**Academic Programs – Ocean Engineering Program**

**The program objectives and outcomes should be changed to the following text (where the text in red indicates the change)**

**Ocean Engineering Program Educational Objectives**

Graduates of the ocean engineering baccalaureate program at the Florida Atlantic University, within a few years after graduation, will:

1. Demonstrate the ability to carry out engineering tasks in the multi‐disciplinary field of ocean engineering.
2. Make meaningful contributions in terms of design, development and integration of engineering systems, particularly for applications in the ocean environment.
3. Pursue further study for the graduate degree and/or participate in professional societies.
4. Develop and exhibit leadership qualities in their engineering work.
5. Understand various complexities and issues of the contemporary society and make professional contributions in the larger and long‐term interest of the society.

**Educational Outcomes for Student Performance**

The program will meet the above objectives by establishing the following educational outcomes for student performance. At the time of graduation, the students will attain the following:

1. An ability to apply knowledge of mathematics, science, and engineering
2. An ability to design and conduct experiments, as well as analyze and interpret data
3. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
4. An ability to function on multidisciplinary teams
5. An ability to identify, formulate, and solve engineering problems
6. An understanding of professional and ethical responsibility
7. An ability to communicate effectively
8. The broad education necessary to understand the impact of engineering solutions in a global, economic, and societal context
9. A recognition of the need for, and an ability to engage in lifelong learning
10. A knowledge of contemporary issues
11. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

**The table of courses in the Ocean Engineering Core should be changed to the following. The changes consist of: 1) the Electronics I EEE3300 (4 credit hours) is replaced by Electro-Mechanical Devices EGM 4045 (3 credit hours), 2) the 2 Non-Required Elective courses are no longer offered, and should be removed.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Ocean Engineering Core | | | | |
| Introduction to Logic Design | CDA 3201C | | | 4 |
| Circuits 1 | EEL 3111 | | | 3 |
| Electro-Mechanical Devices | EGM 4045 | | | 3 |
| Fundamentals of Engineering | EGN 1002 | | | 3 |
| Statics | EGN 3311 | | | 3 |
| Dynamics | EGN 3321 | | | 3 |
| Strength of Materials | EGN 3331 | | | 3 |
| Engineering Thermodynamics | EGN 3343 | | | 3 |
| Engineering Materials 1 | EGN 3365 | | | 3 |
| Fabrication of OE Systems | EOC 2801 | | | 1 |
| Vibrations | EOC 3114 | | | 3 |
| Fluid Mechanics 1 | EOC 3123 | | | 4 |
| Ocean Engineering Lab | EOC 3130L | | | 3 |
| Materials 1 – Marine Topics | EOC 3213 | | | 1 |
| Acoustics 1 | EOC 3306 | | | 3 |
| Structural Analysis 1 | EOC 3410C | | | 3 |
| Ocean Engineering Systems Control and  Design | EOC 4804 | | | 3 |
| Ocean Engineering Systems Control and  Design Project | EOC 4804L | | | 4 |
| Ocean Thermal Systems | EOC 4193 | | | 3 |
| Ocean Wave Mechanics | EOC 4422 | | | 3 |
| Dynamic Systems | EGN4432 | | | 3 |
| Ocean and Environmental Data Analysis | EOC 4631C | | | 3 |
| Choose two of the following four courses: | | | | |
| Structural Analysis 2 | | EOC 4412 | 4 | |
| Fluid Mechanics 2 | | EOC 4124 | 4 | |
| Acoustics 2 | | EOC 4307C | 4 | |
| Engineering Materials 2 | | EOC 4201C | 4 | |

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| --- | --- | --- |
| Non-Engineering Core  (grade of "C" or higher required) | | |
| Engineering Math 1 | MAP 3305 | 3 |
| Engineering Math 2 | MAP 4306 | 3 |
| C for Engineers | EEL 2161 | 3 |
| Engineering Graphics | EGS 1111C | 3 |
| Oceanography | OCE 3008 | 3 |

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| --- | --- | --- |
| Non-Required Electives | | |
| ~~Professional Development~~ | ~~EOC 2902~~ | ~~1~~ |
| ~~Ocean Engineering Diving~~ | ~~EOC 2131C~~ | ~~1~~ |

**The sample four-year program of study for BSOE should be changed to the following. The only change consists of: the Electronics I EEE3300 (4 credit hours) is replaced by Electro-Mechanical Devices EGM 4045 (3 credit hours).**

|  |  |  |
| --- | --- | --- |
| First Year, Fall (14 credits) | | |
| College Writing 1 | ENC 1101\* | 3 |
| Engineering Chemistry 1 or General Chemistry I | EGN 2095 or CHM 2045 | 3 |
| Engineering Chemistry 1 Lab or General Chemistry 1 Lab | EGN 2095L or CHM2045L | 1 |
| Calculus for Engineers 1 | MAC 2281 | 4 |
| Fundamentals of Engineering | EGN 1002 | 3 |

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| --- | --- | --- |
| First Year, Spring (14 credits) | | |
| College Writing 2 | ENC 1102\* | 3 |
| Oceanography | OCE 3008 | 3 |
| Physics for Engineers 1 | PHY 2043 | 3 |
| General Physics 1 Lab | PHY 2048L | 1 |
| Calculus for Engineers 2 | MAC 2282 | 4 |

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| --- | --- | --- |
| First Year, Summer (10 credits) | | |
| Calculus with Analytic Geometry 3 | MAC 2313 | 4 |
| Engineering Graphics\*\* | EGS 1111C | 3 |
| [Foundations of Society and Human Behavior course](http://www.fau.edu/academic/registrar/FAUcatalog/degreerequirements.php#fdnsoc) | | 3 |

