

ELEC 391 Final Report Template

(The list below shows sections that should be included in the final report. Use your discretion to adapt and rename these, as appropriate, for your final report.)

1. Title Page

- Project Title, Authors, Date and Instructors to whom this is submitted

2. Table of Contents

- List of all major sections and sub-sections with page numbers

3. Introduction

- Description of the engineering problem or challenge
- Background context and any relevant history

4. Requirements, Specifications and Constraints

- It's helpful to list these in a table or enumerated, (e.g. R1, R2, etc.) so this can be treated as of checklist of requirements that must be tested as detailed in the Verification and Validation section.
- **Functional Requirements**
 - What the system must accomplish. Include both the core requirements and your team's additional features.
- **Performance Requirements**
 - Metrics for performance such as speed, efficiency, capacity, etc.
- **Constraints** (financial, temporal, material, environmental, standards and regulations to follow, etc.)

5. Detailed Design and Implementation

- Describe your final design. The level of detail should be such that other 3rd year ELEC students can implement it from this report without the need for more details.
- Details of earlier prototypes might be included in an Appendix but might only be briefly mentioned for comparison in the body of the main report.
- Compare different design alternatives considered and provide the rationale for your design choices (e.g., in approach or component selection). Avoid a narrative description of the design process; instead, appropriate usage of figures and comparison tables that justify your design decisions will demonstrate adherence to a systematic design process.
- As appropriate, include relevant calculations, equations, models and simulations used to validate the design.
- **Conceptual Design**
 - High level functional diagram/architecture of the overall system.
- **Subsystem Designs**
 - Detailed description and schematics for key subsystems
 - Include electrical, mechanical, structural, or process-related subsystems as appropriate

6. Verification and Validation

- **Verification:** testing methods and results to demonstrate that the product meets the specified requirements.
- **Validation:** Testing methods and results to demonstrate that the product actually will meet the high-level goals.

7. Conclusions and Future Work

- Summary of the outcomes achieved/learned
- Recommendations for next steps or further improvements

8. References

- Cite any academic papers, industry standards, or prior work consulted in the project. Use consistent reference formatting (e.g. <https://pitt.libguides.com/citationhelp/ieee>)

9. Appendices

- Include sections that do not fit well in the main body of the report but help to show the development progress and justify your decisions. These might include (but may not be restricted to) the following:
- **Appendix A:** Budget (list all expenditures including any cost overrun)
- **Appendix B:** Additional technical calculations, simulations, with accompanying explanations
- **Appendix C:** Additional detailed drawings, schematics, or blueprints
- **Appendix D:** Datasheets or product specifications for selected components (URL's preferred if available)
- **Appendix E:** Relevant industry standards or regulations used
- **Appendix F:** Prototypes (including relevant C-sketches, photos, state-machine diagrams, weighted decision matrices etc.)
- **Appendix G:** Sample Code

Notes:

- **Figures and Tables:** Include figures, tables, and diagrams where relevant to clarify complex points. All figures and tables should be enumerated, captioned and referenced in the text. For photos, consider adding appropriate labeling.
- **Page numbers:** insert page numbers on all pages except the title page

Rubric

Criterion (weight%)	Poor	Marginal	Meets Expectations	Exceeds Expectations
Organization and Structure (10%)	0-4 pts Often difficult to follow due to absence of structure.	4.5-6.0 pts Occasionally difficult to follow due to erratic topic shifts/jumps.	6.5-8.5 pts Most information is organized in a logical order that is easy to follow	9-10 pts All information is presented in a logical and engaging sequence.
Use of Visual Aids (primarily figures and tables) (10%)	0-4 pts Minimal use of visual aids and/or all carelessly prepared.	4.5-6.0 pts Some visual aids are carelessly prepared or used.	6.5-8.5 pts Most visual aids are good, though a couple may be sloppy/difficult to read.	9-10 pts ALL visual aids are easy to read and understand and of high quality.
Core Design & Implementation (35%)	0-14 pts Design solution is unclear, impractical, scientifically flawed and/or doesn't meet most objectives.	14.5-21 pts Design solution has modular functionality but integrated solution doesn't meet stated objectives.	21.5-31 pts Design solution meets stated objectives	31.5-35 pts Design solution shows strong rationale, is innovative and/or robustly meets all objectives.
Testing (25%)	0-10 pts Testing methods and results absent or unconvincing.	10.5-15 pts Mostly marginal test methods and results.	15.5-22 pts Most test methods and results presented are appropriate.	22.5-25 pts Convincing test methods and results presented.
Extra Feature (20%)	0-8pts Trivial difficulty level and/or little evidence of extra effort.	8.5-12 pts Marginal difficulty level and/or objectives not very close.	12.5-17.5 pts Good difficulty level and objectives mostly met.	18-20 pts Challenging difficulty level and objective met.