Senior Design I Proposal Part 1

**Genre:** Design Proposal, used to present a new design or an innovative approach to an existing design, with the following purposes:

1. Persuade a person or institution to approve your invention.

2. Illustrate why the new product is needed and demonstrate that the potential users will accept the product.

3. Demonstrate your knowledge of the area.

4. Demonstrate that you know how to create a new product from scratch and that you have a plan to make the project real.

**Audience:** The proposal is intended for two audiences, on the one hand for a technical audience of engineers who understands the details of the design and on the other hand for top managers that can make decisions to go ahead with the project. Some chapters of the proposal are dedicated exclusively to the technical audience while the others serve both audiences. In this assignment, only Background and Intellectual Property are dedicated to the technical audience.

**Due date:** Two weeks after the last topic is covered in class.

**Format details:** According to the modified IEEE style, this style should be strictly followed and can be found at:

 <http://web.eng.fiu.edu/arellano/1002/Style/msw_usletter_format_nov12mod.doc>

Be sure to save some time for final edits, to eliminate errors and typos that could lead your audience to question your professionalism and the quality of your work.

Please find grading details and estimated page count in TABLE 1. A detailed rubric with grading criteria will be provided.

Every section starts on a new page; the only exception is when two complete sections fit in one page.

Any image, diagram, etc. that you copied from a different author must have an inline citation in the object’s captions.

Every block diagram, created by you or being reviewed, must be explained in full detail.

Always refer to tables and figures by their names and numbers, avoid expressions like the table below, rather use Table I.

From the style lecture, you learned the general section structure, which is copied below. The Introductory and Concluding paragraphs are worth 20% of the score of each section.

# Section Heading

**Introductory paragraph:**

Highlight the importance of the chapter. Here you explain why the section that you are writing is essential for any engineering project. Provide details of what you plan to do, the methods to be used, the data and information sources, etc.

**Body:**

In this part, you provide detailed explanations, figures, tables, etc.

Foremost, any figure, table, etc., that you use must be explained in the text. Use “In Figure 7,” rather than “the figure below.”

**Concluding paragraph:**

Here you explain what was learned or obtained from the section. Don’t use general terms; make it unique how your findings impact your project. Link to the next Section

Please don’t use headers for Introduction, body, and conclusion. Your writing style must resemble a book, not a Lab report. Avoid storytelling.

TABLE I. shows the topics covered with their weight along with possible deductions. Highlighted in yellow a topic of frequent errors and misunderstandings. Please use the definitions as presented in Need Specification.

1. Topics, Scores, and deductions

|  |  |  |
| --- | --- | --- |
| Section | Weight | Typical Page Count |
| II.           PROBLEM STATEMENT | 5 | 1 |
| *A.    Project Objectives* |
| *B.    Constraints* |
| III.         ASSUMPTIONS AND LIMITATIONS.  | 5 | 1 |
| *A.    Assumptions* |
| *B.    Limitations* |
| IV.         NEEDS FEASIBILITY ANALYSIS |  |  |
| *A.    Needs Analysis* | 10 | 5 |
| *B.    Need Specification* | 10 | 2 |
| *D.    Marketability* | 10 | 1 |
| VI.         OPERATING ENVIRONMENT | 3 | ½ |
| VII.       INTENDED USER(S) AND INTENDED USE(S) |  |  |
| *A.    Intended user(s).* | 3 | ½ |
| *B.      Intended use(s).* | 4 | ½ |
| VIII.     BACKGROUND | 15 | 10 |
| IX.           INTELLECTUAL PROPERTY | 10 | 6 |
| XVII. CONCEPT DEVELOPMENT | 10 | 6 |
|  *A. Alternative Options* |
|  *1) Advantages* |
|  *2) Disadvantages* |
| XVI. ETHICAL CONSIDERATIONS AND SOCIAL IMPACT | 15 | 3 |
|  |  |  |
| Reason | Deduction |  |
| Heading Style, Single Occurrence | 4 |  |
| Heading Style, Multiple Occurrences | 7 |  |
| Not referencing Images, Single Occurrence | 4 |  |
| Not referencing Images, Multiple Occurrences | 7 |  |
| Assumptions Limitations errors | 1 Each |  |
| Objectives and Constraints not Self-Standing | 1 Each |  |
| Not reviewed by mentor | 25% |  |
| Not presenting the required information | Case by Case |  |

Tables II through VI provide details on the different sections of the assignment.

1. Need Analysis and Specification

|  |
| --- |
| II.           Problem Statement |
| A.    Project Objectives |
| B.    Constraints |
| III.         Assumptions and Limitations |
| A.    Assumptions |
| B.    Limitations |
|  |
| IV.         Need Feasibility Analysis |
| A.    Needs Analysis |
| Opening, body, closing |
| Show and explain the different steps of the Need Analysis, including the tables with the objectives and their evolution. |
| Conclude With Problem Statement and Objectives. Make sure that the problem statement, objectives, and constraints are self-standing. For example, “The boomerang should return near the launcher.”, rather than “Should return near the launcher.”. |
|   |
| XVII.     |
| B. Specifications |
| Opening, body, closing |
| Explain the rationale to obtain your specifications |
| Make sure to include specifications coming from operating environment and assumptions. |
| Include a table summarizing your specifications at the end of the section. This time include just parameter names and values. |

