



**SOUTHERN POLYTECHNIC COLLEGE OF
ENGINEERING ELECTRICAL AND COMPUTER ENGINEERING
EE4800: SENIOR PROJECT SYLLABUS**

Course Information

Class meeting time: *Tuesday and Thursday, 12:30 PM to 1:20 PM (Civil 125)*

Labs: *2:00 PM – 4:45 PM (Q254)*

Modality and Location: *Hybrid; Syllabus is posted on the Course D2L*

Instructor Information

Names: Dr. Cyril Okhio

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Office Location: W181

Office phone: 470 578 7247 (Preferred method of communication: Email)

Office Hours: W 10:30am – 3:30pm

Course Description

Senior design projects (a.k.a. Capstones) represent the centerpiece of the EE curriculum's professional component. They allow students to get involved in interesting, real-world problem-solving activities. Each senior student is required to complete this course. Projects are advised by a full-time, tenured or tenure-track faculty member who works with the teams. Without exception, all EE4800 projects must be team efforts. Teams must consist of between three (3) and five (5) students.

Process

Senior Design projects allow students to experience the rigor and structure of a full-cycle design, including:

- Problem definition
- Benchmark studies
- Concept generation and feasibility study
- Engineering design analyses
- Prototype fabrication and testing
- Communication of Outcomes

Through the capstone courses, students learn to fully define a design problem. This includes not only a statement of the project deliverables and objectives in the layman's or client's terms, but also a full definition of the agreed upon functional requirements and constraints (quantified).

All of the capstone projects draw upon at least several fundamental engineering science areas and involve significant quantitative analysis, often in the form of numerical simulation, typically preceded by approximate analytical solutions. Industry-inspired projects are carefully selected on the basis of the required fundamental engineering science areas to align with the core expertise of the faculty adviser.

All projects must include a written report. Although the form of the report may vary according to the nature and requirements of the individual project, all final reports must contain the following (or equivalent) sections:

- Risk and liability
- Ethical issues
- Impact on society
- Impact on the environment
- Cost and engineering economics

Sponsored Projects

Industry-sponsored senior design projects provide benefits for both the students and sponsoring organizations. Students gain valuable experience from working within real-world constraints, while sponsoring organizations reap the benefits of innovations and insights provided by the project deliverables.

Course Objectives/Learning Outcomes



The student will demonstrate, and exhibit proficiency in the entire department of Electrical Engineering Program Outcomes. In particular, students will gather, investigate, evaluate and assess information to successfully achieve a design solution to an engineering problem. They will consider realistic constraints such as safety, economic factors, reliability, aesthetics, ethical considerations and societal impacts. In addition, students will have to draw on their prior knowledge; including that obtained in general education coursework, to develop appropriate and successful engineering designs.

The successful student-team will be able to:

- Demonstrate an ability to apply knowledge of mathematics, science, and engineering
- Demonstrate an ability to design simulate build and conduct experiments, as well as to analyze and interpret data
- Demonstrate an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, manufacturability and sustainability
- Demonstrate an ability to use modern engineering hardware and software tools
- Demonstrate an ability to function on multi-disciplinary teams
- Demonstrate an understanding of professional and ethical responsibility
- Demonstrate an ability to communicate effectively, write technical documents and give oral presentations related to design project results
- Demonstrate an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

Course Flow and Requirements

- Students must form design teams. They also must decide on a design topic and submit it to the instructor for approval. You can also request the instructor for project topics.
- The design teams must choose a feasible topic (which they will introduce to the class) and perform research to write a Technical Review Paper.
- Each design team must make a presentation of the progress of the project during weekly meetings with the instructor throughout the semester, and submit design review reports as required by the instructor, including maintaining an individual as well as a group *design notebook*, which *must* contain all material related to the design project.
- At midterm, a *Preliminary Design Review* will be held in which the design teams will give oral presentations to an audience detailing their progress as well as their learning and future work. A written review will also be submitted.
- Towards the end of term, a *Critical Design Review* will be conducted where the design teams will give oral presentations to an audience detailing their progress as well as their learning and future work. A written review will also be submitted.
- At the conclusion of the project, the design team must submit a written technical report describing the details of the final design process and results, as well as highlight relevant conclusions. At the end of the semester each design team is required to prepare and present the description of the design project as well as create a project summary. The design groups are encouraged to publish their design on the web and organize a design exposition.
- Apart from the design aspect, the class will perform a review of core Electrical Engineering and Engineering Design and Management principles that will then be tested in one or more examinations.
- Group discussions and individual assignments, peer evaluations and inverted classroom techniques will be used to reinforce learning of key concepts and evaluations.

Instructor Participation

Instructor participation involves mentoring and oversight in the following areas:

- Guide students design groups as they progress with their project designs
- Monitor the progress of project designs during weekly meetings
- Expose the students to engineering research & research methods, economic, and other aspects related to their design projects



- Discuss methods of writing technical reports and interact with students to enhance their writing skills
- Assess the quality of presentation describing the final design project results
- Evaluate term examinations and design prototypes

Course Materials

The instructor will advise on and provide guidance on resources through D2L Blackboard.

Weekly Format of Class

Typically, the class will have *one lecture session* and *one group-based review session* per week. This format is subject to change based on the progress of the class.

Assessment Criteria

The final grade will be based on multiple components as detailed below (**No makeup is allowed if any of the components is skipped. In case of emergency, contact the instructor at the earliest**). Grading will be based on individual grade component and a team grade component. The grading criterion is illustrated as follows:

Course Grading Scheme

1.	Initial Project Proposal/SOW	10%
2.	Feasibility and Project Plan	10%
3.	Requirements	10%
4.	Preliminary Design Review	10%
5.	Final Design Review	10%
6.	Prototype and demo	20%
7.	Final Poster/PPT/Report	10%
8.	Peer Review	10%
9.	Final test	10%
	Grand Total	100 %

Course Timelines (separate schedule) Attendance

Mandatory, except for special circumstances and special arrangements as discussed with the instructor.

Cheating/Plagiarism

Please refer to the Departmental Policy.

Note

All components of the Syllabus are subject to change as and when deemed necessary by the instructor. The instructor will convey the changes to the class at his earliest.

Disruptive Behavior and Academic Dishonesty

SPSU has an Honor Code and a new procedure relating to when academic misconduct is alleged. All students should be aware of them. Information about the Honor Code and the misconduct procedure maybe found at <http://spsu.edu/honorcode/>. **A faculty member reserves the right to remove any student from his or her course if the student's behavior is of a disruptive nature or where there is evidence of academic dishonesty.** In instances of disruptive behavior and/or academic dishonesty, the faculty member will discuss the circumstances with the student(s) before taking final action. In the event the student cannot be reached, he/she will be given the grade of "Incomplete" until such time as he/she can be reached. The student shall have the right of appeal of the faculty member's decision first to the faculty member's department head and then to the appropriate college or school dean and, if necessary, to the Vice President for Academic Affairs. **Removal of a student from a course under this provision will result in the faculty member's issuing a grade of "F". A grade of "F" issued under these circumstances shall not be superseded by a voluntary withdrawal and will be included in the student's cumulative grade point average calculated for graduation purposes.**

Institutional Policies

Federal, BOR, & KSU Course Syllabus Policies



[Student Resources](#)

[Academic Integrity Statement](#)

[KSU Student Resources](#)

[This link contains information on help and resources available to students: KSU Student Resources for Course Syllabus](#)