ECE DEPARTMENT
THE COLLEGE OF NEW JERSEY
SPRING 2016

ELC 496 - Senior Project II

2013-2014 Course Description

Senior project focuses students' previous experience upon a specific technical project. Library research, design, cost analysis, construction, testing, and project management. Students work closely with a faculty adviser.

Textbook: None
Forms & information: http://www.tcnj.edu/~engsci/info/SeniorProjectInformation.htm

Coordinator: **Dr. Allen Katz, akatz@ieee.org, x2666, 149 Armstrong Hall**
Office Hours: M 02:00 - 03:20 pm and 5:30 – 6:00 pm, W 12:00 – 12:30 pm and TR 5:00 – 6:00 pm.

The senior design project is a major engineering design experience.

Course Schedule

Week	Material To Be Covered	Assignments	Date
1.	No meeting		(1/27/16)
2.	a. Welcome back b. Review critical dates c. Discussion of final report requirements d. TCF	Report on group status Prepare for PDRs	(2/3/16)
3.	1st, 2nd and 3rd group PDRs	Prepare for PDRs	(2/10/16)
4.	4th and 5th group PDRs	Prepare for PDRs	(2/17/16)
5.	PDRs continue 1st, etc. again	Update Project Web page	(2/24/16)
6.	PDRs continue	Prepare TCF	(3/2/16)
7.	No meeting	TCF practice	(3/9/16)
8.	Spring Break & TCF on Saturday*		(3/19/16)*
9.	Preliminary Report discussion	Abstract due	(3/23/16)
10.		CSA Forms	(3/30/16)
11	**Interim Design Review Presentations**		(4/6/16)
12.		Draft Reports due	(4/13/16)
13.	No meeting		(4/20/16)
14.	Prepare final presentations		(4/27/16)
15.	Final Presentation & CSA Presentation	Reports due	(5/4/16)

The course specific requirements in addition to those found in the Senior Project Manual are:

PROJECT PROPOSAL

The project proposal form completed and signed was a perquisite for registering for the course. A copy of you must be e-mailed to the course coordinator prior to the first meeting of class.

SOFTWARE

All senior design projects must include the integration and application of design/analysis software.

WEB SITE

A web site is required for all projects. Include (minimum) the names of all team members, each member's role and email address, the Design Problem and progress reports (at least every two weeks).

PROJECT NOTEBOOK

You are required to maintain a bound notebook for the course. All entries should be in ink and signed and dated. This journal documents the evolutionary development of your engineering knowledge and understanding. Besides project specific information, it should document the class periods you attended and design team meetings you attended. The course instructor will review the notebook at least once each semester.

PROGRESS/FINAL REPORT

First Semester: It is recommended that you submit to your advisor the Progress report at least one week before fall Senior Project Conference Day, Wednesday, December 2th. The report with your advisor's written comments and recommended grade is due by Monday, December 14.

Second Semester: It is recommended that you submit to your advisor the Progress report at least one week before spring Senior Project Conference Day, Wednesday, May 4th. The report with your advisor's written comments and recommended grade is due by Monday, May 9th.

WRITTEN AND ORAL PRESENTATION REQUIREMENTS

Each group in the senior design project is required to make the following written presentations.

- The project proposal-first semester
- The final design report-first semester
- The final design report-second semester

The oral presentations required for each group are:

- Project Proposal presentation-first semester
- Preliminary Design Review presentation-first semester
- Final design presentation-first semester
- Final design poster presentation-second semester

Grading Policy

- 80% assigned by advisor (see advisor grade breakdown form)
- 20% assigned by course coordinator (see coordinator grade breakdown form)

Format of Final Report

The Final report must be in a binder using a 19-ring binding system (available in the department office). The report must include the following:

