EEE 491 Engineering Design I
Detailed Design Report (max. 25 pages)

See EEE392 Course Materials before developing your report. EEE 392 Video records can also be reached via
https://www.youtube.com/channel/UClpWqUL0Ux4DJE53ovgyDtw

Also note that some major components (with some improvements) of conceptual design report are expected to be integral part of the detailed design report.

The report must contain

- front page
- content page
- summary

Summary
An overview of the report, including the scope and general content of the project, detailing the progresses made in the project, and the conclusions of the report.

1. Introduction
2. Problem statement/Needs Identification
3. Research/Technology Survey and Background information
4. Requirement Specifications
   - Engineering requirements
   - Marketing Requirements
   - Constraints (economical, environmental, sustainability, manufacturability, social)
   - Standards/Certification/Legal Issues
5. Detailed Design (including Concept Generation and Evaluation)
   A. Level 0 Design: the highest level design of the system, overall description of the system, i.e., description of inputs-outputs and functionality, decomposition of the requirements to sub-system requirements (for Level 1 Design)
   B. Level 1 Design: functional decomposition of the system (based on Level 0 Design) to sub-systems (divide and conquer), input-output and functionalities, interfacing
   C. Level 2 Design: component level-detailed design (finalized), a ready-for-implementation design is expected at this stage, including device selection (model number with justification), simulations regarding hardware implementation if applicable, all components/modules/sub-modules identified and their availability in the market inspected (ready to purchase), major or critical operations are demonstrated via simulations (or perhaps some preliminary laboratory tests).
      In the design stages, proofs of implementation regarding the following methodologies are expected
      - Demonstration of how concept generation methods are implemented (existing products, benchmarking, brainstorming, nominal group technique, concept table/fun etc.)
      - Demonstration of how behavioral models (class diagram, use cases, state machine, activity diagram, UML etc.) are implemented (if applicable)
   D. Based on the detailed design (Level 2), detailed test plans are prepared including unit test, module tests, functional tests and integration tests
6. Project Plan: Work Breakdown Structure (WBS), Work Packages (elements; activity, responsibility, timeline, dependency, deliverables and budget), Gantt diagram
7. Risk analysis, alternative plans (plan B/C)
8. Cost Analysis and Commercialization Plan
9. Conclusions
10. References
11. Appendix (team working proofs shall be provided)