ECE 372 – Microcontroller Design
Writing Portfolio - Professional Design Report

Professional Design Report
- Document a project in a professionally written design report

Goals:
- Detailed report providing a clear description and discussion of your design
- Should provide enough detail that an engineer with appropriate background can re-implement your design

Design reports have two audiences:
- Engineers
  - Interested in how the design works and how effective the design is
- Management
  - Interested in the application of the design and its effectiveness

Professional Design Report Contents
- Cover/Title Page
- Table of Contents
- Abstract/Summary
- Introduction/Problem Statement
- Technical Discussion and Details
- Conclusions
- Appendices

Abstract/Summary:
- Concise description of design itself
- Brief motivation for design and discussion of usefulness and effectiveness
- Follow guidelines for writing an abstract

Introduction/Problem Statement:
- Provide context for problem and define problem/project that was solved/built
- Discuss any prerequisites/assumptions for the design
- Discuss alternative solutions (previous work) and benefits of your design compared to those alternatives
Professional Design Report Contents

Technical Discussion and Details:
- Presents the design itself and all details relevant to implementing the design
- Design Details
  - Description of the hardware and software explaining how the design works
  - Overview of design identifying major subcomponents with detailed description for each subcomponent
  - Usually includes some figures, block diagrams, flow charts, schematics, etc.
  - Should reference detailed schematics and software code in the appendices when necessary

Discussion of Problems Encountered
- Detailed description of any problems encountered while implementing the design
- Discussion of solutions utilized to overcome those challenges
- Purpose:
  - Help other engineers avoid encountering the same problems
  - Provide solutions if similar problems are encountered

Design Verification and Testing
- Describe the testing procedures undertaken to verify design functionality and effectiveness
- Can simply include testing procedures documenting the desired functionality was correctly implemented
- But, may require quantitative analysis to support the testing and verification depending on design

Conclusions:
- Provides brief summary of design and evaluates how well the design achieved the design goals
- If design goals were not met, should provide analysis as to why
Professional Design Report Contents

- **Appendices:**
  - Includes any detailed information that is too large to include directly within the design report text itself.
  - Such items should be included in the appendices and reference within the report text.

- **ECE 372 Specific:**
  - Complete Circuit Diagram and Schematics
  - Complete Software Code Listing
  - Complete Part Lists with Costs
  - Copy of your Project Proposal