

Tennessee Technological University
Department of Civil & Environmental Engineering
CEE 4950 – Senior Design Project
Required
Fall Semester 2007, Spring Semester 2008

2007 Catalog Data:	CEE 4950: Senior Design Project. Lab 6. Credit 3. Comprehensive design project of civil engineering projects using a team approach. Prerequisite: Senior standing.
Textbook:	None
Reference:	Textbooks, notes, library books, regulations, and other materials
Coordinator:	Edmond P. Ryan, Associate Professor of Civil Engineering
Goal:	The goal of CEE 4950 “Senior Design Project” is to develop the student’s ability to synthesize his or her accumulated engineering knowledge and apply it to the solution of a complex, realistic engineering project within a professional engineering environment.

Course learning objectives:

1. The student is to develop an ability to apply his or her engineering knowledge to the solution of an open-ended, realistic engineering project.
2. The student is to develop an ability to solve engineering problems within a professional, team-oriented environment.
3. The student is to develop an ability to communicate the results of a design project both orally and in writing.

Course measurable outcomes:

Students will be expected to:

1. work in a cooperative team environment to complete a project assigned to the team by a professional engineer;
2. present both individual and team oral reports on the team’s progress toward completing the project; and
3. present a formal final report to the supervising professional engineer, a faculty advisor, and the instructor of the course.

Topics covered: (Two classes per week, 3 hours each – a combination of lecture and recitation)

1. The design process (2 classes)
2. Information gathering (2 classes)
3. Evaluation of design alternatives (2 classes)
4. Economic factors (2 classes)
5. Engineering communications (2 classes)
6. Human factors in design (2 classes)
7. Conclusions and reporting (2 classes)

Contribution of the course to meeting professional component:

This course is a part of engineering topics of the curriculum that culminates capstone design experience. It contains significant design content.

ABET category content as estimated by faculty member who prepared this course description:

Engineering Science:	0 credits or 0%
Engineering Design:	3 credits or 100%

Relation of course to program outcomes:

- Outcome 1: The graduates will have a broad understanding of the relevant principles of mathematics, science, and engineering.
- Outcome 2: The graduates will have a general comprehension of four technical areas appropriate to civil engineering.
- Outcome 3: The graduates will be prepared to begin the professional registration process.
- Outcome 4: The graduates will be capable of design activities and have the ability to identify, formulate, and solve civil engineering problems.
- Outcome 5: The graduates will have effective communication skills.
- Outcome 6: The graduates will be capable of functioning on multi-disciplinary teams.
- Outcome 8: The graduates will have the ability to use techniques, skills, and modern engineering tools needed for engineering practice.
- Outcome 9: The graduates will have an understanding of their social and ethical responsibilities as civil engineers.
- Outcome 10: The graduates will have an understanding of the need to continue their education through life-long learning.
- Outcome 12: The graduates will have an understanding of fundamental principles and key concepts in engineering management, business, public policy, and leadership.

Relation of course to ABET Criteria:

General Criteria

Bloom's Level of Achievement

(3a)	Knowledge of math, science, engineering	3
(3c)	Design a system, component or process	5
(3d)	Multidisciplinary teams	3
(3e)	Identify, formulate, and solve engineering problems	5
(3g)	Effective communication	3
(3k)	Techniques, skills, modern tools for engineering practice	3

Program Criteria

Bloom's Level of Achievement

1.	Apply knowledge of math and sciences	3
2.	Apply knowledge of four technical area appropriate to civil Engineering	5
3.	Design a system, component, or process in more than one civil engineering context	5
4.	Explain basic concepts in management, business, public policy, and Leadership	1
5.	Explain the importance of professional licensure	2

Computer usage:

- 1. As needed in the development of the design project.

Laboratory projects:

- 1. Comprehensive design project executed by a design team of 4 to 7 students. Written and oral reports are required. Project sites within county, if possible.

Prepared by: E.P. Ryan

Date: September 2007