Graduate Programs—NEW COURSE PROPOSAL

DEPARTMENT: CECE

COLLEGE: ENGINEERING AND COMPUTER SCIENCE

RECOMMENDED COURSE IDENTIFICATION:
PREFIX ENV COURSE NUMBER 6932 LAB CODE (L or C)
(TO OBTAIN A COURSE NUMBER, CONTACT MJENNING@FAU.EDU)
COMPLETE COURSE TITLE: Sustainability and Pollution Prevention

EFFECTIVE DATE
(first term course will be offered)
SPRING 2015

CREDITS:
3

TEXTBOOK INFORMATION:

GRADING (SELECT ONLY ONE GRADING OPTION): REGULAR X SATISFACTORY/UNSATISFACTORY

COURSE DESCRIPTION, NO MORE THAN THREE LINES:
The course introduces students to the principles of engineering sustainability, life cycle cost analysis, pollution prevention, and environmental resource management of infrastructure planning and design.

PREREQUISITES *:
NONE

COREQUISITES *:
NONE

REGISTRATION CONTROLS (MAJOR, COLLEGE, LEVEL) *:
NONE

* PREREQUISITES, COREQUISITES AND REGISTRATION CONTROLS WILL BE ENFORCED FOR ALL COURSE SECTIONS.

MINIMUM QUALIFICATIONS NEEDED TO TEACH THIS COURSE:
PH.D. IN CIVIL ENGINEERING OR CLOSELY RELATED FIELD

Faculty contact, email and complete phone number:
Daniel Meeroff, Ph.D.
dmeeroff@fau.edu
7-3099

Please consult and list departments that might be affected by the new course and attach
comments.
No other departments affected.

Date: 9/29/14

1. Syllabus must be attached; see
guidelines for requirements:
www.fau.edu/provost/files/course
syllabus_2012.pdf

2. Review Provost Memorandum:
Definition of a Credit Hour
www.fau.edu/provost/files/Definition
Credit_Hour_Memo_2012.pdf

3. Consent from affected departments
(attach if necessary)

FAUnewcourseGrad—Revised September 2013
Email this form and syllabus to UGPC@fau.edu one week before the University Graduate Programs Committee meeting so that materials may be viewed on the UGPC website prior to the meeting.
1. Course title/number, number of credit hours

| Sustainability and Pollution Prevention (ENV6932) | 3 credit hours |

2. Course prerequisites, corequisites, and where the course fits in the program of study

Prerequisites: None
This course introduces students to the principles of sustainability, life cycle cost analysis, pollution prevention, and environmental impacts of civil engineering and infrastructure planning and design.

3. Course logistics

Term: Spring 2015
This is a classroom lecture course
Class location and time: Tuesday 4:00 – 6:50 pm

4. Instructor contact information

<table>
<thead>
<tr>
<th>Instructor's name</th>
<th>Dr. Daniel E. Meeroff, Associate Professor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office address</td>
<td>Engineering West (EG-36) Bldg., Room 206</td>
</tr>
<tr>
<td>Office Hours</td>
<td>T/R 11:00 am – 12:20 pm</td>
</tr>
<tr>
<td>Contact telephone number</td>
<td>561-297-3099</td>
</tr>
<tr>
<td>Email address</td>
<td><a href="mailto:dmeeroff@fau.edu">dmeeroff@fau.edu</a></td>
</tr>
</tbody>
</table>

5. TA contact information

<table>
<thead>
<tr>
<th>TA's name</th>
<th>TBA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office address</td>
<td></td>
</tr>
<tr>
<td>Office Hours</td>
<td></td>
</tr>
<tr>
<td>Contact telephone number</td>
<td></td>
</tr>
<tr>
<td>Email address</td>
<td></td>
</tr>
</tbody>
</table>

6. Course description

The course introduces students to the principles of engineering sustainability, life cycle cost analysis, pollution prevention, and environmental resource management of infrastructure planning and design.

The class meets for one 170-minute lecture per week. Homework assignments are given weekly, typically. There is a major term paper with oral presentation, and a midterm exam and a final exam are given.