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| --- | --- | --- |
| Second Year, Fall (13 credits) | | |
| Engineering Math 1 | MAP 3305 | 3 |
| Physics for Engineers 2 | PHY 2044 | 3 |
| General Physics 2 Lab | PHY 2049L | 1 |
| Statics | EGN 3311 | 3 |
| C for Engineers | EEL 2161 | 3 |

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| --- | --- | --- |
| Second Year, Spring (13 credits) | | |
| Dynamics | EGN 3321 | 3 |
| Engineering Thermodynamics | EGN 3343 | 3 |
| Fabrication of OE Systems | EOC 2801 | 1 |
| Ocean Engineering Lab | EOC 3130L | 3 |
| Engineering Math 2 | MAP 4306 | 3 |

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| --- | --- | --- |
| Second Year, Summer (9 credits) | | |
| Circuits 1 | EEL 3111 | 3 |
| [Foundations of Global Citizenship course\*](http://www.fau.edu/academic/registrar/FAUcatalog/degreerequirements.php#fdnglobal) | | 3 |
| [Foundations of Creative Expressions course](http://www.fau.edu/academic/registrar/FAUcatalog/degreerequirements.php#fdncreate) | | 3 |

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| --- | --- | --- |
| Third Year, Fall (16 credits) | | |
| Dynamic Systems | EGN 4432 | 3 |
| Strength of Materials | EGN 3331 | 3 |
| Engineering Materials 1 | EGN 3365 | 3 |
| Introduction to Logic Design | CDA 3201 | 4 |
| [Foundations of Society and Human Behavior course](http://www.fau.edu/academic/registrar/FAUcatalog/degreerequirements.php#fdnsoc) | | 3 |

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| --- | --- | --- |
| Third Year, Spring (13 credits) | | |
| Acoustics I | EOC 3306 | 3 |
| Fluid Mechanics 1 | EOC 3123 | 4 |
| Ocean Thermal Systems | EOC 4193 | 3 |
| Structural Analysis 1 | EOC 3410C | 3 |

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|  |  |  |
| --- | --- | --- |
| Third Year, Summer (9 credits) | | |
| Electro-Mechanical Devices | EGM 4045 | 3 |
| [Foundations of Global Citizenship course](http://www.fau.edu/academic/registrar/FAUcatalog/degreerequirements.php#fdnglobal) | | 3 |
| [Foundations of Creative Expressions course\*](http://www.fau.edu/academic/registrar/FAUcatalog/degreerequirements.php#fdncreate) | | 3 |

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| --- | --- | --- |
| Fourth Year, Fall at SeaTech Campus (13 credits) | | |
| Ocean Systems Control and Design | EOC 4804 | 3 |
| Vibrations | EOC 3114 | 3 |
| Ocean and Environmental Data Analysis | EOC 4631C | 3 |
| Materials 1 - Marine Topics | EOC 3213 | 1 |
| Ocean Wave Mechanics | EOC 4422 | 3 |

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| --- | --- | --- |
| Fourth Year, Spring at SeaTech Campus (12 credits) | | |
| Ocean Engineering Systems Control  and Design Project | EOC 4804L | 4 |
| Fluid Mechanics 2\*\*\* | EOC 4124 | 4 |
| Engineering Materials 2\*\*\* | EOC 4201C | 4 |
| Acoustics 2\*\*\* | EOC 4307C | 4 |
| Structural Analysis 2\*\*\* | EOC 4412 | 4 |
| Total | | 136 |

**Course Descriptions – Ocean Engineering Program**

**Remove the following courses as they are no longer offered or required   
(must be submitted on course termination forms; not to be considered as part of this proposal)**

**Electronics 1 (EEE 3300) 4 credits**

**Ocean Engineering Diving (EOC 2131C) 1 credit**  
**(Not a required course)**   
*Prerequisite: Nationally recognized dive certification and permission of instructor*  
This course averages one lecture and one four-hour dive trip per week. Lectures cover scientific diving techniques. Field work provides students with hands-on experience in conducting underwater scientific experiments.

**Professional Development for Ocean Engineers (EOC 2902) 1 credit  
(Not a required course)**  
*Prerequisite: ENC 1101*  
A study of professionalism as it relates to ocean engineering with the following topics: written and oral business communications and processes, company organization and operations, management of resources, and professional ethics. *Grading: S/U*

**Electro-Mechanics, Electrical Machines, and Analog Electronics (EOC 3636) 3 credits**  
*Prerequisite: EEL 3111*  
Designed for Ocean Engineering majors, the course deals with fundamentals of electrical and electronic machines; theory of operational amplifiers and filters; semi-conductors, diodes and transistors; and electronic instruments and measurements.

**Replace the following course description   
(must be submitted on course change form; not to be considered as part of this proposal)**

**Dynamic Systems (EOC 4620) 3 credits**  
*Prerequisite: EOC 3114, EEL 2161*  
Course examines mathematical modeling of dynamic systems, linear systems analysis in the time and frequency domains, and analysis and design of control systems. Students are also exposed to practical control implementation issues through real time control experiments.

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**Dynamic Systems (EGN 4432) 3 credits**  
*Prerequisite: EGN 3321* - Dynamics or equivalent, *EEL 2161* C for Engineers, *MAP 3305* – Engineering Mathematics I

To acquaint Ocean and Mechanical Engineering students with basic knowledge about dynamic systems, systems stability analysis and basic controller design

**Add the following course description**

**Electro-Mechanical Device (EGM 4045) 3 credits**  
[*(See Mechanical Engineering courses, this section)*](http://www.fau.edu/academic/registrar/PREcatalog/engineeringDES.php#me)