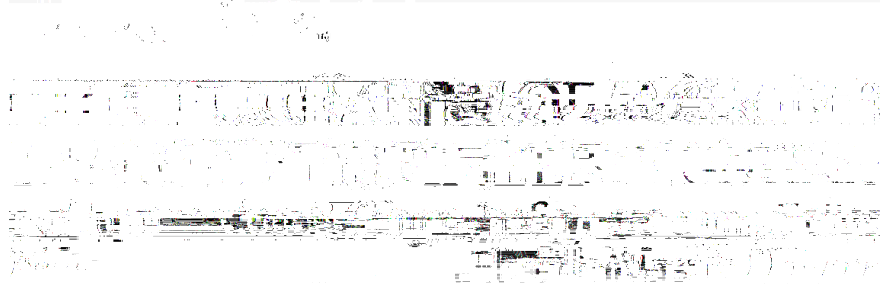


CALL



## Continuous Improvement Plan

### Ocean Engineering Undergraduate Curriculum

Plan for the Assessment and Continuous Improvement of the  
Ocean Engineering Undergraduate Curriculum  
Department of Ocean and Mechanical Engineering  
Florida Atlantic University  
January 2, 2018

The Ocean Engineering program is accredited by the Engineering Accreditation Commission (EAC) of ABET, 111 Market Place, Ste. 1050, Baltimore, MD 21202-4012 ([www.abet.org](http://www.abet.org)). Florida Atlantic University is accredited by the Southern Association of Colleges and Schools (SACS) Commission on Colleges to award associate, bachelor, masters, specialist and doctoral degrees. Contact the Commission on Colleges at 1866 Southern Lane, Decatur, Georgia 30033-4097. Both of these organizations have moved towards the requirement of a Continuous Improvement Program (CIP) for the curriculum and the progress of the students. The department has responded to these requirements in the following manner:

1. The establishment of a mission statement for the Ocean Engineering Program.
2. The establishment of educational objectives for the Ocean Engineering Program.
3. The development of student educational outcomes for student performance.
4. A mapping of the student educational outcomes to the educational objectives.
5. A mapping of the contents of each required course in the curriculum to the student educational outcomes.
6. The responsibility of the OE Undergraduate Committee for reviewing course sequences in the program.
7. The development of assessment tools for each of the intended courses and student educational outcomes.
8. The forwarding of the recommendations of the OE Undergraduate Committee to the faculty at large, for decisions regarding adjustments or changes that are necessary to insure continuous improvement of the Ocean Engineering program.

Each of these steps will be presented or discussed in detail. A flowchart has been developed to show the linking of the different segments of the Continuous Improvement Program, which is presented in Appendix 1. The Educational Objectives established for the Ocean Engineering Program will be reviewed every three years.

1. Mission Statement of the Ocean Engineering Program

The program mission is to provide an outstanding ocean engineering program for learning and research and to prepare individuals to meet national and international engineering challenges in the ocean environment.

## 2. Educational Objectives for the Ocean Engineering Program

Graduates of the ocean engineering baccalaureate program at the Florida Atlantic University,

- k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
4. The mapping of the Ocean Engineering student educational outcomes to the educational objectives is presented in Appendix 2.
5. The mapping of each required course in the Ocean Engineering program to the student educational outcomes is presented in Appendix 3.
6. The OE Undergraduate Committee develops and maintains the course syllabus for each course. These are posted on the internet on the Ocean Engineering web page at [www.ome.fau.edu](http://www.ome.fau.edu). It establishes the prerequisites and co-requisites for each course, the topics to be included and the expected course outcomes. The committee is responsible for addressing the feedback received from the surveys and assessment results and forwarding recommendations for change to the

improvements are shared with the program faculty and steps are taken for program improvement. The exit interview is conducted every year.

Each year, the College of Engineering and Computer Science, through Educational Benchmark, Inc. (EBI), conducts a survey of all graduating seniors on the quality of the education received at Florida Atlantic University. The EBI survey is standardized and results of the individual program as well as its comparison with similar programs (ocean engineering, naval architecture and marine engineering) at other institutions are provided. The survey questionnaire contains close to a hundred questions grouped into 15 factors. As shown in Appendix 4-4, many of the EBI questions are directly related to the ABET student outcomes.

A sample form used to survey students on one of the OE courses EGN 4432 (Dynamic Systems) is given in Appendix 4-5. Similar forms are used to survey students on all other OE courses. This survey asks students to assess their self-reported attainment of specific course outcomes using a scale ranging from 1 (lowest) to 10 (highest). It

recommendations of the OE Undergraduate Committee will be acted upon in a faculty meeting as deemed appropriate. Course or curriculum changes will be forwarded to the OE Undergraduate Committee for implementation.







