Syllabus – Spring 2018
CE 465: Green and Sustainable Civil Engineering
John A. Reif, Jr. Department of Civil and Environmental Engineering

Course Information

Title: CE 465, Green and Sustainable Civil Engineering
Class Location: CKB 212
Meeting Times: Wednesday and Friday: 1:00-2:25
Credit Hours: 3 Credits

Instructor

Matthew P. Adams, Ph.D.
Office: Colton 266
E-mail: Adams@njit.edu
I respond to course e-mails twice a day, and do not check e-mails on Saturday or Sunday.

Office Hours

- Tuesday: 10:30 AM – 12:00 PM
- Friday: 10:30 AM – 12:00 PM
- Open door policy (if the door is open, come on by).
- By appointment

Required Pre-requisites

The required prerequisite for this course is CE 210: Construction Methods and Procedures

Course Description

Designed to teach students currently available approaches that incorporate renewable energy and sustainable development concepts in civil engineering projects. This will include various methods of planning, design, and evaluation that promote increased energy efficiency and sustainable use of materials. Cost estimating and life cycle planning will also be included. The course will encourage students to look beyond the information in the course, to come up with additional methodologies, which may not currently be in use. Topics include: sustainability, life cycle assessment, LEED, Living Building Challenge, Green Roads, sustainability software

Learning Outcomes

Upon completion of this course, students will be able to:

1. Define sustainability in their own words and relate how sustainability is defined in the context of new construction as well as renovation and rehabilitation.
2. Identify criteria essential to determining what makes a sustainable technology "green".
3. Demonstrate concepts of life-cycle analysis including economic and sustainability aspects and apply these concepts to sustainable construction.
4. Understand and evaluate green building evaluation programs (LEED, LBC, GreenRoads) for their ability to rate sustainability and applicability to certain projects.
5. Demonstrate improved technical writing and presentation skills through individual and group assignments.

Course Website

Information about the course, as well as many of the assignments and project guidelines will be posted on the course website. This can be accessed through moodle.njit.edu

Required Reading Materials

There is no required text for this course. Students will be provided with handouts and slides throughout the course on Moodle course website.

Additional Reading Materials

Gibaldi, J., MLA Handbook for Writers of Research Papers, 6th or 7th Edition, Modern Language Association, New York, New York, March 2009.

-or-

University of Chicago Press Staff, The Chicago Manual of Style, 15th Edition (or newer), University of Chicago Press, Chicago, Illinois, August, 2003.

Grade Determination

The course grade will be determined using the following point breakdown:

Homework Assignments	50 Points total (5 Homework assns. at 10 points each)
Quizzes	70 Points total (7 Quizzes at 10 points each)
Exam 1	100 Points total
Exam 2	100 Points total
Final Project	130 Points total
Class Participation	50 Points total

All grades will be rounded to the nearest tenth. Letter grades will be determined using the following breakdown of grade points:

A = 450 points and above
B+ = 425 – 449 points
B = 400 – 425 points
C+ = 375 – 399 points
C = 350 – 375 points
D = 325-350 points
F = Below 325 points

Attendance Policy

Attendance will not be taken but you are responsible for material covered in class, which may not be found in posted material online. Class participation is part of your grade, and missing class regularly will affect your participation grade. Regular attendance in class will greatly increase your ability to perform well on the mid-term, final project, and class assignments. Participation includes: questions or discussion during class, participation in group projects, participation on in class assignments, questions during office hours. Weekly quizzes will be given out at the start of each class and students will not be allowed to retake them if missed. Students will be able to miss 2 weekly quizzes with no penalty.

Course Schedule

Note: Course schedule is tentative and may change throughout the term. The instructor will communicate any changes. Class time is provided for topics of particular interest to students, or to provide additional instruction if class is running behind. Students wishing to suggest a special topic should speak with the instructor.

Homework Assignment Requirements

Homework assignments will be posted on the course website regularly throughout the term. Students will have at least 7 days to complete homework assignments from the date they are posted. Homework assignments are due by the end of class on the due date. Assignments must be printed out and handed in to the professor in class.

Homework assignments are expected to look professional and be legible. Up to 20% of each homework will include points for meeting the criteria below. Homework assignments will meet the following requirements:

- Each page will have a header that includes student name, date, course number, assignment, and page number.
- All homework will be completed on fresh paper with clean edges (not ripped out of a notebook). Engineering paper is preferred.
- Written sections have correct grammar and spelling.
- Handwriting is legible
- Each question is clearly labeled, with the given information, what you are required to answer, and the solution clearly marked.
- **Each homework answer is properly cited and referenced when using any source other than course notes.**

An example of a correctly formatted homework is attached at the end of this syllabus.