7. Course objectives/student learning outcomes/program educational objectives

<table>
<thead>
<tr>
<th>Course objectives</th>
<th>I. Present the fundamental concepts of sustainability in engineering, as applied to the analysis, design, modeling and operation of engineered systems.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>II. Expose students to energy management and environmental resource management tools.</td>
</tr>
<tr>
<td></td>
<td>III. Expose students to measurement tools associated with sustainable systems.</td>
</tr>
</tbody>
</table>
**Department of Civil, Environmental & Geomatics Engineering**  
**Florida Atlantic University**  
**Course Syllabus**

| Student learning outcomes & relationship to ABET a-k student outcomes | A. Ability to understand the fundamental sustainability concepts necessary to analyze basic civil/environmental engineering problems. (a, b, c, e, f, h, k)  
B. Ability to apply energy management and environmental resource management tools for basic civil/environmental engineering problems. (a, b, e, f, h, k)  
C. Ability to understand basic applications of sustainability measurement tools (b, e, f, h, j)  
D. Ability to communicate effectively about sustainability issues in environmental engineering (d, e, f, g, i)  
E. Ability to understand the sustainability issues involved in advanced or specialized environmental engineering coursework (e, f, h, j, k) |
|---|---|

**Relationship to program educational objectives**

| Objective 1: Practice civil engineering within the general areas of structural engineering, transportation engineering, geotechnical engineering, and water resources/environmental engineering in the organizations that employ them.  
Objective 2: Advance their knowledge of civil engineering, both formally and informally, by engaging in lifelong learning experiences including attainment of professional licensure, and/or graduate studies.  
Objective 3: Serve as effective professionals, based on strong interpersonal and teamwork skills, an understanding of professional and ethical responsibility, and a willingness to take the initiative and seek progressive responsibilities.  
Objective 4: Participate as leaders in activities that support service to, and/or economic development of, the region, the state and the nation | H  
H  
M  
H |

**8. Course evaluation method (note percentages subject to change)**

| Midterm(s) | 27%  
Final Exam | 33%  
Reports | 17%  
Class Assignments | 23%  
---|---  
---|---  
---|---  
---|---  
---|---  
---|--- |

Note: The minimum grade required to pass the course is C.

**Attendance** to class is required. You are expected to participate in all class sessions and keep up with the material. You are expected to participate in all class sessions. You are not expected to be a distraction in the class. Final grades will be reduced by one letter for class disruption of lack of participation (as determined by the instructor). Participation in University-approved activities or religious observances, with prior notice, will not be penalized. Keep copies of all quizzes and homework assignments for ABET purposes. Tests are open book, but NOT open notes or homework.

**9. Course grading scale**

There are no fixed criteria for the grading scale. The overall performance as related to course objectives and outcomes is evaluated and considered during grading.
## 10. Policy on makeup tests, late work, and incompletes

*Exams* will be given only at the scheduled times and places, unless previous arrangements have been made no less than one (1) full week in advance. No one is exempt from exams. *Makeups* are given only if there is solid evidence of a medical or otherwise serious emergency that prevented the student of participating in the exam. Makeup exams will be administered and proctored by department personnel unless there are other pre-approved arrangements. *Late work* is not acceptable. *Incomplete grades* are against the policy of the department. Unless there is solid evidence of medical or otherwise serious emergency situation, incomplete grades will not be given. Note: *Incomplete grades* are only reserved for those students who were passing but could not complete the required work due to exceptional circumstances.

## 11. Special course requirements

The goal of integrating writing in this course is to improve students' ability to produce professional quality engineering reports. Contact the University Center for Excellence in Writing at 561-297-3498 or [www.fau.edu/UCEW](http://www.fau.edu/UCEW) for assistance.

If you need help finding appropriate research or background information for reports, try the libguide: [http://libguides.fau.edu/basic_engineering-boca](http://libguides.fau.edu/basic_engineering-boca)

Report all technical problems in Blackboard to the IRM helpdesk ([http://www.fau.edu/helpdesk](http://www.fau.edu/helpdesk))

## 12. Classroom etiquette policy

1. Cell phones and beepers should have the ringers turned off as a courtesy to the instructor and your fellow classmates.
2. Computers must be closed and turned off in class
3. You can leave only on breaks
4. Exams will be given only at the scheduled times and places. No make-ups, except in documented emergencies. No one is exempt from the final examination.
5. Attendance to class is required. You are expected to attend and participate in all class sessions. Final grades will be reduced by one letter for every three (3) unexcused absences (as determined by the instructor). Attendance to at least one (1) professional meeting is required.
6. You are expected to complete the assigned reading prior to the date indicated on the class schedule, to do all homework assignments, and to participate fully in the group projects.
7. Assignments are due at the beginning of class on the date indicated on the assignment sheet. University policy requires that in order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular phones and laptops, are to be disabled in class sessions. You are expected to complete the assigned reading prior to the date indicated on the class schedule, to do all homework assignments, and to participate fully in the group projects.

## 13. Disability policy statement

In compliance with the Americans with Disabilities Act (ADA), students who require special accommodations due to a disability to properly execute coursework must register with the Office for Students with Disabilities (OSD) located in Boca Raton campus, SU 133 (561) 297-3880 and follow all OSD procedures.

