

MSE 480 Case Study Assignment

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I. Overview

In this case study, a team of students take one of the case studies in Chapter 5 of “Materials Selection in Mechanical Design” by Michael Ashby. However, the material in Ashby is **not** sufficient for this case study. The case study is supplemented with independent review of the literature on topics relevant to the case study.

II. Case Study Deliverables

In MSE 480, the senior design project has two deliverables from the students. The team is required to create an oral presentation and a written report.

II.A. Oral Presentation

The first student deliverable for the case study is the oral presentation, which constitutes 10% of the MSE 480 course grade. This presentation should run 20 minutes in length and leave five minutes for a Q&A session.

A rubric for the grading of the oral presentation is provided on the course website. Importantly, the rubric scores both technical and communication elements of the presentation.

II.A.1. Recommended Elements

Some recommended elements of the oral presentation are given below. Keep in mind these are just proposed helpful guidelines as different case studies will dictate more or less attention to different areas.

- Title slide (with team members)
- Problem statement – what is the problem your “product” is addressing? Give your audience context (2-3 slides)?
- Overview possible solutions (1-2 slides)

- Overview your proposed solution and briefly justify its superiority to alternatives (1-3 slides) (could generate a chart ranking elements of design solutions and illustrate how you got to your solution)
- Identify what properties are critical to your design solution (and hierarchy) (1-2 slides)
- Overview Materials selection for your design, using appropriate design criteria and property charts (3-4 slides)
- Summarize optimized material(s) selection (1 slide)
- Cost analysis (1-2 slides)
- Environmental impact (1-2 slides)
- Summary – (1 slide)

II.A.2. Helpful Presentation Tips

- As a rule of thumb, you can estimate 1 slide per minute on average
- Avoid overcrowding slides (do not be wordy in your bullets – use short phrases that capture the main point and guides your discussion)
- Judicious use of animations can facilitate audience following your presentation (if a slide is loaded, they may not follow your flow)
- Do not overuse animations as this can distract (do not need to animate every word or line!)
- Choose neutral template (white background, appropriate color fonts)
- Use consistent formatting (titles and bullets should have similar punctuation/capitalization, be consistent with active or passive voice...)

II.B. Written Report

The second student deliverable for the case study is the written report, which constitutes 10% of the MSE 480 course grade. This written report contains the same content as the oral presentation.

A rubric for the grading of the oral presentation is provided on the course website. Importantly, the rubric scores both technical and written elements of the report.

References

Students are required to use EndNote software for the bibliography of their report. The final report must contain at least five sources that are archival, refereed journals, typically indexed in the Web of Science database. Some of these articles can (should) include technical as well as economic, environmental, societal and ethical information.

III. Schedule

The schedule for this course is provided in a separate document located on the course website at <http://utkstair.org/clausius/docs/mse480/pdf/schedule.pdf>