

EEE 4910 SENIOR DESIGN PROJECT I

Fall 2020-2021

AIM OF THE COURSE

To provide the ability to understand and define an engineering problem, to provide design experience through teamwork, and to apply project management methodology.

LEARNING OUTCOMES OF THE COURSE

Ability to design a product under realistic constraints by using modern design methods

Experience on project management and project planning

Ability to design in order to meet desired needs under realistic conditions and limitations such as engineering standards and economic, environmental issues, sustainability, manufacturability, ethical, health, safety, social and political problems, etc. and apply test procedures

Experience on written and oral communication techniques

Appreciation of the need for self and continuous learning

Ability to share responsibilities within a teamwork

ECTS : 8 (1 - 6)

CLASS HOURS / LOCATION :

Monday 12:30-13:20 Online

COURSE COMMITTEE:

Dr. Nalan ÖZKURT (nalan.ozkurt@yasar.edu.tr)

ASSISTANT: Güneş Becerik Mir (gunes.becerik@yasar.edu.tr)

GRADING POLICY

See Appendix 1 at the end of the document

ATTENDANCE POLICY:

Attendance is compulsory; students should attend at least % 80 of the weekly meetings. Any student missing an exam should provide a valid excuse within five days following the exam, otherwise he/she will receive a failing grade.

Weekly Schedule

| Week | Date | | Advisor-Student | Lecture |
|------|------------|------------|---|---|
| 1 | 5.10.2020 | 11.10.2020 | | EEE 4910 Introduction |
| 2 | 12.10.2020 | 16.10.2020 | Project teams will select their subjects from the list | Project Management and Planning |
| 3 | 19.10.2020 | 23.10.2020 | 1.Weekly Advisor-Firm-Team meetings | Report Writing |
| 4 | 26.10.2020 | 30.10.2020 | | Writing Project Proposal Report |
| 5 | 2.11.2020 | 6.11.2020 | 2. Upload meeting notes to Sakai | Lifelong Learning and Accessing Information |
| 6 | 9.11.2020 | 13.11.2020 | | Presentation Preparation |
| 7 | 16.11.2020 | 20.11.2020 | 3. Prepare Project Proposal Report and Presentation | Tips for Online Proposal Presentations |
| 8 | 23.11.2020 | 27.11.2020 | Upload Project Proposal Report Deadline 27.11.20 23:00 | |
| 9 | 30.11.2020 | 4.12.2020 | Project Proposal Presentation (Online Sakai Meeting) Upload presentation Deadline 02.12.20 23:00 Online PP Presentation Meeting (To be announced) | |
| 10 | 7.12.2020 | 11.12.2020 | 1.Follow the work schedule given in Project Proposal Report | System Engineering |
| 11 | 14.12.2020 | 18.12.2020 | 2. Weekly Advisor-Firm-Team meetings | Testing |
| 12 | 21.12.2020 | 25.12.2020 | 3. Upload meeting notes to Sakai | Engineering Standards |
| 13 | 28.12.2020 | 1.01.2021 | 4. Prepare Design Document and Presentation Design Document Upload Deadline 28.12.2020 23:00 | Video Preparation |
| 14 | 4.01.2021 | 8.01.2021 | Video Upload Deadline 05.01.2021 23:00 | Tips for Online Design Presentations |
| 15 | 11.01.2021 | 15.01.2021 | Online Design Presentation Meeting (To be announced) | |
| | 18.01.2021 | 29.01.2021 | Final Exam Weeks Course Evaluation Exam | |

A. Basic Approach:

a. Graduation Project is carried out for two terms. Graduation Project students take EEE 4910 in the fall semester and EEE 4920 in the spring semester. The prerequisite for EEE 4920 is EEE 4910.

b. At the end of the Fall Term

- Project Proposal Report (requirement, purpose, main stages, work schedule etc.)
- Design Document (which describes design steps to design a complex system, process, device _or product under realistic constraints and conditions, in such a way as to meet the desired results; ability to apply modern design methods for this purpose. It includes working principles of the product, how to prepare test mechanisms and test procedures, block diagram, circuit diagrams, calculations, simulation results, and budget analysis).

are completed.

In the Spring Semester, it is aimed to realize the design, test works and prepare the project report (Graduation Thesis). Spring semester application will be finalized before the beginning of the semester.

c. Fall term, project definition, project program preparation; product development workflow and stages; design / development workflow, system engineering, continuing education, report preparation, presentation - poster preparation and similar subjects are taught in the classroom.

d. In the implementation of this plan, the Committee manages the monitoring and flow of the process in accordance with the plan.

