Discrete Mathematics, Math 163
Project grading rubric

An "A" to "A-" project report has these characteristics:

-The report is professionally written, with very few or no typographic or grammatical errors. Meaningful figures, tables or diagrams are included as appropriate that are informatively labeled and are referenced in the narrative in informative ways.

-The report's organizational structure contributes to the clarity of the report; paragraph breaks are used effectively to convey the logical structure of the narrative.

-All mathematical concepts in the report are used appropriately (rather than in ways that do not apply), and all reasoning and calculations are correct, except for very minor rounding issues.

-The mathematical methods used and approaches taken are all explained, not only in terms of *what* was done and *how*, but also *why* these methods/approaches are appropriate. The explanation is at a level the report audience can understand.

-Important steps in reasoning and calculations are shown in sufficient detail that the intended audience could routinely fill in omitted steps. The reader has enough information to reproduce every conclusion reported. [For calculations, as a general rule, if the calculation is one you did routinely in high school, summarize. If the calculation is one you learned in college, fill in the details.] Important mathematical concepts, facts, or theorems, along with outside sources of information, are cited explicitly.

-The report demonstrates understanding of the logical and mathematical subtleties of the topic and clarifies them for the reader. In other words, confusing or tricky parts of the work are clarified rather than ignored or "brushed under the rug."

-The report satisfies the needs of the audience and gives them more than they asked for in relevant ways.

A "B+" to "B-" project report has the characteristics of an "A" report, except:

-Typographic or grammatical errors are not frequent, but they may not be very rare.

-There may be a spot or two where the paper's organization is not so clear, perhaps an out-of-place paragraph or a duplicate explanation of something already well covered.

-Mathematical concepts are still used correctly and reasoning and calculations are correct, but the explanation or presentation of reasoning and calculations may have minor gaps that might confuse the audience slightly.

-While the report demonstrates complete understanding of the main mathematical methods and concepts, it demonstrates less clear understanding of the more subtle details, perhaps by avoiding discussing them at all, or perhaps by containing minor inaccuracies in the explanation.

-The report satisfies the needs of the audience.

A "C+" to "C-" project report has the characteristics of a "B" report, except:
-The report may be unprofessional in spots, containing sloppiness, informality to the point of distraction, or significant problems with typographic and grammatical errors.
-While all important reasoning and calculations are present and correct, they may be organized in a way that requires the reader to work hard at deciphering or reproducing the writer's sequence of reasoning or calculation.
-Instead of disorganization, there could also be an instance of reasoning or calculation which, although it is not provably wrong, cannot be reproduced from the information the reader has.
-Very minor errors may creep into the mathematics or logic.
-While an attempt has been made to explain the methods used, there may be gaps in the explanation that would make it very difficult or impossible for the typical audience member to fill in omitted steps; in other words, the explanation cannot be fully understood except by someone who already knows how to completely solve the problem.
-While the report correctly carries out and explains all routine calculations, subtleties of the methods employed are unexplained, ignored or misapplied, though these problems do not result in significant errors.
-The report satisfies the needs of the audience, though they may have been asked to trust some parts of the work without having a complete reason to do so.
-If the report otherwise satisfies the criteria for a "B" paper but has one fairly large mathematical or logical error, it *may* qualify for a C.
A "D+" to "D" project report has the characteristics of a "C" report, except:
-The report writing may be frequently unprofessional.
-The organization may be seriously confusing. The report may appear to be several independently-written, overlapping reports poorly combined – in other words, the "seams are showing" where the report was (badly) stitched together from separate group members' work.
-Some parts of the calculations and reasoning are correct but some are incorrect; important steps in calculations and reasoning were mostly shown, but sometimes incorrectly.
-An attempt was made to explain the mathematical and logical approach and methods used, but the gaps are significant. The report demonstrates substantial confusion about the methods appropriate to solving the problem, not merely about the more subtle or tricky aspects, but at the basic or routine level.
-The report addresses most of the needs of the audience (but possibly with incorrect conclusions).
Failing reports typically have at least one of these characteristics:
-The report was a rough draft, and would constitute clearly unacceptable writing in a professional setting.
-Several parts of the calculation or reasoning were incorrect or missing.
-At least one central calculation or reasoning process was not explained at all; most methods or approaches were explained little.
-Some central part of the problem was not addressed, i.e. the report did not satisfy the needs of the audience.

Some questions to ask yourself about your preliminary report, while you still have time to revise:
1. Does the preliminary report show (not merely *claim*): a. That the team has completed some significant part of the work?
b. That the team has a plan, shown in *some* if not *full* detail, about how to complete the project?
c. That the team is capable of writing in a professionally appropriate manner, regarding, e.g. grammar, formatting, and writing a report that stands alone without requiring the *audience* to read the prompt?
d. That the team has made a solid beginning toward a report that will give positive answers to the questions below?

Some questions to ask yourself about your final report, while you still have time to revise:
(this list is not comprehensive, but it does address the most popular mistakes).
2. Does this paper: a. Clearly restate the problem to be solved?
b. State the final conclusions in complete sentences that stand on their own?
c. Aim its explanations at the appropriate audience?
d. Have an organization and logical structure that highlights the main points of the argument?

3. Does this paper: a. Clearly label diagrams, tables, graphs, or other visual representations?
b. Explain how any formulas are derived, or where they can be found?
c. Clearly state any assumptions that underlie the scientific work?

4. In this paper: a. Are the mathematics and logic correct?
b. Do the authors explain the difficult parts and summarize the routine parts of the mathematics and computation, rather than the other way around?
c. Did the writers solve all of the problems and answer all the questions originally posed?

5. In this paper: a. Are the spelling, grammar, and punctuation correct?
b. Are all formatting specifications followed?
c. Is the presentation logical and easy to read?