Course Title	**Capstone Design Project**
Course Code	**EE5300**
No. of Credit Hrs (Lecture + Tutorial + Lab)	**3**
Level-Year	**9-5**
Prerequisite (if any)	**Complete 126 CH**

1) Course Objectives:

A comprehensive course that allows the students work in teams to integrate the knowledge and skills learned in the classroom and the collaborative work terms. This syllabus covers a two-trimesters sequence that forms the EE Senior Design Project:

- **The First Semester**:
  The course requires students to work in small design teams to solve a significant engineering problem. Students develop, design, and implement a solution to the engineering problem under supervision of a faculty advisor. The course reinforces principles of the engineering design process and serves as a capstone for electrical engineering knowledge obtained in the EE curriculum. The consideration of the ethical and social implications of technology and the basic concepts of business are also aspects of the course. Each student design team is expected to present information related to their project in both written and oral formats. Preliminary paper design is followed by implementation in the lab using digital and analog hardware design techniques and through software engineering.
- **The Second Semester:**
  Continuation of the first trimester. Design of small computer/electronic system built, refined, tested, and demonstrated. Final prototype is shown to meet initial specifications at final design review presentation. At the end, the project teams submit reports and present their projects to a panel of judges. Also, the students are highly encouraged to showcase their efforts to invited guests, media, and their peers at the other colleges.

2) Expected Learning Outcomes:

Knowledge & Understanding

1. **Identify, formulate, and analyze** project requirements, and produce system-level models and block diagrams. **PLO1 [1]**
2. **Design and develop** appropriate solutions to engineering problems, considering constraints and standards. **PLO2 [2]**
3. **Outline and explain** technical aspects and the structured steps involved in project design and implementation. **PLO2 [2]**

Skills

4.
5. **Create and apply** scientific principles and recent developments in electrical engineering for implementing innovative project ideas. **PLO4**
6. **Investigate and relate** electrical engineering concepts and theories to project work in order to generate novel solutions. **PLO3 [6]**
7. **Utilize and adapt** modern engineering tools, techniques, and resources effectively in project development. **PLO4**
8. **Conduct experiments** and analyze results to support project design and implementation. **PLO3 [6]**
9. **Communicate** technical ideas, progress, and results effectively through written reports and oral presentations. **PLO8 [3]**

Values, Autonomy, and Responsibility

10. **Apply critical thinking** to generate innovative and optimized project solutions. **PLO9 [7]**
11. **Engage in life-long learning** by recalling and applying fundamental design concepts relevant to project development. **PLO9 [7]**
12. **Recognize and practice** professional and ethical responsibility throughout the project. **PLO6 [4]**
13. **Recognize standards and adopt** specialized digital technologies/tools required for professional project execution. **PLO5 [4]**
14. **Assess and justify** the societal, global, and environmental impact of engineering solutions, supporting sustainable development. **PLO5 [4]**
15. **Collaborate and lead** effectively in multidisciplinary teams to plan, organize, and complete project tasks. **PLO7 [5]**
16. **Evaluate contemporary issues** in engineering and incorporate them into project solutions. **PLO5 [4]**

3) Course Contents

4) Teaching Methods:

- Lectures
- Videos
- Discussion
- Self-learning

5) Mode of Evaluation:

The final grade for project will be a weighted average of the following three grade components:

- Advisor grade (50%): Given at the discretion of the advisor.
- Review Board grade (40%): Average of first and final presentation.
- Final Report grad (10%): Average of advisor and review board grades.

Each Team member is graded individually.

Course Assessment Methods

- First presentation
- Final presentation
- Periodically and final reports

6) Textbook(s):

To be determined

7) References:

To be determined