

**PELLISSIPPI STATE COMMUNITY COLLEGE
MASTER SYLLABUS**

**INTRODUCTION TO SUSTAINABILITY
CET 2501**

Class Hours: 2.0

Credit Hours: 3.0

Laboratory Hours: 2.0

Revised: Fall 2013

Catalog Course Description:

This course will explore green building concepts and strategies that affect the designs of buildings, site development, water efficiency, energy efficiency, materials and resources, and indoor environmental quality. Topics include an introduction to basic concepts of sustainable building design, day lighting, exterior envelope assemblies, renewable energy alternatives, reusable and renewable materials, and LEED document preparation. This course presents rating systems for high performance buildings developed by the US Green Building Council and other international organizations.

Entry Level Standards:

College-level reading and writing.

Prerequisites:

MATH 1030

Corequisites:

ENGL 1010, MATH 1710

Textbook(s) and Other Course Materials:

TBD

I. Week/Unit/Topic Basis:

Week	Topic
1	Lecture: Introduction to Green Buildings and Communities Lab: Open
2	Lecture: Sustainable Thinking: Systems approach, Life Cycle approach, Integrated Process Lab: Quiz 1
3	Lecture: Sustainability Thinking at Work – New Processes for Building Green Lab: Quiz 2
4	Lecture: Green Building Core Concepts – Sustainable Sites Lab: Quiz 3

- 5 Lecture: Green Building Core Concepts – Water Efficiency
Lab: Quiz 4
- 6 Lecture: Green Building Core Concepts – Energy and Atmosphere
Lab: Quiz 5
- 7 Lecture: Green Building Core Concepts – Materials and Resources
Lab: Quiz 6
- 8 Lecture: Green Building Core Concepts – Indoor Environmental Quality
Lab: Quiz 7
- 9 Lecture: Green Building Core Concepts – Innovation in Design and Operations
Lab: Quiz 8
- 10 Lecture: U.S. Green Building Council – History / Now / Other Green Rating Systems
Lab: Quiz 9
- 11 Lecture: U.S. Green Building Council: LEED Documentation
Lab: Quiz 10
- 12 Lecture: Group Project -Building Needs Assessment
Lab: Physical Plant Tour
- 13 Lecture: Group Project –Building Sustainable Design Plan Development
Lab: Design Project
- 14 Lecture: Group Project - Building Sustainable Design Plan Presentation
Lab: Design Project Presentation
- 15 Final Exam Period

II. Engineering Technology General Outcomes (Educational objectives)

- I. Apply basic engineering theories and concepts creatively to analyze and solve technical problems
- II. Utilize with a high degree of knowledge and skill equipment, instruments, software, and technical reference materials currently used in industry.
- III. Communicate effectively using developed writing, speaking, and graphics skills.
- IV. Assimilate and practice the concepts and principles of working in a team environment.
- V. Obtain employment within the discipline or matriculate to a four year program in engineering or industrial technology

III. Engineering Technology Concentration Competencies*

Students will:

- A. Apply the knowledge, techniques, skills, and modern tools for the concentration of study to specifically defined engineering technology activities
- B. Demonstrate the knowledge of mathematics, science, engineering and technology to engineering technology problems using developed practical knowledge

- C. Conduct and report the results of standard tests and measurements, and conduct, analyze and interpret experiment or project results
 - D. Function effectively as a member of a technical team
 - E. Identify, analyze and solve specifically defined engineering technology-based problems
 - F. Employ written, oral and visual communication in a technical environment
- At the program level all 6 competencies apply to roman numerals I – V of the Engineering Technology General Outcomes (Educational objectives) listed above.

IV. Course Goals*:

The course will

1. Enhance students understanding of the basics of sustainability. (A, B, C)
2. Expand the students' Knowledge of LEED and other certification organizations (D, E)
3. Expand student understanding of project synergies, establish metrics for measuring success, and gauging design concepts. (A, B, C, D, E, F)
4. Build the skills to communicate effectively as a technician and team member, working with the above competencies. (A, B, C, D, E, F)
5. Foster the ability to demonstrate leadership and self-initiative to complete all assignments on time. (A, B, C, D, E, F)

*Capital letters after course goals reference the competencies of the Engineering Technology concentrations listed above.

