



AL IMAM MOHAMMAD IBN SAUD ISLAMIC UNIVERSITY
COLLEGE OF ENGINEERING
Department of Mechanical Engineering

Course Information

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| Course Code and Name: | ME211 Materials Science and Engineering |
| Credit Hours: | 3 (3 Lecture + 1 Tutorial) |
| Prerequisites: | CHEM 103 General Chemistry, MATH 105 Calculus 1 |

Course Description

Introduction to Materials Science and materials engineering, Different applied materials (metals, polymers, ceramics and composites). Atomic structure and inter-atomic bonding. Polymer structure and polymer processing and properties. Mechanical properties of metals, polymers, ceramics and composites. Material solidification, microstructures, dislocations and defects. Phase diagrams and phase transformations. Strengthening mechanisms in materials. Classification of Metal Alloys. Basics of Corrosion and corrosion prevention

Textbook

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|-----------|---|------------------|-------------------------------|
| Title | Materials Science and Engineering - An Introduction | | |
| Authors | William D. Callister | | |
| Publisher | John Wiley & Sons, Inc. | Year and Edition | 7 th Edition, 2007 |

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| Introduction to Materials Science |
| Atomic Structure and Interatomic Bonding |
| Structures of Metals and Ceramics |
| Polymer Structures |
| Polymers properties & processing |
| Mechanical Properties and Testing |
| Solidification of Metals and Alloys |
| Imperfections in Metals and Alloys |
| Phase Diagrams |
| Materials Strengthening Mechanisms |
| Classification of Metal Alloys |
| Basics of Corrosion and corrosion prevention |

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| Academic Coordinator | Signature |
| Prof. Dr. Sabbah Ataya | <i>S. Ataya</i> |



Official Stamp