Course Information
Title: CE 465, Green and Sustainable Civil Engineering
Class Location: FMH 108
Meeting Times: Mondays: 6-9 P.M
Credit Hours: 3 Credits

Instructor
Matthew P. Adams, Ph.D.
Office: Colton 266
E-mail: matthewpadams@gmail.com
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
- Thursday: 1:00 PM – 3:00 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

-or-

Grade Determination
The course grade will be determined using the following breakdown:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework Assignments</td>
<td>15%</td>
</tr>
<tr>
<td>Midterm Examination</td>
<td>25%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>15%</td>
</tr>
<tr>
<td>Final Project</td>
<td>40%</td>
</tr>
<tr>
<td>Class Participation</td>
<td>10%</td>
</tr>
</tbody>
</table>

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

- A = 90.0 and above
- B+ = 85.0 – 89.9
- B = 80.0 – 84.9
- C+ = 75.0 – 79.9
- C = 70.0 – 74.9
- D = 65.0 – 69.9
- F = Below 65.0

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.

<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture</th>
<th>Topics</th>
<th>Assignment</th>
<th>Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-Sep-16</td>
<td>1</td>
<td>Course overview, introductions, Sustainability Overview, Writing exercise overview</td>
<td>Homework 1</td>
<td>19-Sep-16</td>
</tr>
<tr>
<td>19-Sep-16</td>
<td>2</td>
<td>Homework 1 Peer Review, Carbon Footprinting, Material Life Cycle</td>
<td>Team Memo 1</td>
<td>3-Oct-16</td>
</tr>
<tr>
<td>26-Sep-16</td>
<td>3</td>
<td>Material Life Cycle (Cont.), End of Life</td>
<td>Homework 2</td>
<td>3-Oct-16</td>
</tr>
<tr>
<td>3-Oct-16</td>
<td>4</td>
<td>Life Cycle Analysis</td>
<td>Team Memo 2</td>
<td>10-Oct-16</td>
</tr>
<tr>
<td>10-Oct-16</td>
<td>5</td>
<td>BEES and Athena Exercises</td>
<td>Homework 3</td>
<td>17-Oct-16</td>
</tr>
<tr>
<td>17-Oct-16</td>
<td>6</td>
<td>Eco-Material Choice and Greenwashing</td>
<td>Study for Midterm</td>
<td></td>
</tr>
<tr>
<td>24-Oct-16</td>
<td>7</td>
<td>MIDTERM</td>
<td>Team Memo 3</td>
<td>21-Oct-16</td>
</tr>
<tr>
<td>31-Oct-16</td>
<td>8</td>
<td>LEED</td>
<td>Group Presentations</td>
<td>7-Nov-16</td>
</tr>
<tr>
<td>7-Nov-16</td>
<td>9</td>
<td>Living Building Challenge, Group Update</td>
<td>Homework 4</td>
<td>14-Nov-16</td>
</tr>
<tr>
<td>14-Nov-16</td>
<td>10</td>
<td>Sustainable Infrastructure and Road Diets</td>
<td>Homework 5</td>
<td>21-Nov-16</td>
</tr>
<tr>
<td>28-Nov-16</td>
<td>12</td>
<td>Sustainable Energy Technology Pros and Cons</td>
<td>Final Project</td>
<td></td>
</tr>
<tr>
<td>5-Dec-16</td>
<td>13</td>
<td>Class Cancelled</td>
<td>Final Project</td>
<td>12-Dec-16</td>
</tr>
<tr>
<td>12-Dec-16</td>
<td>-</td>
<td>Final Project Presentations</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**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 will be assigned in class and are due by the beginning of class on the due date.

Homework assignments are expected to look professional and be legible. This means that homework assignments will meet the following requirements:

- Each page will have a header that includes student name, date, assignment, page number.
- All homework will be completed on fresh paper with clean edges (not ripped out of a notebook)
- Written sections have correct grammar and spelling.
- Handwriting is legible
- Each question is clearly labeled.
- Written portions will be graded for grammar and spelling.

**Late Homework and Missed Exam Policy**

Homework will be accepted up to 24 hours late for a penalty of 20% of the final score of the homework. No homework will be accepted later than 24 hours after the original due date. Make-up exams will be given at the discretion of the instructor, and if discussed prior to the exam time with the instructor.

**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.

**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.