Appendix 3  
Mapping of OE Courses to Educational Outcomes

## Appendix 4-1 Alumni Survey Form for Outcomes

Using a scale ranging from 1 to 10, with 1 meaning unsatisfactory, 5 satisfactory and 10 excellent, please assess how the BSOE program at FAU fares in achieving the learning outcomes through its curriculum. If unable to rank any of the outcome(s), you leave that blank. Please return the completed form to Dr. An ([pan@fau.edu](mailto:pan@fau.edu)). Thanks.

<b>BSOE Student Outcomes</b>	<b>Assessment</b>
The learning outcomes of the BSOE program at FAU are the following:	1 .....5.....10 Unsatisfactory      Satisfactory Excellent
(a) an ability to apply knowledge of mathematics, science, and engineering	
(b) an ability to design and conduct experiments, as well as to analyze and interpret data	
(c) 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	
(d) an ability to function on multidisciplinary teams	
(e) an ability to identify, formulate, and solve engineering problems	
(f) an understanding of professional and ethical responsibility	
(g) an ability to communicate effectively	
(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	
(i) a recognition of the need for, and an ability to engage in life-long learning	
(j) a knowledge of contemporary issues	
(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	

## Appendix 4-2 Employer Survey Form for Outcomes

Based on the performance of FAU-BSOE graduates, please assess how the BSOE program at FAU fares



Appendix 4-4 EBI Survey Questions related to Student Outcomes

<b>ABET Outcome</b>	<b>EBI Questions</b>
	Q45, 46, 47. Application of math, science and engineering.
	Q48, Q49 and Q50. Design and conduct experiments and analyze data
	Q51. Technical Design.

	Q62. Ability to use modern engineering tools
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Appendix 4-5

Student Survey of Course Outcomes

Course Number and Title: EGN 4432 Dynamic Systems

Semester Taught: \_\_\_\_\_

Instructor: \_\_\_\_\_

Please use this form to rate your personal feelings of achievement of the published outcomes for the course as listed below. The following 0 to 5 rating scale should be used in assessing your achievement of the outcomes. This information will be presented for review to the Department ABET/SACS committee at the end of each semester. The committee will evaluate performance of the specified outcomes by the students and make recommendations for changes as appropriate.

5 - Complete understanding of the technical content of the outcome or the specified skills and a confidence in applying the techniques to engineering problems.

4 - Good understanding of the technical content of the outcome or the specified skills and an ability to apply the techniques to engineering problems.

3 - Adequate understanding of the technical content of the outcome or the specified skills and some ability to apply the techniques to engineering problems.

Outcome 5: An ability to design a simple feedback control system that meets desired system output specifications. (c) \_\_\_\_\_



Appendix 4-6 - Direct Course Assessment Form

EGN 4432 Dynamic Systems

Semester / Year: \_\_\_\_\_

Direct Course Assessment on Course Outcomes

Outcome	Assignment	Course Assignment Assessment Ave (10pt max)
1		
2		
3		
4		
5		

**NOTE:** Please do not include students' grades who withdrew your class.

Course Outcomes: (letters in parentheses indicate correlation of the outcome with the appropriate program outcomes a-k)

Outcome 1: A basic knowledge of the fundamental principles governing the dynamics of simple mechanical, thermal, fluid and electrical systems. (a)

Outcome 2: An ability to apply the knowledge of mathematics and engineering to model simple dynamic systems. (a)

Outcome 3: An ability to simulate dynamic systems using computer simulation tools. (k)

Outcome 4: An ability to characterize the stability properties of a dynamic system. (e)

Outcome 5: An ability to design a simple feedback control system that meets desired system output specifications. (c)

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## Appendix 4-7

Appendix 4-8 (Frequency of Assessment)

Assessment Method	Outcomes Assessed	Frequency	Rationale and Discussion
<b>Indirect Assessments</b>			
Alumni Survey	A-K	Once every 3 years	Once every 3 years the alumni that graduated over the previous five years are surveyed. Thus all graduates are surveyed at least once the achievement of outcomes
Employer Survey	A-K	Once every 3 years	This survey is conducted along with the alumni survey to get the viewpoints of both the graduates and their employers. The frequency is found to be just about right to frequency is found to

Appendix 4-9 (Satisfactory Attainment Criteria)

Satisfactory Attainment Criteria for the Indirect Assessments

<b>Indirect Assessment</b>	<b>Satisfactory Attainment Criteria set by faculty</b>
Alumni Survey (2012-2013)	At least 67% of the alumni find that all outcomes are achieved at a satisfactory level
Employer Survey (2012-2013)	At least 67% of the employers find that all outcomes are achieved.
Graduating Senior Survey (2013, 2014)	At least 67% of the graduates find that all outcomes are achieved.