Template for the non-thesis report writing to be reviewed by the MS exam committee.

A good technical report for the non-thesis committee is one in which the reader can quickly find what they need without spending time reading the entire report. The main reader who needs to read the entire report is the person who would need to reproduce and extend the accomplishments of the project in the report. This reader is most likely a student who will get the report/slides from a faculty member.

Note that you will produce a report and a set of overview slides. The slides should contain headings that are identical to section headings in the report.

Committee readers should be able to do the following in priority order:

1) Note the key accomplishments in the abstract. Whenever possible, there should be quantitative metrics about the accomplishments. The abstract also contains a concise version of the Problem Statement.

2) By reading the Conclusion, the reader develops an understanding of what made the accomplishments possible. The quantitative metrics that were concisely done in the abstract are in a much more detailed form in the Conclusion, but less detailed than the Results part in the Discussion Section.

3) By reading the Recommendation section, the reader is given some reasons for what was not accomplished, and how they could be.

4) By reviewing the Problem Statement details in the Introduction, the reader has the framework for the project.

5) By viewing the Overview Slides of the report, the reader has a visual picture of the entire report, which supports the previous reading of the Abstract, Conclusions, Recommendations, Problem Statement, and other possibly skimmed sections. Note that at this point the Committee readers have a good idea of the main utility of the report, without having to painstakingly read every word in the report. It is the author's writing requirement to make this possible.

6) The reader than starts in the body of the report. Next read is the expansion of the Problem Statement into sub-problems. This is known as a Requirements Specification, and is located in the Technical Background section of the report. The sub problems are best written as a list. Three default sub-problems are: 1) What measures could be used to assess how well the problem was solved. 2) The author should identify some related sub-problems that could be solved if the project was further extended. 3) How will the author facilitate a future reader being able to reproduce and extend the accomplishments in the report by only looking at the report/slides and not having contact with the author.

7) The body of the report is skimmed.

8) The body of the report is read in detail – by the Committee, only if needed.

When sending a draft of your nonthesis content to your committee for evaluation, the most prioritized parts of the draft are: 1) The set of overview slides 2) The Conclusion and Abstract of your report 3) Following the template for both the report and overview slides (they should correlate with headings, etc.) 4) the overall report.

<u>Abstract</u> - As quantitative as possible about performance metrics and other results.

## Table of Contents, Lists of Figures and Tables

<u>Introduction</u> - besides the usual information, there should be an obvious section that has the Problem Statement. In addition, the Introduction should end with an overview of the remaining sections of the report.

<u>Technical Background</u> – besides the usual information, there should be an obvious (ie. with subheading) section which states the Requirements Specification that expands the problem statement. The specification will include requirements that were not actually met by the final solution, consistent with the open ended aspects in the problem statement, and will define performance metrics applied to either parts of the final solution or the whole final solution. Requirements that were not met will be discussed further in the Recommendations section of the report.

<u>System Specification</u> – this is the architecture of the solution to the problem, describing the relationship between various modules of the solution.

<u>Discussion</u> – this includes the results section of the report, with discussion on what requirements were met and how well. This section should include plots of the performance metrics as a function of one or more design variables. If possible, two competing performance metrics of a design variable should be used to highlight a tradeoff made in the solution choices. There should also be some discussion about the problem requirements that were not met.

<u>Conclusion and Recommendations</u> – this should summarize the achieved solution and include suggestions for how to achieve the requirements that were not met, if more resources were available to work on the problem topic. The Recommendations should be under a separate subheading.

Finally, a set of presentation slides that highlight the important content of the report will also be created, both as a guide to the student in writing the report and for the faculty evaluation committee to quickly assess the report. The set of slides should mirror the organizational structure of the report, and it is suggested to use similar headings as those in the written report template. Key figures in the report should show up in the slides. Faculty viewing the slides should be able to identify the same key points as those in the report.