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Department of Chemical Engineering	
Heat Transfer Operations Lab (64339)	
Total Credits	**1**
major compulsory	
Prerequisites	P1 : Heat Transfer Operations (64334) OR Heat Transfer (64232)

Course Contents

This is an application to the basic phenomena and principles of heat transfer. The Lab provides all necessary instrumentations such as heat conduction unit, boiling and condensation unit, fluidized bed unit, air conditioning unit, heat exchanger, etc. .

	Intended Learning Outcomes (ILO's)	Student Outcomes (SO's)	Contribution
1	Design&conduct experiments, as well as to analyze &interpret data.	B	70 %
2	Communicate effectively	G	10 %
3	Use the techniques skills and modern engineering tools necessary for engineering practice.	K	10 %
4	Show an understanding of professional and ethical responsibility	F	10 %

Textbook and/ or Refrences

Laboratory Manual Cengel, Y. A. (2003). Heat Transfer: a practical Approach. (2ed edition). The McGraw-Hill companies.

Assessment Criteria	Percent (%)
Reports	45 %
Laboratory Work	15 %
Final Exam	40 %

Course Plan

Week	Topic
1	Thermal conductivity
2	Linear Heat Conduction
3	Effect of cross-sectional area
4	Effect of surface contact (Insulation)
5	Radial Heat Conduction
6	Conduction along a composite bar
7	Boiling heat transfer
8	Film condensation
9	Drop condensation
10	Fluidization
11	Bench top cooling tower
12	Air conditioning