Homework will be submitted online via Moodle and reviewed through Turn-it-in for plagiarism.

Each homework will be graded out of 10 points total for a total homework grade of 75 points by the end of the term.

Late Homework and Missed Exam Policy

Assignments are due by the end of class on the date they are due. Any assignment turned in later than the end of class will be considered late unless prior arrangements are made with the instructor. Late homework will be accepted up to 24 hours after the assigned due date and time for a loss of 50% of the total possible points. No late homework will be accepted after 24 hours. Assignments must be turned in via Moodle.

Missed examinations will not be allowed to be made up without prior consent from the professor. If a student will be missing an examination please contact the professor at least **24 hours prior** to missing the exam.

Course Project

The course project will be a group project that will span the entire semester. Time will be given during each class period to meet with your team and discuss the project. You are expected to complete work as a team and share equally in the tasks. The course project will be discussed in detail separately from the syllabus.

Students with Disabilities

NJIT is committed to providing students with documented disabilities equal access to programs and activities. If you have, or believe that you may have, a physical, medical, psychological, or learning disability that may require accommodations, please contact the Coordinator of Student Disability Services located in the Center for Counseling and Psychological Services, in Campbell Hall, room 205, (973) 596-3414. Further information on disability services related to the self-identification, documentation and accommodation processes can be found on the webpage at: (http://www.njit.edu/counseling/services/disabilities.php)

Academic Dishonesty and Student Conduct

(Taken from the NJIT Academic Integrity Code linked below)

New Jersey Institute of Technology is an institution dedicated to the pursuit of knowledge through teaching and research. The university expects that its graduates will assume positions of leadership within their professions and communities. Within this context, the university strives to develop and maintain a high level of ethics and honesty among all members of its community.

Imperative to this goal is the commitment to truth and academic integrity. This commitment is confirmed in this NJIT University Code on Academic Integrity. The essential quality of this Code is that each student shall demonstrate honesty and integrity in the completion of all assignments and in the participation of the learning process. Adherence to the University Code on Academic Integrity promotes the level of integrity required within the university and professional communities and assures students that their work is being judged fairly with the work of others. For more information on the code of academic integrity please see: http://www.njit.edu/education/pdf/academic-integrity-code.pdf

Class Behavior

While the university is a place where the free exchange of ideas allows for debate and disagreement, all classroom behavior and discourse should reflect the values of respect and civility. Behaviors that are disruptive to the learning environment will not be tolerated and students will be asked to leave the classroom. This includes but is not limited to aggressive behavior, sleeping in class, disruptive behavior, use of electronic devices for activities not related to coursework, racist, sexist, ableist, or homophobic language, and inappropriate or crude language.

Any student that prefers to use a particular pronoun should let the professor know so that this can be accommodated.

Legal Disclaimer

Students' ability to meet outcomes listed may vary, regardless of grade. They will achieve all outcomes if they attend class regularly, complete all assignments with a high degree of accuracy, and participate regularly in class discussions.

This syllabus is subject to change at the discretion of the instructor throughout the term.

Sample Homework Layout

Question 1

Given:

List the resources and emissions associated with the life of a washing machine. Provide both the resources input to each step, and the emissions output. Your answer should be in the form of a cycle diagram as done in class.

Solution:

Figure 1 presents the inputs and outputs from the manufacture of a washing machine.

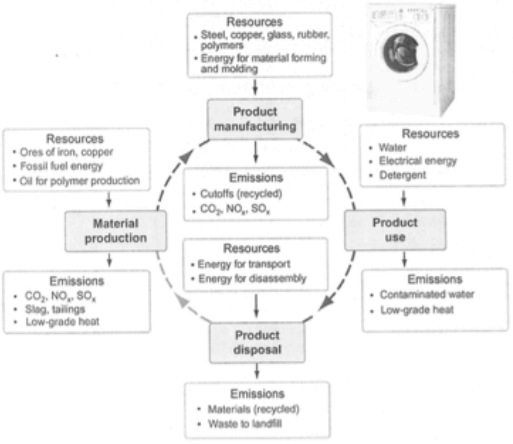

Figure 1: Inputs and outputs from the manufacture of a washing machine [Ashby 2014]

This image shows the resources required and emissions from each step of the manufacture of a washing machine. Significant greenhouse gas emissions can be noted during the material production and product manufacturing phase and energy is required as an input for each phase of the cycle.

References:

Ashby, Michael F., 2014, Materials and the Environment: Eco-informed Material Choice, Elsevier Science, St. Louis