ATME College of Engineering

DEPARTMENT OF MECHANICAL ENGINEERING

Lesson Plan & Work-done Diary for AY:2025-26, Even Semester

Course with Code: Heat Tranasfer-BME601				Faculty: Mr. Ravikumar S			Semester & Section: VI Sem ME	
Class No.	Date planned	Topics to be covered	TLP Planned	Class No.	Date of Conduction (DD/MM)	Topics Covered	TLP Executed	Remarks if any deviation
MODULE-1								
1		Bridge course on Basics of Physics related to heat and energy transfer	PPT and Chalk & Talk					
2		Bridge course on Basics of Physics related to heat and energy transfer	PPT and Chalk & Talk					
3		Bridge course on Basics of Physics related to heat and energy transfer	PPT and Chalk & Talk					
4		**Conduction-Basic Equations** General form of one-dimensional heat conduction equation.	Chalk & Talk					
5		Boundary conditions of first, second and third kinds.	Chalk & Talk					
6		Steady state conduction in slab, with engineering applications.	Chalk & Talk					
7		Steady state conduction in cylinder with engineering applications.	Chalk & Talk					
8		Steady state conduction in sphere with engineering applications.	Chalk & Talk					
9		**Steady state conduction:** Overall heat transfer coefficient for a composite medium.	Chalk & Talk					
10		Thermal contact resistance. Critical thickness of insulation. Discussion on engineering application.	Laboratory Experiment					

Module - 2								
10		Steady state conduction in fins of uniform cross section long fin.	Chalk & Talk					
11		Fin with insulated tip.	Chalk & Talk					
12		Fin with convection at the tip.	Chalk & Talk					
13		Fin efficiency & effectiveness.	Chalk & Talk					
14		Discussion on engineering applications.	Laboratory Experiment					
15		**One dimensional Transient conduction:** Conduction in solids with negligible internal temperature gradients (lumped system analysis).	PPT and Chalk & Talk					
16		Use of transient temperature charts (Heisler's charts) for Transient conduction in slab.	PPT and Chalk & Talk					
17		long cylinder and sphere; concept of semi-infinite solids.	PPT and Chalk & Talk					
18		Discussion on engineering applications.	Laboratory Experiment					
Module - 3								
19		Introduction, one-dimensional steady conduction and one Dimensional unsteady conduction.	Chalk & Talk					
20		Unsteady conduction, boundary conditions, and solution methods.	Chalk & Talk					
21		Review of basic laws of thermal radiation.	PPT and Chalk & Talk					
22		Intensity of radiation and solid angle; Concept of thermal radiation resistance.	PPT and Chalk & Talk					
23		Radiation network, view factor, Radiation heat exchange between two parallel infinite black surfaces	PPT and Chalk & Talk					

24		Between two parallel infinite gray surfaces; Effect of radiation shield.	PPT and Chalk & Talk					
25		Discussion on engineering applications.	PPT and Chalk & Talk					
26		Discussion on engineering applications.	Laboratory Experiment					
Module - 4								
27		**Concepts and Basic Relations in Boundary layers**: Flow over a flat plate -Velocity boundary layer, Thermal boundary layer.	Chalk & Talk					
28		Prandtl number; general expression for local heat transfer coefficient; Average heat transfer coefficient.	Chalk & Talk					
29		**Forced Convection:** Physical significance of Dimensionless numbers.	Chalk & Talk					
30		Use of various Correlations for hydro dynamically and thermally developed flows.	Chalk & Talk					
31		Use of correlations for flow over a flat plate, cylinder.	Laboratory Experiment					
32		Use of correlations for flow over a sphere and flow inside the duct.	Chalk & Talk					
33		**Free or Natural Convection:** Physical significance of dimensionless numbers.	Chalk & Talk					
34		Use of correlations for free convection from or to vertical, horizontal and inclined flat plates.	Chalk & Talk					
35		Use of correlations for free convection from or to vertical and inclined cylinder.	Laboratory Experiment					

Module - 5									09-04-25
36		Film, dropwise condensation theory.	PPT and Chalk & Talk						
37		Pool boiling regimes.	PPT and Chalk & Talk						
38		Use of correlations for film and dropwise condensation on tubes.	Chalk & Talk						
39		**Heat Exchangers:** Classification of heat exchangers.	PPT and Chalk & Talk						
40		Overall heat transfer coefficient, Fouling, Scaling factors.	PPT and Chalk & Talk						
41		LMTD method of analysis of heat exchangers.	PPT and Chalk & Talk						
42		NTU method of analysis of heat exchangers.	PPT and Chalk & Talk						
43		Compact heat exchangers.	PPT and Chalk & Talk						
44		Revision	Laboratory Experiment						
45		Revision	Laboratory Experiment						
46		Revision	PPT and Chalk & Talk						
47		Revision	PPT and Chalk & Talk						
48		Revision	PPT and Chalk & Talk						

Summary of the Lesson Plan and Work-Done

	Activity	Planned	Actual	Remarks
1	Theory Classes	48		
2	Demonstrations & Lab Visit/ Experiment conduction	8		
2	Assignments/ Quizzes/ reports	3		
3	Tutorials/ Extra classes/Bridge Classes	3		
4	Internal Assessments	3		
5	ICT based Teaching (% of usage in Curriculum)	40%		
Planning			**Execution**	
Faculty Signature:			**Faculty Signature:**	
HoD Signature:			**HoD Signature:**	