

**PELLISSIPPI STATE COMMUNITY COLLEGE
MASTER SYLLABUS**

**SUSTAINABILITY IN APPLICATION
CET 2502**

Class Hours: 2.0

Credit Hours: 3.0

Laboratory Hours: 2.0

Revised: Fall 2013

Catalog Course Description:

A continuation of CET 2501, topics will include return on investment, life cycle cost analysis, Leed document preparation, energy codes and their implications for the various building types, and implementation issues. Design teams will consider multiple strategies for problem solving and produce comparative analysis of mechanical systems, exterior envelope material and construction, day lighting, and interior finishes, to support the design. Project teams will be asked to solve multiple sustainable design charrettes.

Entry Level Standards:

College-level reading, writing, and math; second-year status

Prerequisites:

CET 2501 or consent of instructor.

Textbook(s) and Other Course Materials:

TBD

I. Week/Unit/Topic Basis:

Week	Topic
1	Lecture: Fundamentals of sustainability revisited Lab: OPEN
2	Lecture: Sustainability – Where are we and where are we going Lab: Topical research assignment
3	Lecture: Energy Codes and Net Zero Lab: Energy Codes and Net Zero assignment
4	Lecture: Return on Investment and Life Cycle Cost Lab: Return on Investment and Life Cycle Cost assignment
5	Lecture: Considering mechanical systems Lab: Mechanical systems assignment
6	Lecture: Designing – Building envelopes and R-values Lab: Design assignment

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| 7 | Lecture: Designing – Day lighting and fenestration
Lab: Design assignment |
| 8 | Lecture: Designing – Roofing and rain catchment systems
Lab: Design assignment |
| 9 | Lecture: Design charrettes – Homes
Lab: Design Project |
| 10 | Lecture: Design charrettes – Schools
Lab: Design Project |
| 11 | Lecture: Design charrettes – New Construction
Lab: Design Project |
| 12 | Lecture: Design charrettes – Commercial Interiors
Lab: Design Project |
| 13 | Lecture: Design charrettes – Existing Buildings
Lab: Design Project |
| 14 | Lecture: Design charrettes – Neighborhood Development
Lab: Design Project |
| 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' ability to integrate sustainability concepts. (A, B, C)
2. Expand the students' Knowledge of LEED certification process. (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 determine most effective energy and money saving scenarios and return on investment timeline, 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. Implement approaches required to lower dependency on depleting non-renewable resources. (1, 2, 3, 4, 5)
- b. Demonstrate working knowledge of sustainable building systems. (1, 2, 3, 4, 5)
- c. Demonstrate the integration of sustainable concepts and their appropriate application. (1, 2, 3, 4, 5)
- d. Practice acquired knowledge with team based sustainable design charrettes. (1, 2, 3, 4, 5)
- e. Extrapolate lessons from the class to building, community, and planning development. (1, 2, 3, 4, 5)
- f. Develop your ability to carry out a project in a collaborative, academic setting. (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: 85 % of grade

Quizzes:

Quizzes may be given by the instructor. Most quizzes will be un-scheduled and randomly given. They 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 three separate individual student design assignments and six group design assignments to be completed at indicated on this syllabus. 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:

n/a

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