

Department of Mechatronics Engineering			
Thermo- Fluids &Heat Transfer Lab. (67461)			
Total Credits	1		
major compulsory			
Prerequisites	P1 : Principles of Thermo-Fluids &Heat Transfer (67261) P11Synch. : Principles of Thermo-Fluids &Heat Transfer (67261)		
Course Contents			
Linear heat conduction along simple and composite bars, Radial conduction, heat conduction in fluids, hydraulic turbines, fluid properties, flow through venture meter, flow through orifice and nozzle, impact of jet, pumps in serial and parallel, vortex Flow and steam engine.			
Intended Learning Outcomes (ILO's)		Student Outcomes (SO's)	Contribution
1	Ability to conduct experiments and analyze interpret related to heat conduction, fluid flow and the concepts of hydraulic systems as pumps, turbine and steam engine.	B	50 %
2	Be able to use the devices of the lab properly and write scientific report	K	40 %
3	Be able to work in team for preparing the experiments and collect the data	D	10 %
Textbook and/ or References			
Laboratory handout and sheets			
Assessment Criteria		Percent (%)	
Mid. Term Exam		20 %	
Quizzes		10 %	
Laboratory Work		40 %	
Final Exam		30 %	
Course Plan			
Week	Topic		
2	Experiment No. 1: Linear heat conduction along simple bar		
3	Experiment No. 2: Linear heat conduction along composite bar		
4	Experiment No. 3: Radial conduction		
5	Experiment No. 4: Heat conduction of fluids		
6	Experiment No. 5: fluid properties		
7	Experiment No. 6: Flow through venture meter		
8	Experiment No. 7: Flow through orifices and nozzles		
9	Experiment No. 8: : Impact of jet		
10	Experiment No. 9: Pumps in series and parallel		
11	Experiment No. 10: Hydraulic turbines (Pelton, and Francis turbines)		
12	Experiment No. 11: vortex flow		
13	Experiment No. 12: Steam engine I		
14	Experiment No. 13: Steam engine II		
15	Discussion		
16	Final exam		