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Department of Chemical Engineering	
Material Science (64311)	
Total Credits	**3**
major compulsory	
Prerequisites	P1 : General Chemistry I (23101)

Course Contents

This is an introductory course in materials science. It is intended to provide basic knowledge of materials which are of interest for materials engineers. Solid materials will be discusses with respect to their properties as well as the relation among material processing, structure, properties, and performance.This course will give students an ability to use these principles and information in the design of structures and equipment.

	Intended Learning Outcomes (ILO's)	Student Outcomes (SO's)	Contribution
1	Distinguish between different types of solids&alloys according to their chemical and physicalproperties.	A	40 %
2	Calculate mechanical properties of materials and define the different solid structures, solid imperfections, microstructure of metals and alloys, and solid failure mechanisms.	E	40 %
3	Investigate modern materials needs and present future challenges and environmental concerns.	G	20 %

Textbook and/ or Refrences

William D. Callister, Jr., Materials Science and Engineering, an Introduction John Willey &Sons, Inc., 7th Edition, 2007

Assessment Criteria	Percent (%)
First Exam	15 %
Second Exam	15 %
Quizzes	10 %
Homeworks	10 %
Projects	20 %
Final Exam	30 %

Course Plan

Week	Topic
1	Introduction: Classification of materials
2-3	Crystal Structures
4-5	Imperfections in solids
6	First Exam
7-8	Mechanical properties of materials
9-10	Dislocation and Strengthening Mechanism
11	Second Exam
12-13	Failure of Solids
14-15	Project Presentations
16	Final Exam