The design / development / realization / test / report-presentation preparation activities within the scope of the project are managed by the related advisor faculty member.

e. The project subjects are determined by the Committee with the contribution of all department members; Assignment of projects to the teams is made by the Committee, taking into consideration their preferences and coordinating with the advisors.

f. Project Teams make 2 oral presentations each semester. Academic staff and all project teams participate in the presentations.

g. Presentations, reports and other relevant documents are uploaded to the system at the latest at the time announced and / or delivered to the research assistant of the course. In case of late surrender, a penalty is applied (see section Other Matters).

h. Letter grades determined by the Academic Board of the Department according to

- The performance of the student / group in regular meetings,
- presentation performance,
- report performance,
- evaluation of the resulting work (by the advisor and the committee),
- written / oral examination

and using the principles of the regulation in Appendix.

Detailed Implementation Plan

Week 1:

The Committee compiles the projects proposed by the companies and / or department staff by taking into account the number of students who are expected to complete the project this year. The list is finalized by the Department Academic Board and advisors are assigned.

Week 2:

a. The project topics are announced on the course website.

b. Notification of teams and project preferences: Students identify teams of 3 people and report their project preferences to the Committee via electronic means. Students rank their preferences from 1 (most wanted) to 5 (least wanted).

c. First meeting with students: Students are informed about Graduation Project Application and Term Plan covering the operation and rules of the course and the projects are introduced to the students. At this meeting, students are not informed about who the project advisors are.

Week 3 - Week 8:

a. Assignment of teams to projects: A team-project assignment is made by applying a matching algorithm in which preferences are input. The algorithm tries to assign each

team to the highest possible preference, taking into account the preferences of the companies, if any.

Students who do not have a team and / or project are assigned to existing teams or new teams are formed and the teams are finalized (total number of teams is equal to the number of projects).

"Team-Project-Advisor" matching that results from team-project assignment is announced on the web page of the course.

b. Weekly Meetings: Each team meets with their advisors (at least 1 hour).

c. Teams contacting the company: Each team, in consultation with the advisor, determines the weekly regular meeting days, if possible.

d. Submission of Meeting Notes: Each team writes the notes of each interview with the advisor and / or company. A digital meeting note including the screen capture of online meeting is uploaded to system.

e. Preparation and submission of the Project Proposal Report (PP): Each team, with the agreement of the advisor and the firm, prepares the PP, the format and content of which will be available on the course website.

Week 9:

PP presentation: Each team makes a presentation explaining the project topic and project plan. All teams and academic staff must attend the presentations. Presentation language is English.

Week 10 - Week 13:

a. Design Studies: Each team carries out the design / development work in accordance with the plan in the PP report.

b. Submission of Meeting Notes: Each team writes the notes of each interview with the advisor and / or company and it is uploaded to system.

c. Draft report submission: Each team prepares and uploads the "Design Document" following the requirements on the web page of the course. The draft report is evaluated by the team's advisor. The final reports uploaded to the system before the deadline. In case of delay, penalty is applied.

Week 14:

a. Video Preparation: Each team prepares a video describing their design in English in accordance with requirements given. This video includes the detailed design and plan of the project. Teams are required to share draft with their advisors and get feedback before the presentation. The teams upload the videos to the system before the deadline.

b. Online Design Presentation: Each team will be ready in the presentation area on the announced date and present their design, answer the questions of the faculty and explain their projects in English.

Final Exam Weeks

a. Assessment of the course information: The test exam prepared by the Committee is conducted in a way to measure the course outcomes described during the semester. If the grade of this exam is less than 50, the student will fail the course with letter grade of F.

b. Grade submission: Department Academic Board determines letter grades and grades are entered into the system. When evaluating project teams with a grade, each student may be given a separate grade. A student who completes the course successfully can be evaluated with one letter higher or lower than the average grade received by the team. If there is a problem in grading, the course coordinator will be engaged.

Attendance: Each student should attend at least 80% of the weekly meetings. Students whose absence exceeds these limits will be given an NA grade.

Report Submissions: Reports must be uploaded to the system until the announced time. For late reports, a 5% penalty (up to 30%) will be applied for every 30 minutes delayed on the day of delivery. A penalty of 30% will be applied for each delayed day.

Reports should be printed in pdf format. The report format published on the course website should be strictly followed.

