

SENIOR DESIGN PROJECT PROPOSAL GUIDELINE

1. Project Title:

2. Problem Statement:

Students should briefly describe the problem they will propose a solution for. Students should approach the Senior Design Project as an engineering design project aiming to offer a solution to a specific need of a specific customer. In other words, senior design project should be a specific solution focused on a specific need.

a. Requirements, Specifications:

Students should identify a target beneficiary group who will benefit from the solution to the problem. Solution to the problem will be determined based on the needs and requirements of this target customer group. Therefore, students should identify the needs and requirements of the customer group as well as technical specifications the proposed solution should meet. Requirements and specifications must be quantitative and measurable.

b. Literature Review:

Students should represent the solutions proposed to the specific problem. They should provide an evaluation of current solutions with their strengths and weaknesses. The analysis should consider the requirements and specifications for the specific project.

c. Objectives:

In this sub section, students should state the objective of the project. They should set specific goals they wish to achieve with their proposed solution and discuss to what extent they will work on the problem. The opportunities which the students have realized while analyzing the weaknesses of the current state of the art should be stated in this part.

Students should state the reason for choosing the specific problem. They should also describe how this problem fits their skills, background and how working on this problem will contribute to their skills and knowledge. They should briefly list the knowledge and skills acquired in earlier course work and other related experience which will help them formulate and solve the specific problem.

3. Realistic Constraints:

Students should consider realistic constraints while they design a solution for the problem. A designer must consider certain engineering standards, meet the available time limits and make sure cost of his design does not exceed the available budget. Students should evaluate the social, environmental and economic impacts of the project

and potential risks of harm the outcome of the project might pose on health and safety of the user. Students should also list the standards their solution should will adhere to.

a. Cost:

Students should determine the resources, facilities and material they will need for the project and evaluate the cost of the project. The cost should include the parts, software, labor and other costs. Students should assume decent salary for themselves based on a junior engineer's salary and calculate the labor cost based on the time they will allocate to the project.

b. Standards:

Students should list all engineering standards applicable to the project. These standards may include standards set by IEEE, IET, EU and Turkish Standards Institute. Students should also mention relevant engineering ethics they will follow during the project.

c. Social, Environmental and Economic Impact:

Students should discuss the end product and manufacturing process of the end product can affect the society, environment and the economy. Students should discuss possible impacts and the uses of your project. They should offer solutions to minimize the potential negative impacts.

d. Health and Safety Concerns:

Students must analyze how the end product may pose a risk of harm to users. All potential health and safety concerns associated with the end product must be listed clearly.

4. Approach and Methodology:

a. Methodology:

In this section, students should describe the methodology they will follow for the design. They should clearly discuss how they will achieve the goals they set. Outline of the path they will follow in the project should be described in detail. The project should be divided into tasks. Milestones in the project should be specified. Students should set quantitative metrics of success for each task.

Students should mention engineering ethics relevant to the project. Students should also evaluate safety concerns and determine safety measures they should follow while working on the project. Especially, practical implementations projects requiring students to build prototypes might require working with soldering stations, mechanical tools, etc. Students should be cautious while working with such equipment.

b. Plan for Completion:

Students should present a timeline for the tasks/milestones they have defined. Team members and the tasks each member is responsible for should be listed. Time timeline should be realistic and distribution of workload among team members should be balanced.

c. Expected Results and Accomplishments:

Students should discuss the expected results of each task and how they will evaluate the success of each task. Outcomes and accomplishments that are expected to make this project a success should be set using quantitative and measurable evaluation criteria.

d. Deliverables:

Students should list deliverables of the project. They should state what they will present to demonstrate that the project is successful. Every group must deliver a project report. Other deliverables may include prototypes, test setups, schematics, layouts, simulation results, software, etc.

e. Risks and Alternative Approaches:

Students will analyze risks associated with their approach to solving the problem in this section. They will list weaknesses of their approach and potential mechanisms of failure. They will present alternative approaches which may lead to solving the problem in case of a failure.

5. Conclusion:

Students should conclude the proposal with a conclusion section. Conclusion should include a short rephrasing the problem, needs of beneficiaries/customers, benefits of the proposed solution and their objectives. Then, they should summarize their methodology. Conclusion should clearly state the strengths of the proposed solution.

6. References:

Students should cite each reference in the text according to IEEE citation style. They should list all references in the References section.