0

Department of Industrial Engineering	
Engineering Materials &Metallurgy Lab. (65325)	
Total Credits	**1**
major compulsory	
Prerequisites	P1 : Engineering Materials and Metallurgy (65332) OR Engineering Materials (67330) OR Engineering Materials (67314) OR Properties of Engineering Materials (65321)

Course Contents

Experiments to be achieved by this course 1- Specimen preparation for metallographic study (grinding, polishing and etching) 2- Microstructure examination of ferrous and non- ferrous alloys. 3- Hardness test. 4- Impact test. 5- Heat treatment of plain carbon steel (hardening, normalizing, annealing). 6- Hardenability (jominy test). 7- Surface hardening of steel (carburizing). 8- Tensile test. 9- Fatigue test. 10- Torsion test. 11- Precipitation hardening. 12- General corrosion test.

	Intended Learning Outcomes (ILO's)	Student Outcomes (SO's)	Contribution
1	Be able to collect and analyze the data from experiments showing factors affecting the results.	B	35 %
2	Be able to conduct the experiments using the exact required tools &equipment in the right way.	K	30 %
3	Demonstrate an understanding of the main principles of Engineering Materials and Metallurgy	H	35 %

Textbook and/ or Refrences

Laboratory sheets and handouts William D. Callister, Jr., Materials Science And Engineering, An Introduction John Willey &Sons, Inc., 7th Edition, 2007

Assessment Criteria	Percent (%)
Mid. Term Exam	20 %
Laboratory Work	40 %
Final Exam	40 %

Course Plan

Week	Topic
1	Specimen preparation for metallographic study (grinding, polishing and etching).
2	Microstructure examination of ferrous and non- ferrous alloys.
3	Hardness test
4	Impact test
5	Tensile test
6	Torsion Test
7	Heat treatment (hardening, normalizing, annealing).
8	Hardenability (jominy test)
9	Precipitation hardening (age hardening)
10	Surface hardening of steel (pack carburizing).
11	Corrosion test