1. Marketability

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| C. (FEASIBILITY NOT DUE AT THIS TIME) |
| D.    Marketability |
| Opening, body, closing |
| Write a separate section of your proposal about Marketability. Provide strong, persuasive, arguments of your project Marketability. Imagine your audience is composed of potential investors. However, do not mention them directly. |
| You have to review two similar projects in https://www.kickstarter.com/. |
| Each item you review must have a Sub Section Heading and an entry in the Table of Contents. |
| At the beginning of the first paragraph of each Kickstarter project, you should name authors, institution date, and citation number. Make sure that the citation number that is enclosed by square brackets. “in [1] . . . ”, rather than as “in reference [1] . . . ”. In general, it is not necessary to mention the authors of a reference, but in this case, they are relevant to the context. |
| You have to find at least two **current** projects that relate to your topic or that may have similar approaches. |
| Project Summary: Natural Language description of the project. |
| Funding strategy (Rewards) |
| Technology Overview (Type of Technology, Components used, and their main characteristics, speed power consumption, etc.). No explanations of the interconnections or operation are provided here. |
| System Description. A detailed explanation of the signals flow and interconnections, including at least: |
| One Block Diagram |
| One Picture |
| You must conclude with a hypothetical fund rising strategy, inspired by the examples you just analyzed, or by ideas presented at: |
| <http://www.cnbcprime.com/shark-tank?__source=pd|SharkTank|Google_Search&par=pd> |
| Start with something like: "If we were to make a fund raising …" |

1. Sections VI, VII and VIII

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| VI.         Operating Environment |
| Show how the project environment affects the specs of your project. |
| Include these findings in your Technical Specs |
|   |
| VII.       Intended Users and Intended Uses |
| A.    Intended user(s). |
| Show how the intended users affects the specs of your project |
| B.      Intended use(s). |
| Show how the intended uses affects the specs of your project |
|   |
|  VIII.         Background |
| Opening, body, closing |
| Each item you review has a Sub Section Heading and an entry in the Table of Contents. |
| At the beginning of the first paragraph of each research project, you should name authors, institution date, and citation number. Make sure that the citation number that is enclosed by square brackets. "in [1] . . . ", rather than as "in reference [1] . . . ". In general, it is not necessary to mention the authors of a reference, but in this case, they are relevant to the context. |
| You have to find at least three projects or products that relate to your topic or that may have similar approaches. |
| The topics should be current. |
| For each research project, the corresponding section should include the following subsections: |
| Project Summary: Natural Language description of the project. |
| Technology Overview (Type of Technology, Components used, and their main characteristics, speed, power consumption, etc.). No explanations of the interconnections or operation are provided here. |
| System Description. A detailed explanation of the signals flow and interconnections, including at least: |
| One Block Diagram |
| One Picture |
| Use your own words, copy and paste of text will be considered plagiarism and will severely affect your grade depending on the magnitude of the case. |
| Any picture, figure, table or graphic item that you import from the document must include the name of the original project and a citation |
| You should write Project reviews of no less than 2 pages, no more than 3 pages.  |

1. Section IX

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| IX.            Intellectual Property |
| Opening, body, closing |
| Do not use less than a page per patent but no more than three pages for each patent. |
| Sub Section Heading and an entry in the Table of Contents per item reviewed. |
| Patent number as part of the Sub Section Heading. |
| An overview of the patent. |
| Summary of the claims that may relate to your project. |
| What measures could be taken to avoid infringement? |
| Include at least one figure from the patent. |
| No expired patents, please. |
| Find a name for your team that does not have any copyright or trademark conflict. |
| Write a Team contract to be included in one appendix indicating: |
| What are the team members obligation |
| Under what circumstances a team member could be expelled from the team |
| Write an IP contract to be included in one appendix indicating: |
|  Your criteria for co-inventorship. Who will be considered an inventor? In what extent? (Team members, mentor, sponsors) |
| Who will be the invention spokesman? |
| How you plan to split the profit. |
| What will be the mechanism for intellectual property decision making? |
| XVII. Concept Development |
| Opening, body, closing |
| Follow the guidelines indicated in the Concept-End Product lecture. |
| Illustrate the method you follow and how you obtain the weights. |
| For each option indicate its advantages and disadvantages. Please do that not as a summary but in each option section. |
| Complete the whole section |

1. Section XVI

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| XVII End Product Description Not Due at this Time |
| XVI. Ethical Considerations and Social Impact |
| A.    Ethical Considerations |
| Opening, body, closing |
| Start with a paragraph that indicates that you are in compliance with the IEEE code of ethics and that any present dilemmas would have to be resolved using the Theory Model. In particular, before analyzing with the Theory Model, refer to some of the IEEE codes and explain their significance to your project. |
| Make sure that your dilemma is stated in a separate, indented, and italicized paragraph. |
| Use a decision system as Line Drawing and please include several options. |
| *B.    Social Impact* |
| Opening, body, closing |
| Use the data you have obtained from your survey and your contact with students and faculty abroad. |
| Write an essay of how your project will contribute to: |
| a.      Local Culture |
| b.      Global Culture |
| Based on Sebastian Deterding's talk: What your designs say about you, elaborate on: |
| a. What are the intentions that you bring to bear with your design?  |
| b. What are the effects, intended and unintended, that you may have?  |
| c. What are the values you are using to judge those?  |
| d. What vision of the good life do you want to convey and create with your design? |