

IENG263 - TERM PROJECT

Project Background

As a *newly appointed Manufacturing Engineering & Management team* (Ideally, *Group of 4 Students*), you have been asked to work on the following tasks below:

Project Tasks

The following tasks form the basis of the project:


- 1- Choose an engineering organisation in a manufacturing sector of your own choice with production operations and provide an introduction to your chosen organisation and to its products and services [300 words].
- 2- For a typical product of your organisation, identify and analyse the application of this product, along with its performance requirements and its in-service conditions [300 words].
- 3- Based on your prior analysis in part 2, identify and analyse the geometric, mechanical, physical, and environmental properties of this product [600 words].
- 4- Based on your prior analysis in part 3, identify three candidate materials for this product, proposing a material option. Justify your material selection proposal. Identify and analyse the structure of your proposed material [600 words].
- 5- It is known that tensile strength (UTS and yield strength) and hardness are of paramount importance for engineering products. Describe the importance of these mechanical properties for your product, and discuss how these properties can be verified/tested in your manufacturing plant. Discuss the typical stress-strain curves for your proposed material [600 words].
- 6- Discuss in-detail, three alternative approaches of manufacturing this product. Include the details of equipment and labour that would be required, the detailed sequence of steps of manufacturing, and cost of manufacturing, in your discussion. Assume annual volumes for your product. Include CAD models/visual demonstrations regarding the manufacturing processes and your product, where applicable. Compare the three alternative approaches, and propose the most viable option of manufacturing [2000 words].

- 7- Could this product be manufactured via the Additive Manufacturing technology? Why/why not? What would be the advantages and disadvantages of adopting such a manufacturing process (if possible)? [600 words].

Guidance notes

- Choose an engineering organisation in the manufacturing sector, and an engineering product, which you will be able to apply all of the concepts and tasks above. Consider typical manufacturing processes and statistics when assuming your data, justifying your assumptions as required.
- You can select an organisation you worked during one of your placements or another of your acquaintance to provide practical examples to support your project.
- Structure and format your report, as per the project grading scheme provided below.
- Time management and team work is crucial in this project. Groups are advised to be formed early, tasks shared among members and term project work commenced as early as possible.
- Write the project as a guidance document for top management, unfamiliar with materials and manufacturing engineering fields.
- DO NOT exceed the word limits designated for each project task and the total word limit of 5500 words (excluding your References).
- Adopt all appropriate report writing practices, including an appropriate referencing system.

Project Grading Scheme

IENG263 - TERM PROJECT GRADING SCHEME				
Group:		0 60 90		
Organisation Selected:		Not Included Satisfactory Outstanding		
Turnitin Score: %				
No	Task	Weight	Rating (0 - 100)	Grade
T	Title Page, Table of Contents & Executive Summary	2%		0.00
1	Introduction (including your organisation and its products)	4%		0.00
2	Application, performance requirements and in-service conditions	9%		0.00
3	Geometric, mechanical, physical, and environmental properties	6%		0.00
4	Material selection	6%		0.00
5	Strength and hardness analysis/application	5%		0.00
6	Manufacturing approaches	40%		0.00
7	Additive manufacturing	5%		0.00
C	Conclusions	3%		0.00
F	Formatting, Organisation and Referencing	20%		0.00
Final Grade (Out of 100)		0.00		

Note: Your project report grade will form 93% of your overall grade for the term project. The report grade will then be combined with your attendance grade (7%) for the Friday's lab/tutorial sessions.

- **Distinction/Outstanding – 90% +**
Work of a distinguished quality that demonstrates a detailed knowledge base and awareness of the wider implications. The work will clearly show the ability to analyse, synthesise, evaluate and interpret concepts, principles and data. There will be strong evidence of competence across a range of specialised skills, using them to plan, develop and evaluate problem solving strategies.
- **Merit – 75 – 89%**
Work of a very good quality that demonstrates a high degree of ability in subject areas/key skills. Evidence of strong analysis, synthesis, evaluation and the ability to develop judgements. The work should be able to show consistent evidence of capability, including self-evaluation and the ability to effectively use a range of techniques in various situations.
- **Satisfactory – 60 – 74%**
Work of satisfactory quality that demonstrates a good knowledge of theories and provides some evidence of analysis and evaluation. The work may be rather standard, limited, but will be mostly accurate. There may be some errors and omissions.
- **Fail – 0 – 59%**
Work that is well below the standard in relation to one or more subject based or key skills area. It may address to some extent some of the subject matter, but such factors are outweighed by major deficiencies across remaining areas.

Formatting, Organisation and Referencing

Students are required to implement a proper report format, and referencing system (As advised in: <https://ie.emu.edu.tr/en/others/report-writing>) for their reports, effectively organizing their reports and effectively utilising in-text citations for all information that they obtain from textbooks, research articles, internet and any other sources including Figures/Tables. These sources are then required to be clearly demonstrated at the References section, included at the end of the reports, in line with the referencing system adopted. The level of organization and implementation of references will highly influence grading of the reports.

Submissions, Deadlines and Final Remarks

You are required to submit your project report and other relevant files to the project submission page on LMS. Failure to submit any of these before the deadline, and/or exceeding a Turnitin Score of 25% WILL result in refusal of your project or severe deductions from your project grade.

The reports are due on:

6th June 2022, Monday (17:00 – TRNC Local Time)

Good luck!

Ali Baştaş, PhD CQP MEng DipQ