Electronic Documents: At the end of the semester, the electronic version of the final report must be uploaded to the course website (sakai). The material to be uploaded should include a copy of the poster and presentations (in pdf format) and the reports in doc (or docx) format.

| | |
|--------------------------------|-----|
| Meeting Notes | %5 |
| Project Proposal Report | %10 |
| Project Proposal Presentation | %15 |
| Design Document | %20 |
| Design Presentation Evaluation | %25 |
| Exam | %15 |
| Advisor Evaluation | %10 |

EEE 4910- Project Proposal Report Evaluation

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|---|-----|
| Experience on project management and project planning (Mühendislik problemi, projenin amacı, iş bölümü, proje takvimi uygun şekilde tanımlanmış mı?) | 60p |
| Experience on written and oral presentation techniques (Yazılı rapor performansı) | 40p |

EEE 4910- Project Proposal Presentation Evaluation

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|---|-----|
| Experience on project management and project planning (Mühendislik problemi, projenin amacı, iş bölümü, proje takvimi uygun şekilde tanımlanmış mı?) | 60p |
| Experience on oral presentation techniques (Sözlü anlatım performansı?) | 40p |

Exam Evaluation

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|---------|---|-----|
| Part 1: | Project management and project planning | 30p |
| Part 2: | System Engineering, experimental setup and procedures | 30p |
| Part 3: | Engineering Standards | 20p |
| Part 4: | Lifelong learning, ability to access information | 20p |

| EEE 4910- Design Document Evaluation Form | | |
|--|--|------------|
| Section | | Grade |
| 1. Scope of the Project 1.1 Description of The Problem 1.2 Aim of the Project | Problem tanımlanmış mı? Projenin amacı verilmiş mi? Proje çıktıları (prototip, model vs.) açıkça tanımlanmış mı? | 10 |
| 2.1 System Specifications 2.2 High Level Design 2.3 Item Design | <i>Experience on the implementation of an engineering project including software and/or hardware design.</i> Blok diagramlar ve grafikler kullanılarak tasarım açıklanmış mı? Hangi ürünlerin tasarlanacağı, hangilerinin satın alınacağı gerekçeleriyle belirlenmiş mi? Her bir parça ayrı ayrı tasarlanmış mı? Proje çıktılarının elde edilmesi için gerek donanım gerekse yazılım parçalarının nasıl gerçekleştirildiğini gösteren diagramlar, fotoğraflar, ekran çıktıları var mı? | 30 |
| 2.4 Realistic Restrictions and Conditions in The Design - Engineering Standards - Economical Effects - Manufacturability, Productivity and Sustainability - Ethical, Health and Safety Issues - Social and Political Effects | <i>Ability to design in order to meet desired needs under realistic conditions and limitations such as engineering standards and economic, environmental issues, sustainability, manufacturability, ethical, health, safety, social and political problems, etc. and apply test procedures.</i> Tasarımda mühendislik standartları, üretilebilirlik, ekonomik, sürdürülebilirlik, çevresel etkiler, etik konuları, güvenlik, sosyal ve politik etkileri dikkate alınmış mı? | 10 |
| 3. Experimental Procedures and Test | Test düzeneği tasarımı, kullanılacak ekipman ve test prosedürleri tanımlanmış mı? Proje çıktısının başarılı sayılması için testlerden beklenen sonuçlar açıklanmış mı? | 10 |
| 4.1. Cost Analysis | Malzeme fiyatları, işgücü kullanımı (adam-ay değerleri), hizmet alımı ya da özel ekipman kullanım ücretleri cinsinden yapılan harcamalar analiz edilmiş mi? Elde edilen sonuçlar ve beklenen sonuçlar karşılaştırılmış mı? Maliyet analizi tartışılmış mı? | 10 |
| 4.2. Risks and Risk Management | <i>Experience on project management and project planning.</i> Riskler hakkında düşünülmüş ve B planı düşünülmüş mü? | 10 |
| 5. References | <i>Appreciation of the need for self and continuous learning.</i> Literatür taraması yapılmış mı, konu ile ilgili teorik ve güncel bilgilere erişilebiliyor mu? | 10 |
| Overall Formatting Requirements | <i>Experience on written and oral communication techniques.</i> Formata dikkat edilmiş mi (Resim ve tablolar metin içinde açıklanmış mı, Referanslar metin içinde ve kaynakçada uygun şekilde yazılmış mı) İngilizce yeterli mi? | 10 |
| | Toplam | 100 |

EEE 4910- Design Presentation Evaluation

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|---|-----|
| Ability to design a product under realistic constraints by using modern design method. | 40p |
| Ability to design in order to meet desired needs under realistic conditions and limitations such as engineering standards and economic, environmental issues, sustainability, manufacturability, ethical, health, safety, social and political problems, etc. and apply test procedures | 40p |
| Experience on written and oral presentation techniques | 20p |