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Department of Building Engineering	
Fluid and Thermal Sciences Lab. (68308)	
Total Credits	**1**
major compulsory	
Prerequisites	P1 : Fluid and Thermal Sciences (68301)

Course Contents

This lab includes two sections; the first section aims of showing students the practical processes of heat transfer. Experiments include process of conductors, and heat transfer in fluid layers. However, the second part aims of showing them the practical applications of fluid mechanics. Experiments include calibration of pressure gauge and pressure measurement, flow through venture meter, orifice and nozzle, measurement of impact of fluid jet, measurement of flow fraction losses along a pipe, measurement of minor losses along a pipe flow, and Reynolds number.

	Intended Learning Outcomes (ILO's)	Student Outcomes (SO's)	Contribution
1	Design and conduct fluid mechanics and heat transfer exp. and analyze and interpret data.	B	70 %
2	Communicate effectively with each others to write technical reports and conducting the experiments.	G	10 %
3	Use the techniques ,programs (Excel) and modern engineering tools to write the required reports.	K	10 %
4	Demonstrate an awareness of health and safety issues applicable to working in the supervised laboratory.	F	10 %

Textbook and/ or Refrences

Cengel, Y. A. (2003). Heat Transfer: a practical Approach. (2ed edition). The McGraw-Hill companies. Mott, R. L. (1994). Applied Fluid Mechanics (4th ed.). New Jersey: Prentice Hall.

Assessment Criteria	Percent (%)
Mid. Term Exam	15 %
Quizzes	10 %
Reports	30 %
Laboratory Work	10 %
Final Exam	35 %

Course Plan

Week	Topic
1	Introduction: How to Write a Laboratory Report?
2-5	Lecture (theoretical background) Conduction a Long Simple &Composite Bar Radial Conduction &Insulation Thermal Conductivity of Fluid (water)
6-7	second part (fluid mechanics) 6 Calibration of Pressure Gauge 7 Pressure measurement
8-15	Lecture (Theoretical background) Flow Through A Venturi Meter Flow Through Orifice And Nozzle Measurement of Impact Forces of Fluid Jets Lecture (Theoretical background) Measurement of Flow Friction Losses A Long A Pipe Measurement of Minor Losses A Long A Pipe-Flow Reynolds number
16	Discussion + Final Exam