

CE 335 term project specifications

The term project involves doing some additional reading and programming on a numerical problem of your choice. Your results should be written in an engineering lab report format. You will also give a very short in-class presentation of your topic and main findings.

1 *Project topic proposal*

You can choose any computational problem that you find of interest, preferably one from engineering. Prepare a 2-3 page proposal that concisely states the problem you want to work on, why it is important or significant (give 2-4 references), and which mathematical models, numerical methods and Matlab functions or capabilities you expect to use. You may be asked to revise or change the topic if it's not suitable or if someone else is already doing it.

2 *Project format*

See also the project grading rubric on the class website. If you have any questions about the expectations, please ask as soon as possible.

Written report (80% of project grade)

Your written report should be around 10-15 pages (single spaced) and contain the following sections:

- a) Abstract – Summarize what you did and key results in a couple paragraphs. (½ page)
- b) Introduction – Concisely describe your problem and how it relates to material we discussed in class. Also include 1-2 applications of your problem to engineering (with at least 3 references to textbooks, technical manuals, or journal articles); if you can't find engineering applications, then provide applications to science or math areas. (1-3 pages)
- c) Methods – Include (and justify) any simplifying approximations or assumptions you made in solving the problem. With these approximations, how accurate is the answer to the original problem expected to be? Describe the algorithms you used to solve the problem (and why you chose them). Describe any special difficulties that came up when programming the solution and how you overcame them. (1-3 pages)
- d) Results – Include graphics that clearly show your main findings. Provide an estimate of the error in your results (and explain how you estimated the error). (2-4 pages)
- e) Conclusions – Summarize how your work solves the problem given and how it might be useful in applications. Comment on possible extensions and improvements. (1 page)

- f) Bibliography – List alphabetically all references cited, using ASCE's format. References should be to technical literature, not to popular media or Wikipedia.
- g) Appendices, including your computer code.

All material taken from other sources needs to be properly cited. Use quotation marks around all verbatim quotes. (But if you find yourself quoting whole sentences, it's probably a sign you need to study the topic so that you can explain it in your own words.)

Grammar and spelling matter. Have friends look your drafts over, and get help at the Writing Center.

Oral presentation (20% of project grade)

Your presentation should be 5 minutes long (no more than 6 slides). It should be structured as follows:

- a) Introduction: State the topic and why it's important. (1-2 min)
- b) Results: Show 2-3 key figures and explain what they mean in a way that's understandable to the average CE335 student. (2-3 min)
- c) Conclusions: What you achieved, what you learned. (1 min)

3 Project submission

I will get back to you within a few days of the proposal deadline to either approve the topic or suggest modifications.

A first draft of the written report must be submitted. It should be close to complete, containing all the required sections. I will review your draft and return it to you with comments so that you can correct any problems.

The due dates for the project components are given in the syllabus. The project grade will be reduced by 10% for missing any of the due dates. Details on exactly how to submit each component will be given in class or via e-mail as the due dates approach.