a successful program, and must cover the estimated costs of the program.

1. Expenditures for program initiation and annual operation should be estimated and displayed in the proposed budget. The summary should enable the reader to understand expenditures for a period representative of one full program cycle. A model for presenting expenditure estimates for academic program changes appears in [Budget Model](#). One column should be completed for each year in the cycle.

No new additional expenses

2. Revenue estimates should be provided for a similar period of time. For a new program, the appropriateness and feasibility of instituting differential tuition and/or fees should be addressed. A model for presenting revenue estimates for academic program changes appears in [Budget Model](#). One column should be completed for each year in the cycle. For the first year, distinguish between existing and new resources. Caution: The expenditure and revenue estimates are the portion of the proposal which tend to cause the greatest difficulty. It is advised that the model forms be used for reporting this information and that proposal developers work with appropriate budget personnel.

No immediate impact on revenue. Longer-term increases MS graduate enrollment. Improve quality of undergraduate students.

3. Describe how current institutional resources will be redeployed or extra institutional resources will be obtained to support the program (e.g., describe program eliminations, external sources of monies, etc.)

No redeployment of resources.

**L. Evaluation:** Appropriate criteria for evaluating the success of a program should be developed and used.

**1. List the criteria by which the institution plans to evaluate the program during the first program cycle. Describe provisions made for external evaluation, as appropriate.**

Department faculty will review the program annually. An in depth review will be held after the first class graduates. The program will also be reviewed by the department Industrial Advisory Board at this time. Annual and three year adjustments to the program will be made as appropriate.

**2. If the proposed program is eligible for specialized accreditation, indicate name and address of the accrediting agency and a list of accreditation requirements. If specialized accreditation is available but not sought, indicate why.**

No change is anticipated in the existing accreditation process by the Accreditation Board of Engineering and Technology (ABET) of the BS program in Ocean Engineering.