V. Expected Student Learning Outcomes*:

Students will be able to:

- a. Understand approaches required to lower dependency on depleting non-renewable resources. (1, 2, 3, 4)
- b. Exhibit basic knowledge of sustainable building systems. (1, 2, 3)
- c. Understand the broad concepts of sustainability. (1, 2, 3)
- d. Develop their ability to integrate b and c. into future projects (1, 2, 3)
- e. Extrapolate lessons learned from the class and apply to building, community and development planning.(1, 2, 3, 4, 5)
- f. Practice integrating academic knowledge in a real-world client specified project. (1, 2, 3, 4, 5)
- g. Develop their ability to carry out a project in a collaborative environment. (1, 2, 3, 4, 5)

*Numbers after Expected Student Learning Outcomes reference the course goals listed above.

VI. Evaluation:

A. Testing Procedures: 10% of grade

There will be a True/False, Multiple Choice, and Design Vignette final - no make-up.

B. Laboratory Expectations: 80% of grade

Quizzes:

Weekly quizzes will be given by the instructor. They will cover the previous session's materials or the reading assignment for that day. There is no make-up or extra credit given for quizzes missed.

Design work:

There will be a group design assignment to be completed as a final project. All assignments must be handed in on time and in the form provided by your instructor.

All assignments will be assessed a 10% penalty for each school day it is late.

All student work submitted for evaluation may be retained by the instructor.

Homework:

One written assignment will be required. The written assignment will consist of a synopsis of an article, taken from a periodical. Students are free to pick their own topics, as long as they relate directly to topic given. Students may also be required to hand in answers to select questions at the end of each chapter or other appropriate homework at the instructor's discretion. All written assignments must be handed in on 8 1/2 x 11" engineering notepad paper, paper with smooth edges, or forms provided by your instructor.

All written assignments will be assessed a 10% penalty for each school day it is late.

All student work submitted for evaluation may be retained by the instructor.

C. Field Work: 5% of grade

The group project will require site investigation and possible interviews with facilities plant manager or other governing bodies.

D. Other Evaluation Methods: 5% of grade

A subjective evaluation based on attendance, classroom participation and attitude may be included.

E. Grading Scale:

Grades are based on the following:

90 - 100 A

85 - 89 B+

80 - 84 B

75 - 79 C+

70 - 74 C

60 - 69 D

Below 60 F

VII. Policies:

A. Attendance Policy:

Pellissippi State expects students to attend all scheduled instructional activities. As a minimum, students in all courses (excluding distance learning courses) must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course. Individual departments/programs/disciplines, with the approval of the vice president of

Academic Affairs, may have requirements that are more stringent. In very specific circumstances, an appeal of the policy may be addressed to the head of the department in which the course was taken. If further action is warranted, the appeal may be addressed to the vice president of Academic Affairs.

B. Academic Dishonesty:

Academic misconduct committed either directly or indirectly by an individual or group is subject to disciplinary action. Prohibited activities include but are not limited to the following practices:

- Cheating, including but not limited to unauthorized assistance from material, people, or devices when taking a test, quiz, or examination; writing papers or reports; solving problems; or completing academic assignments.
- Plagiarism, including but not limited to paraphrasing, summarizing, or directly quoting published or unpublished work of another person, including online or computerized services, without proper documentation of the original source.
- Purchasing or otherwise obtaining prewritten essays, research papers, or materials prepared by another person or agency that sells term papers or other academic materials to be presented as one's own work.
- Taking an exam for another student.
- Providing others with information and/or answers regarding exams, quizzes, homework or other classroom assignments unless explicitly authorized by the instructor.
- Any of the above occurring within the Web or distance learning environment.

Please see the Pellissippi State Policies and Procedures Manual, Policy 04:02:00 Academic/Classroom Conduct and Disciplinary Sanctions for the complete policy.

C. Accommodations for disabilities:

Students that need accommodations because of a disability, have emergency medical information to share, or need special arrangements in case the building must be evacuated should inform the instructor immediately, privately after class or in her or his office. Students must present a current accommodation plan from a staff member in Services for Students with Disabilities (SSWD) in order to receive accommodations in this course. Services for Students with Disabilities may be contacted by sending email to disabilityservices@pstcc.edu, or visiting Goins 127, 132, 134, 135, 131. More information is available at <http://www.pstcc.edu/sswd/>.

D. Other Policies:

Safety and Equipment Abuse:

Repeated safety violations will result in a reduction of final grade, at the instructor's discretion. Flagrant violations which result in equipment damage or personal injury could result in automatic failure of the course