

KING SAUD UNIVERSITY
COLLEGE OF ENGINEERING
MECHANICAL ENGINEERING DEPARTMENT



Course Title: Selection of Materials for Design; ME-509
Semester: First- 1442 - 2020/ 2021 G
Lecturer: Dr. Magdy El Rayes [Room 2C- 44]
Textbook: Materials Selection in Mechanical Design, Fourth Edition, Michael F. Ashby/Wiley, © 2011 Michael F. Ashby, 2011.
Credit Hours: [3] Lecture.
Pre-requisite: Materials Engineering ME-254, Manufacturing Processes; ME- 311

Course Outline:

- Introduction.
- The Evolution of Materials in Products
- The Design Process and Types of Design
- Design Tools and Materials Data
- Engineering Materials and Their Properties
- Material Property Charts
- Basics of Materials Selection
- Selection Strategy and Procedure
- Material Indices
- Case Studies: Materials Selection
- Selection of Material and Shape
- Shape Factors
- Case Studies: Material and Shape
- Processes and Process Selection
- Classifying Processes
- Case Studies: Process Selection

Grade Distribution:

Quizzes and/or Assignments	10 %	Any time.
Project	20 %	
First Mid-Term Examination	15 %	within the 7 th . week
Second Mid-Term Examination	15 %	within the 13 th . week
Final Exam	<u>40%</u>	
TOTAL	100%	

Minimum Attendance is 75 % in Lectures.

ATTENDANCE

Attendance is very important. If happens, and the student is absent for whatever the reason is, he is responsible for obtaining class notes and any other materials that he may have missed.

ASSIGNMENTS

Late assignments are NOT normally accepted. Any student who has any difficulty with anything that would affect his academic performance should talk to the instructor as early as possible.

Computer Usage:

Students are encouraged to make their assignments and homework calculations and type their reports using software available on PCs.

Assessment Tools:

1. Homework assignments
2. Quizzes
3. Mid-Term exams
4. Final Term exam
5. Project

Revised 20.08.2020

ME 508 Selection of Materials for Design

3(3+0)

Classification of engineering materials; Effect of composition; Processing and structure on materials properties; Properties versus performance of materials; Criteria and concepts in design; Materials property charts; Performance indices; Decision matrices in materials selection; Case studies in the use of performance indices.