Projects

Goals

The projects offer you practice

- formulating and solving optimization problems;
- choosing appropriate analysis models;
- evaluating optimization algorithms, and;
- writing technical reports

The projects offer me the opportunity to assess your learning of these course objectives.

Step 1: The Analysis Model Write-Up

MANE 4280 only

Usually, the lecture after I introduce the project, a write-up is due that describes how you will analyze the system of interest. The write-up should

- describe the design variables, including any parameterization that you need to introduce;
- address how you will compute the objective function (and constraints, if any), and;
- be typeset, well written, and less than one page

Step 1: The Analysis Model Write-Up (cont.)

Do not worry about how hard the actual analysis might be. For example, if you think a CFD analysis is necessary, then so be it.

- I am more interested in which analysis you think is appropriate.
- Of course, in practice, you should favor analysis methods that are fast to use but provide sufficient accuracy in the design metrics.

After the analysis model write-up has been submitted, I will indicate which model is to be used.

aim for about an hour

- 30 - 40 min for research
- 20 - 30 min for writing

Step 2: The Project Report

Approximately three weeks after the project is introduced, the project report is due. Here's an overview of the typical report contents I expect:

- executive summary;
- description of the analysis method;
- description of the design variables;
- optimization problem statement, objective, constraints, and optimization method;
- results, including optimal solution, and comparison of methods, and;
- appendix for the source code

Step 2: The Project Report (cont.)

Some formatting expectations:

- 10 pages or less (not including the appendix);
- font size 12 or 11;
- word processed, with no hand-written annotations, and;
- Your unique ID for MANE 4280 clearly on the first page, and no other identification.

or MANE 670

avoid meta data in PDF

Step 2: The Project Report (cont.)

I want to help you write a great report!

If you bring me your report or code during office hours, before the report is due, I will provide feedback on

- your methods and their implementation;
- the quality of the Matlab code;
- the report's written quality and layout.

This formative assessment will be provided during office hours only

Step 3a: Quantitative Assessment

Once submitted, Tahmid will assess your reports based on

- your methods and their implementation;
- your Matlab code, and;
- your results.

Each project will have a rubric. Please read the rubric before you start the project!

Step 3b: Peer Review

Simultaneously with the quantitative assessment, we will commence the anonymous peer review:

- each of you will be assigned 2 projects to read and assess;
- you will provide an assessment out of 4 for written quality and organization.
- your assessment score needs to be backed up by a brief explanation; for example, a score of 4/4 needs to be strongly justified, as does 0/4.
- your explanation/justification should be constructive.

These peer reviews will be due, usually, one week after the projects are submitted.

Collaboration

You are permitted and encouraged to discuss the project with each other, provided each of you writes your own code and report.

- A good policy to follow in order to avoid academic misconduct is to not take project notes or exchange project files with one another.
- That is, exchange information verbally and you should be fine.

↪ do not exchange files !