FLORIDA INTERNATIONAL UNIVERSITY
Department of Civil and Environmental Engineering
EGN 4070: Engineering for Global Sustainability and Environmental Protection

Course Syllabus                          Spring 2015

Instructor: Anna R. Bernardo-Bricker, Ph.D.
Meeting Place and Time: Section U01: Mo, We  9:30 AM - 10:45 AM
Room EC 2420

Blackboard Assisted: https://fiu.blackboard.com
Instructor’s e-mail: abernard@fiu.edu
Instructor’s Office Location and Hours: EC 3746
Tuesday 10:00 to 11:00AM, Wednesday 1:00 to 2:00 PM Other times by appointment

Description: From FIU-Civil and Environmental Engineering-Undergraduate Catalog:
“This course examines the effects of modern humans on the environment and explores the role of engineers in creating an environmentally sustainable future. Also serves as a global learning course. Prerequisites: PHY 2048, MAC 2312.”

Objective: This course is intended to provide insight into engineering design for a sustainable future that protects the natural environment.

Textbook and other Reading Material:

Required Reading Material:
This is a **READING and WRITING INTENSIVE** course. The required textbook serves only as a broad guideline. Students will be given access to a collection of relevant and current literature from a variety of book chapters, congress proceedings and peer-reviewed articles mainly, but not exclusively, from ASCE & Sustainability, and EPA Green Water (Supply) Infrastructure.

Classwork: This course strongly depends on active, engaged participation in class activities and discussions. You should come to every class having read all of the required texts and watched the required videos. Assessment of reading and course engagement will be assessed through writing exercises, quizzes, and group work.

Individual Homework Assignments:
- Homework assignments must be submitted on the set due date. Late homework will NOT be accepted.
- These assignments consist mostly of reflective essays which are to be submitted via Turnitin™ within our course’s Blackboard. Guidelines for these assignments include:
  - Typed using Microsoft Words in Times New Roman 12 point font.
  - Must have a standard format of a 1” each margin on the left and right sides with a 0.5” setting for the bottom and top.
- Numerical Problems are to be completed handwritten on Engineering Paper.
- All assignments must include standard header including your complete name, class code and name, Professor’s full name, assignment date, and assignment name.
Capstone Group Assignment: 
Divided into groups of 3-4 people, students will analyze/study one case scenario. Details will be provided in late February.

Service Activity: 
Students will participate in a 3-hour volunteer day conducted at our FIU-Nature Preserve; and led by our University Office of Sustainability. This “volunteer day”, scheduled for Saturday April 4, is specifically focused on “Wetland Restoration Ecology”. The grade for service activity will be apportioned as 75% from attendance and participation and 25% from a brief individual writing assignment reflecting upon the association of the day’s activities to their larger vision as members of the engineering profession (civil or environmental).

Exam: 
There will be one final comprehensive exam assessing the level of knowledge and comprehension of the concepts and terminology learned throughout the course. This exam consists of a combination of short concept or reflective questions, graphic interpretation, and fundamental quantitative problem solving.

Grade Calculation:

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<th>Percentage</th>
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<tr>
<td>All forms of Classwork:</td>
<td>25%</td>
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<tr>
<td>Homework (Mostly Reflective Essays):</td>
<td>20%</td>
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<tr>
<td>Service Activity:</td>
<td>15%</td>
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<td>Capstone Group Assignment (Written + Presentation):</td>
<td>20%</td>
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<tr>
<td>Exam:</td>
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Letter Grade will be assigned based on the following scale:

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<tr>
<td>A</td>
<td>94.0</td>
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<td>C</td>
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<tr>
<td>A-</td>
<td>90.0</td>
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<tr>
<td>B</td>
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<tr>
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<td>78.0</td>
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<td>D-</td>
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<tr>
<td>C+</td>
<td>74.0</td>
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Academic Misconduct: 
Students are expected to uphold the standards of academic integrity and the policies of the University regarding conduct. Cheating and plagiarism will not be tolerated; these offenses can result in failing the course, suspension or expulsion from the University.

College of Engineering and Computing Misconduct Statement:
"Florida International University is a community dedicated to generating and imparting knowledge through excellent teaching and research, the rigorous and respectful exchange of ideas, and community service. All students should respect the right of others to have an equitable opportunity to learn and honestly to demonstrate the quality of their learning. Therefore, all students are expected to adhere to a standard of academic conduct, which demonstrates respect for themselves, their fellow students, and the educational mission of the University. All students are deemed by the University to understand that if they are found responsible for academic misconduct, they will be subject to the Academic Misconduct procedures and sanctions, as outlined in the Student Handbook."

Refer to the FIU Student Handbook for full details on what constitutes academic dishonesty and misconduct as well as the procedures for resolution of pertaining matters within the University judiciary procedures.
Learning Outcomes: By the end of this course, students should be able to:

- Appreciate the impact of modern humans on the earth’s carrying capacity.
- Discuss some of the current environmental and social sustainability challenges.
- Describe the major components/principles of sustainable development.
- Articulate the role of the civil and environmental engineer in identifying the resources, technologies and integrative design strategies that support sustainable developments.
- Recognize the methods, tools, and incentives used to “quantify” or evaluate the various factors that relate to the sustainability of a project.
- Assess, judge, evaluate, interpret, justify, and/or determine design solutions that include consideration of sustainable development.

ABET Outcomes: This course is designed to meet the following ABET-related objectives and outcomes:

1- Technical proficiency:
   (a) an ability to apply knowledge of mathematics, science, and engineering.
   (e) an ability to identify, formulate, and solve engineering problems
   (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

2- Communication:
   (d) an ability to function on multidisciplinary teams
   (g) an ability to communicate effectively

3- Responsible Citizenship:
   (h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
   (j) a knowledge of contemporary issues

The outcome identifiers, herein used correspond to the naming system that is used in the ABET Criteria for Accrediting Engineering Programs (www.abet.org).

Global Learning Outcomes: This course is also intended to serve as an upper division elective addressing FIU’s global learning outcomes. The following global learning outcomes will be addressed:

**Global Awareness**: Students will demonstrate an understanding of the interrelatedness of environmental problems around the world; that these problems have no national borders; and that the extent of these problems is affected by burgeoning human population and consumption, as well as by different socioeconomic, technological, and other conditions. This outcome will be assessed through individual written reflective essays on assigned reading materials and in the final exam.

**Global Perspective**: Students will be able to conduct an analysis of the global nature of a selected environmental problem and the extent to which factors such as economics, technology, and society contribute to the problem. This outcome will be assessed through individual written reflective essays on assigned reading materials and in the final exam.

**Global Engagement**: Students will demonstrate a willingness to develop an engineering approach, solution, or technology that avoids or reduces adverse environmental impact, is more sustainable, and is appropriate within the framework of economic, technological, and societal factors at national, regional, and global levels. This outcome will be assessed through: participation in class activities, volunteer service, and a group paper with oral presentation based on analysis of a case study.