Cover Sheet[1]/Back Sheet (**Green** cover for SPI or **Salmon** cover for SPII)
Fulfillment Page (see attached example)
Acknowledgements (optional)
Abstract[2] (Team-200 words max.) (Single-125 words max.) **Include key words**
Table of Contents
List of Tables (if needed)
List of Illustrations (if needed)
Nomenclature (optional)
Introduction
Specifications
Chapter 1 Background
Chapters 2-? If a group project, each person's contribution to the design project must be **clearly** delineated. Usually, one chapter is devoted to each person's work. Include design approaches and which proved to be superior in meeting the goals.
Chapter ? Conclusion[3]
List of References
Appendixes

A. Picture and short biography of each team member
B. Gantt chart
C. Financial Budget (include travel)
D. Engineering Standards and Realistic Constraints form signed and dated (**Pumpkin**)
E. Realistic Constraints in Design Project
F1. Engineering Standards in Design Project
F2. Three Laws of Marketing (SP II only)
F3. Milestone Resultant Evaluation (SP II only)
G. Software (computer code, etc.)
H-? Other

[1]The Cover Sheet has the following information:

Name of Project
Senior Project I or II
Team Members (indicate Team Leader)
Primary Advisor, Secondary Advisor, Technical Advisor, etc.
Month and Year

[2]An abstract contains the following information:

- A statement defining the general project area being addressed.
- A clear description of the specific problems to be addressed and worked on during the project.
- A description of the technical approaches to be used on the project
- A description of the results to be expected at the conclusion of the project

[3]In the conclusions summarize:

- The core intent and scope of the project as documented in the report
- The results to be expected from the engineering work to be done (SPI)
- The expectation that the recommended approaches will lead to a successful result at the conclusion of the program (SPII)

Course Objectives:

Objective 1: To describe and understand the overall engineering design process, e.g., project justification, identification of constraints, applicable standards, establishment of design criteria, establishment of timetables and project evaluation.

Objective 2: To delineate the principal design criteria and constraints, e.g., cost, size, power, environmental factors, economic, reliability, safety, manufacturability, ethical, health and

safety, social, political and sustainability.

Objective 3: To acquire and understand information contained in contemporary technical literature and to browse the web to acquire information and to create a Website.

Objective 4: For a team project, to understand the benefits and potential problems of teaming, describe qualities and processes of effective teams, and describe the role of teamwork in system design.

Performance Criteria:

Objective 1a. Each team member will submit a completed Project Proposal Form to the course instructor before the end of the first week of classes.

1b. Each team will have weekly meetings with either the course instructor or their technical advisor.

1c. Each team member will maintain a Project notebook.

Objective 2 Each team will submit the Engineering Standards and Realistic Constraints Form and all supporting documentation with the written design reports.

Objective 3 The team will develop a web page related to the project and will include a bibliography of each member in the design report.

Objective 4 The team will understand the role of teamwork.

Educational Objectives:

(What TCNJ engineers should be able to accomplish during the first few years after graduation)
The School of Engineering at The College of New Jersey seeks to prepare its graduates:

- To contribute to the economic development of New Jersey and the nation through the ethical practice of engineering;
- To become successful in their chosen career path, whether it is in the practice of engineering, in advanced studies in engineering or science, or in other complementary disciplines;
- To assume leadership roles in industry or public service through engineering ability, communication skills, teamwork, understanding of contemporary global and socio-economic issues, and use of modern engineering tools;
- To maintain career skills through life-long learning and be on the way towards achieving professional licensure.

Engineering Program Outcomes*
(What TCNJ Engineering students are expected to know and be able to do at graduation. What knowledge, abilities, tools and skills the program gives the graduates to enable them to accomplish the Educational Objectives)

The Program Outcomes listed below are expected of all graduates of the all Engineering Programs.