## 14. Honor code policy
Consultation with your classmates on assignments is expected and encouraged; however what you turn in must be your own work. Representing the work of others as your own is unethical and may result in sanctions (see the FAU Policy on Academic Honesty). FAU is committed to a policy of honesty in academic affairs. The instructor's duty is to pursue any reasonable allegation, taking action where appropriate, as described in the appropriate section of the FAU Catalog [http://www.fau.edu/ug-cat/academic.htm#irregular] and the Florida Administrative Code. Please be advised that the copying of material from the world wide web or any other written material is considered plagiarism and is also a breach of the Honor Code.

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. See University Regulation 4.001 at [www.fau.edu/regulations/chapter4/4.001_Honor_Code.pdf](http://www.fau.edu/regulations/chapter4/4.001_Honor_Code.pdf).

Florida Atlantic University
Regulation 4.001 Code of Academic Integrity

(3) Purpose. Students at Florida Atlantic University are expected to maintain the highest ethical standards. Dishonesty is considered a serious breach of these ethical standards, because it interferes with the University mission to provide a high quality education in which no student enjoys unfair advantage over any other. Dishonesty is also destructive of the University community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility.

(2) Definitions. The FAU Code of Academic Integrity prohibits dishonesty and requires a faculty member, student, or staff member to notify an instructor when there is reason to believe dishonesty has occurred in a course/program requirement. The instructor must pursue any reasonable allegation, taking action where appropriate. Examples of academic dishonesty include, but are not limited to, the following:

(A) Cheating
1. The unauthorized use of notes, books, electronic devices, or other study aids while taking an examination or working on an assignment.
2. Providing unauthorized assistance to or receiving assistance from another student during an examination or while working on an assignment.
3. Having someone take an exam or complete an assignment in one's place.
4. Securing an exam, receiving an unauthorized copy of an exam, or sharing a copy of an exam.

(B) Plagiarism
1. The presentation of words from any other source or another person as one's own without proper quotation and citation.
2. Putting someone else's ideas or facts into your own words (paraphrasing) without proper citation.
3. Turning in someone else's work as one's own, including the buying and selling of term papers or assignments.

(C) Other Forms of Dishonesty
1. Falsifying or inventing information, data, or citations.
2. Failing to comply with examination regulations or failing to obey the instructions of an examination proctor.
3. Submitting the same paper or assignment, or part thereof, in more than one class without the written consent of both instructors.
4. Any other form of academic cheating, plagiarism, or dishonesty.

(3) Procedures.
(A) If the instructor determines that there is sufficient evidence to believe that a student engaged in dishonesty, the instructor will meet with the student at the earliest possible opportunity and provide notice to the student of the instructor's perception of the facts, the charges against the student, and the sanction. The instructor may not remove the student from the course until the appeal process has come to a conclusion.

(B) If, after this meeting, the instructor continues to believe that the student engaged in dishonesty, the instructor will provide the student written notice of the charges and the penalty. A copy of this statement shall be sent to the chair
## 15. Required texts/reading

1. Handouts provided by instructor
2. Blackboard registration

## 16. Supplementary/recommended readings

7. The Triple Top line vs Triple Bottom line

## 17. Supplementary/recommended websites

### 17. Course topical outline, including dates for exams/quizzes, papers, completion of reading

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction, Overview, Sustainability Measurement Systems, Indicators, Environmental, Economic, and Social Carrying Capacity, S-CORE data assessment tool</td>
</tr>
<tr>
<td>2</td>
<td>USGBC, LEED, ISO 14001, Sigma 6, Lean Manufacturing, Kaizen Analysis</td>
</tr>
<tr>
<td>3</td>
<td>Case Studies Involving Measurement Systems, Carbon Accounting</td>
</tr>
<tr>
<td>4</td>
<td>Life Cycle Assessment, Materials Flow Analysis, Design for Environment</td>
</tr>
<tr>
<td>5</td>
<td>Triple Bottom Line, Business/Engineering Protocols for Analysis</td>
</tr>
<tr>
<td>6</td>
<td>Developing Energy Portfolios, Energy Star Portfolio Manager</td>
</tr>
</tbody>
</table>
| 7    | Energy Management Systems and Energy Modeling  
Project 1: Modeling Building Energy Footprint and Assessment/Recommendations |
| 8    | Midterm Exam |
| 9    | Renewable Energy Options and Energy Efficiency |
| 10   | Pollution Prevention |
| 11   | Solid Waste Minimization Strategies |
| 12   | Environmentally Preferable Purchasing |
| 13   | Product Substitution, Green Chemistry |
| 14   | Presentations of Final Case Study |
| 15   | Final Exam |