Capstone Portfolio Template

2021-2022

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Introduction

The team Capstone Portfolio represents the **biography** of the Capstone organized around the engineering design process **EDP** components. The Capstone Portfolio is used as a source of information to prepare the Capstone Exhibition Poster and contributes to the Capstone Exhibition mark.

- Each team has one portfolio
- Portfolio is used to gather information, both process and products, for each component of the engineering design process
- Each team is assigned a **TEAM NUMBER**
- Each team's Portfolio Name **MUST** follow this format

  Year-Semester Number-Team Number

  2021-1-Team Number (example for grade 1 group #7: **2021-1-07**)

One team member sets up the portfolio following the Portfolio Template and makes sure all team members have access to the portfolio.

I. Present and Justify a Problem and Solution Requirements

Egypt Grand Challenge(s)

Which Egyptian Grand Challenge(s) are you addressing, and why are they important to address?

Specify only the grand challenges that are related to the capstone problem or big idea

Problem to be solved

What specific problem are you addressing?

What are the impacts or consequences that are related to dealing with that problem?

Explain The major positive -if problem solved- and negative -if not solved- impacts

Research

Which topics did you research about the problems?

Explain further topics that will help in deeper understanding of the problem

Which topics did you research about the solutions?

Explain further topics that are related to the possible approaches of solving the problem

Other Solutions Already Tried

What are the prior solutions that have been applied trying to solve this problem?

What are the strengths and weakness of those solutions?

II. Generating and Defending a Solution

Solution and Design Requirements

What characteristics (Solution Requirements) should a successful solution have, and how each of these characteristics could make the solution successful?
General solution requirements that must be in any effective, efficient, and successful solution

Which design requirements did you choose and why did you choose it?

Selection of Solution

Describe the solution you decided to pursue for your prototype and why did you choose it?
Demonstrate the **idea** of the prototype you will build to solve the problem

Selection of Prototype

Describe in details the prototype (design and construction) you have decided to construct, and how it will meet the design requirements you have chosen?

III. Constructing and Testing a Prototype

Materials and Methods

List the materials you used to make your prototype.
(Table: Item, quantity, description, usage, cost, source of purchase, picture)

List the safety precautions you took to ensure your team is being safe.

Test Plan

List the design requirements you have chosen to test with your prototype.

List the steps for each test plan to conduct on the prototype associated with each design requirement

Data Collection

What measurement tools or instruments did you use? What level of precision as well the error did you use in measurement?

List all data collected in each test plan
Data visual representation should be in a table and/or graph

IV. Evaluation, Reflection, Recommendations

Analysis and Discussion

What is the analysis of the prototype behavior and the test plan results?

What conclusions do you reach from the data you collected?

The test and measurements should be accurate enough to draw conclusions
The data should authenticate that the prototype met the identified design requirements

Recommendations

What recommendations do you have for future work in this area?
This includes recommendations on the prototype itself and/or the real-life application of the project idea

What would you tell another team who wanted to start where you stopped on your solution to help them?

How did working on this project help you and your team to become better STEM school students?
This includes the scientific, engineering, and social impacts

Learning Outcomes

Which 10 discipline learning outcomes did you identify as related to your Design Challenge?

Explain how each identified learning outcome was transferred to your Capstone.
List the research sources you have used for your project in APA format