Engineering graduates will have*:

a. an ability to apply knowledge of mathematics, science and engineering;
b. an ability to design and conduct experiments, as well as to analyze and interpret data;
c. an ability to design a system, component, or process to meet desired needs;
d. an ability to function in multidisciplinary teams;
e. an ability to identify, formulate and solve engineering problems;
f. an understanding of professional and ethical responsibility;
g. an ability to communicate effectively;

h. the broad education necessary to understand the impact of engineering solutions in a global and societal context;
i. a recognition of the need for and an ability to engage in life-long learning;
j. a knowledge of contemporary issues;
k. an ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

* Each Engineering Program will have additional Outcomes specific to the major.

SELECTED TCNJ POLICIES

TCNJ's final examination policy is available on the web:
http://www.tcnj.edu/~academic/policy/finalevaluations.htm

Attendance

Every student is expected to participate in each of his/her courses through regular attendance at lecture and laboratory sessions. It is further expected that every student will be present, on time, and prepared to participate when scheduled class sessions begin. At the first class meeting of a semester, instructors are expected to distribute in writing the attendance policies which apply to their courses. While attendance itself is not used as a criterion for academic evaluations, grading is frequently based on participation in class discussion, laboratory work, performance, studio practice, field experience, or other activities which may take place during class sessions. If these areas for evaluation make class attendance essential, the student may be penalized for failure to perform satisfactorily in the required activities. Students who must miss classes due to participation in a field trip, athletic event, or other official college function should arrange with their instructors for such class absences well in advance. The Office of Academic Affairs will verify, upon request, the dates of and participation in such college functions. In every instance, however, the student has the responsibility to initiate arrangements for make-up work.

Students are expected to attend class and complete assignments as scheduled, to avoid outside conflicts (if possible), and to enroll only in those classes that they can expect to attend on a regular basis. Absences from class are handled between students and instructors. The instructor may require documentation to substantiate the reason for the absence. The instructor should provide make-up opportunities for student absences caused by illness, injury, death in the family, observance of religious holidays, and similarly compelling personal reasons including physical disabilities. For lengthy absences, make-up opportunities might not be feasible and are at the discretion of the instructor. The Office of Academic Affairs will notify the faculty of the dates of religious holidays on which large numbers of students are likely to be absent and are, therefore, unsuitable for the scheduling of examinations. Students have the responsibility of notifying the instructors in advance of expected absences. In cases of absence for a week or more, students are to notify their instructors immediately. If they are unable to do so they may contact the Office of Records and Registration. The Office of Records and Registration will notify the instructor of the student's absence. The notification is not an excuse but simply a service provided by the Office of Records and Registration. Notifications cannot be acted upon if received after an absence. In every instance the student has the responsibility to initiate arrangements for make-up work.

TCNJ's attendance policy *is available on the web:*

http://www.tcnj.edu/~recreg/policies/attendance.html

Academic Integrity Policy

Academic dishonesty is any attempt by the student to gain academic advantage through dishonest means, to submit, as his or her own, work which has not been done by him/her or to give improper aid to another student in the completion of an assignment. Such dishonesty would include, but is not limited to: submitting as his/her own a project, paper, report, test, or speech copied from, partially copied, or paraphrased from the work of another (whether the source is printed, under copyright, or in manuscript form). Credit must be given for words quoted or paraphrased. The rules apply to any academic dishonesty, whether the work is graded or ungraded, group or individual, written or oral.

TCNJ's academic integrity policy *is available on the web:* http://www.tcnj.edu/~academic/policy/integrity.html.

AT MY DISCRETION, ANYONE VIOLATING THIS POLICY WILL RECEIVE A FAILING GRADE FOR THE ASSIGNMENT OR FOR THE SEMESTER. Please see me if you have any questions.

Americans with Disabilities Act (ADA) Policy

Any student who has a documented disability and is in need of academic accommodations should notify the professor of this course and contact the Office of Differing Abilities Services (609-771-2571). Accommodations are individualized and in accordance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1992.

TCNJ's Americans with Disabilities Act (ADA) policy is available on the web: http://www.tcnj.edu/~affirm/ada.html .