Descriptive and Informative Title of Your Project

Include the names of all team members

Engineering Design Report

***Note: If you are expanding an existing project, make sure to focus on the work <u>your team</u> is developing for this report. You should not simply regurgitate information from prior years. Instead, you will only need to provide relevant information from prior years that is necessary to place your work in the proper context*.**

The Problem (Deliverable I)

Clearly define the problem that the team is addressing. If this is a multiyear project, describe the problem in the context of the likely focus for this academic year (and continue to make that the focus for everything you do this semester) Provide relevant background information to understand the desired impact of this project. Examine the problem being addressed in more detail and describe the positive impact in consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and/or economic factors.

Inspiration (Deliverable I)

Briefly describe and provide credit to any relevant prior work. You should identify gaps and limitations in prior work (particularly gaps your product helps address). Provide citations of prior work when applicable.

Design Constraints (Deliverable II)

Document limitations on your design (constraints) that restrict design options, such as available funds, resources, restrictions on parts/equipment, safety regulations, materials, and/or time. *<u>Make sure to numerate or bullet point each constraint and include a short description and explanation for each.</u>*

System Requirements (Deliverable II)

Summarize the **<u>most important</u>** requirements in this section (4 to 7 requirements). These should be listed in order of importance, from most important to least.

Ensure that the requirements you define follow the SMART approach (**<u>S</u>**pecific, **<u>M</u>**easurable, **<u>A</u>**chievable, **<u>R</u>**elevant, and **<u>T</u>**ime-bound (SMART), aligning with the project's objectives and constraint

<u>Make sure to numerate or bullet point each requirement with its SMART definition of each requirement.</u>

NOTE: It is recommended to include a use case model to diagram the system functionality and system actors. This is a useful visualization that can be translated into user requirements.

Ethical Concerns (Deliverable II)

Briefly document any relevant ethical and legal considerations related to your design.

Some possible concepts to consider are:

- Privacy Issues
- Security Concerns
- Potential Harm
- System Misuse
- Human Subject / Informed Consent
- Liability Concerns
- Intellectual Property

As appropriate, discuss how your design may adapt to address or mitigate potential harm.

High Level Design (Deliverable III)

Include at least one highly informative clear and well-defined high-level diagram (such as a logical block diagram) that illustrates key components of the system defining generalized inputs/output of various subsystems. Provide text that describes the design and how the design satisfies the requirements as previously identified.

Physical Design (Deliverable IV)

Include at least one highly informative and well-defined physical diagram that illustrates key components of the system and defines specific inputs/outputs. Provide text that describes the design and how the design satisfies the requirements as previously identified.

Make sure to include engineering standards and describe in the accompanying text the rationale for the standard and its importance as part of your design.

Bill of Materials (Deliverable IV)

Complete the following table outline the bill of materials of your system needed to build your physical design.

Item	Part #	Item Cost	Quantity	Total Cost	Purchase Link

Provide some text to justify the expense of any significant parts (especially expensive items) utilized as part of the design.

Gannt Chart (Deliverable IV)

Include a highly informative and descriptive Gannt chart that outlines the project timeline by listing all major tasks and milestones along with their respective start and end dates. Each task should be represented as a bar spanning its duration, showing dependencies between tasks and ensuring that the chart reflects a realistic schedule for project completion. Place this chart in context by including a text description of major milestones for system completion.

System Testing (Deliverable V)

Explain your methodology and results for testing the system. Describe data that has been collected, how this data has been analyzed, and your interpretation of results. Consider both validation and verification testing as relevant. For example, for verification testing, breakdown how the system met (or failed) to meet design requirements. In contrast, for verification testing, breakdown how the system performed to address the problem of interest and the methodology used to measure this performance.

Recommendations of Future Work (Deliverable VI)

Consider gaps and limitations of the current system and provide clear recommendations on potential improvements. Numerate or bullet point the recommendations for improvement of the system ranking the recommendations from the most critical to least important. Make sure to include a description for each recommendation.

Conclusion (Deliverable VI)

Include a single paragraph summarization of the key accomplishments and take-aways of the work performed. In other words, succinctly summarize the key findings and outcomes of the project, emphasizing how the project objectives were met. In addition, include, as relevant, a summarization the significance of the work, discuss any major limitations encountered, and suggest the most critical area(s) of potential improvement.

Abstract (Deliverable VI)

Move this section (the abstract) to be the very first paragraph in this report.

The abstract should provide a concise overview of the entire project, including the problem statement, objectives, methodology, key results, and conclusions. It should be clear and to the point, highlighting the significance of the work and its contributions, while being brief enough (keep it to one paragraph) to give readers a quick understanding of the project's scope and outcomes.

Project Transition (Deliverable VII)

Complete the following information to finalize your project transition

- **Project Handoff – Stakeholder Delivery**
  - Has the project been delivered to the stakeholder (Circle One): Yes or No
  - If Yes, indicate the name and email address of who has the project.

- **Project Handoff – Parts on Campus**
  - Is there any parts or equipment purchased as part of this project left on campus (Circle One): Yes or No
    Note, anything on campus should be left in the lockers in EN-104 unless previously discussed with your instructor.

If yes, indicate which part(s) and their location on camps

Item	Part #	Item Cost	Quantity	Total Cost	Location / Locker Number

- **Project Handoff – Software or Computers**
    - Is your **<u>final version</u>** project currently run on one of the computers in the design lab room (EN-104)? (Circle One): Yes or No

      If yes, indicate the computer serial number:

    - Does the project utilize any team software accounts or credentials? (Circle One): Yes or No
        - If so, indicate which software (without any usernames or passwords):
        - Talk with the course instructor ***<u>private</u>*****<u>ly</u>** about providing the account information

      For security reasons, under no circumstances should you provide us with your personal credentials. Instead, we are referring <u>only</u> to project team accounts, such that we may replicate and expand upon the team's work without exposing or compromising any personal account information.

- **GitHub Repo:**
    - Include a link to the project's Github repository:
    - Is the GitHub Repository currently public or private (Circle One): Public or Private
    - Does this project have a public facing (GitHub pages) website (Circle One): Yes or No
        - If yes, include the link:

- **Instructional Video**
    - Include the link or links to your instructional video focused on transitioning the project

- **Post PDF on GitHub:**
    - Finally - Make sure a PDF copy of this report is on the team's GitHub page

- **Congratulations on completing the capstone sequence and good luck on all your future endeavors!**