



AUM Academic Projects

Spring 2021

MSE 230 – Structures & Properties of Materials



Course Project Guidelines
MSE230: Properties of Materials & Structures
Project weight: 25%

Spring 2021

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Important Deadlines

TASK/EVENT	DATES
Project Deliverable 1	Week 6
Project Deliverable 2	Week 13
Project Deliverable 3	Week 14

COURSE PROJECT

I. INTRODUCTION

The Project component of the course is essential to passing this course. The project shows competency in understanding and applying the course objectives and achieving the learning outcomes. The project should allow the student to investigate, apply, research, and practice real life engineering situations with respect to engineering graphics. It is expected that each student to fully and actively participate in the project as an effective team member.

Group Size: 3 students

II. LEARNING OUTCOMES

1. Demonstrate the knowledge, technical skills and personal discipline required to be successful utilizing material science for creative problem solving in an engineering environment.
2. Discover miscellaneous materials science concepts such as crystalline shape and relation between properties and structure of the material.
3. Demonstrate the knowledge required to be successful utilizing material science basis for creative problem solving in an engineering environment.
4. Develop skill and proficiency in the ability to present clearly identified solutions using basic chemistry and materials science and standards in an engineering environment.

III. PROJECT FILES

- Project Production in Moodle , Guidelines for topic selection in Moodle
- Submission link will be available on Moodle for each deliverable.

IV. PROJECT SUMMARY (SCENARIO)

Materials science and Engineering is a key factor contributing towards manufacturing a reliable product. Irrespective of whether the product is a coffee-maker, automotive vehicle or a satellite, materials cost more than 50% of the final product cost. As a materials engineer, you have been given the opportunity to conduct your project for:

MANUFACTURING , TESTING AND APPLICATIONS OF A SELECTED MATERIAL

***Note!** Please note that students are responsible to **take all safety measures** while performing the project.

1. MANUFACTURING , TESTING AND APPLICATIONS OF A SELECTED MATERIAL

Materials science and Engineering is a key towards materials selection and materials manufacturing. Materials selection is an important section of a part design and manufacturing in different areas of Engineering such as mechanical components, structural components, electrical and electronic devices. Within this project, you are asked to pick one material where in the first part its identification (the journey of material from extraction from nature to its production) needs to be performed and in the second part its manufacturing steps and performing tests and experimental procedure towards its use as a final product needs to be investigated.

Del 1:

Select one material

Introduce its chemical composition, structure, all related properties

Investigate about how it has been extracted

Introduce the standards related to this material (only name 1 or 2 standard). Maximum 3 pages of report excluding the cover page ...

Del 2:

Talk in detail about two manufacturing processes being applied for this material in the industry (please check the following: https://en.wikipedia.org/wiki/List_of_manufacturing_processes).

Introduce these processes and give information about advantages and disadvantages of this process especially in the manufacturing of the selected material.

For the test and measurement students can use standards such as ASTM. The appropriate experimentation and how data and output help to verify the part should be included. In specific student need to work of the tensile testing measurement of parts made of the assigned material.

Del 3:

Presentation of Deliverables 1 and 2.

V. DELIVERABLES & PROJECT MANAGEMENT

Full Description

Deliverables		Deadline	Method of Delivery	Grade Allocated
D1 (Progress Report)	<p>Groups of 3 students should be formed and names submitted to the instructor.</p> <p>A report including abstract, introduction of intended work. Follow the details in D1 for each project.</p>	W6	Upload report on Moodle on the specified link	2.5%
D2 (Final Report)	<p>Final Report including the makings of the projects elements.</p> <p>Students should purchase the required items and make the project (See the details in writing rubric)</p> <p>Follow the details in D2 for each project.</p>	W13	Upload final report on Moodle on the specified link	12.5%
D3	A short PowerPoint presentation (10 minutes maximum) describing your work in detail. Poster can be an option.	W14	Upload Power-Point presentation on Moodle and present in the class	10%
			Total	30%

VI. PLAGIARISM

- The policy of the university does not tolerate plagiarism. The students are highly recommended to use their own language in writing the report including the introduction part.
- The students can use any reference they think is informative and relevant to the project. However, the referencing of the sources and the citation of the books or papers must be done professionally.
- Students are recommended to refer to the Students' Handbook for further information on plagiarism.

VII. MARKING SCHEME

	100%	85%	75%	60%	Comments
D1 (Progress Report)	Well written initial Report which includes all elements mentioned in D1 above	Initial report which includes all items but lacks clarity	Initial report lacks clarity and missing one element	Initial report lacks clarity and missing two items	
D2 (Final Report)	Updates for D1 should be included A comprehensive report is presented including all items needed as well as well formatted (see the table below)	Updates for D1 should be included A comprehensive report is presented with adequate content depth and formatting (see the table below)	Updates for D1 should be included A comprehensive report is presented but lacking depth in content.	Poorly structured report with limited analysis and discussion	Grade Assignment: * 80% for content * 20% for structure & formatting
D3	Excellent Presentation accompanied by poster ,model and Q & A (questions)	Good Presentation accompanied by the poster and model	Acceptable Presentation with little care towards poster design and model	Weak Presentation	Grade Assignment: * 10% presentation * 30% poster/model * 60% Q & A

Performance Indicator	Beginning	Developing	Proficient	Exemplary
1. Structure: 5%	The report is poorly structured with little organization	Evident effort of report structure. However, little attention is given to formatting.	The report follows a formal structure and appropriate to the topic. However, misses minor formatting issues.	The report follows a formal structure and appropriate to the topic
2. Style 5%	The report is not capable of capturing the attention of the reader	Little effort is exerted towards capturing the reader's attention	Evident Effort of trying to get the attention of the reader	Style of writing well engages the reader throughout the entire report.
3. Syntax and Grammar 5%	Little Effort is done towards applying grammar rules, spelling, punctuation, ...	Some but insufficient effort is done towards applying grammar rules, spelling, punctuation, ...	Report gives attention to grammar. However, it includes some minor grammatical or syntax mistakes.	Report written in the past tense. No sign of any grammatical or syntax mistakes
4. Vocabulary 5%	Poor vocabulary and little use of discipline specific vocabulary	Some but insufficient effort towards using discipline specific terminology.	Major effort towards using discipline specific terminology.	Use of discipline specific terminology. The report includes a list of abbreviations
5. Content 70%	The report provides limited exploration to the topic	The report addresses all topics but three or more topics are not fully presented	The report addresses the topic in full with one or two minor items missing	The reports content is comprehensive and fully addresses all needed items

Performance Indicator	Beginning	Developing	Proficient	Exemplary
6. Appropriate Use of Referencing System 5%	Little evidence of using any referencing style	An inconsistent referencing style is adopted.	Use of APA style (or an approved alternative system) for referencing. However, some errors were spotted.	Appropriate use of APA style (or an approved alternative system) for referencing
7. Academic Integrity 5%	Report appears to be not sufficiently acknowledging work of other authors.	The report does not provide clear distinction between students' work and work of others.	Report distinguishes between student's own work and the work of others. This is achieved by sufficient and appropriate citations throughout the report.	Report distinguishes clearly between student's own work and the work of others. This is achieved by sufficient and appropriate citations throughout the report.