


**GURGAON INSTITUTE OF TECHNOLOGY & MANAGEMENT**
**COURSE PLAN**

Name of the Teacher:	Prem Pujari
Department: Mechanical	Session: 2017-18
Branch/Semester: Mechanical/ 6th	Subject Name & Code: Heat Transfer (ME-306-F)

**Books Referred:**
**Text Books :**

1. Heat Transfer - J.P. Holman, John Wiley & Sons, New York.
2. Heat Transfer- D.S. Kumar, Katson Publication

**Reference Books :**

1. Conduction of Heat in Solids – Carslow, H.S. and J.C. Jaeger – Oxford Univ. Press.
2. Conduction Heat Transfer – Arpasi, V.S. – Addison – Wesley.
3. Compact Heat Exchangers – W.M. Keys & A.L. Landon, Mc. Graw Hill.
4. Thermal Radiation Heat Transfer – Siegel, R. and J.R. Howell, Mc. Graw Hill.
5. Heat Transmission – W.M., Mc.Adams , Mc Graw Hill.

Lecture	Topics to be Covered
1.	<b>Basics and Laws:</b> Definition of Heat Transfer, Reversible and irreversible processes, Modes of heat flow, Combined heat transfer system and law of energy conservation
2.	Introduction, I-D heat conduction through a plane wall, long hollow cylinder, hollow sphere,
3.	Conduction equation in Cartesian, polar and spherical co-ordinate systems, Numericals.
4.	Introduction, 1 – D heat conduction with heat sources
5.	Extended surfaces ( fins),
6.	Fin effectiveness 2-D heat conduction , Numericals.
7.	Systems with negligible internal resistance
8.	Transient heat conduction in plane walls,
9.	cylinders, spheres with convective boundary conditions
10.	Chart solution, Relaxation Method, Numericals
11.	The Stephen-Boltzmann law, The black body radiation
12.	Shape factors and their relationships


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13.	<b>Heat exchange between non black bodies</b>
14.	Electrical network for radiative exchange in an enclosure of two or three gray bodies
15.	<b>Radiation shields, Numericals.</b>
16.	Classification, Performance variables, Analysis of a parallel/counter flow heat exchanger
17.	Heat exchanger effectiveness, Numericals.
18.	Laminar film condensation on a vertical plate,
19.	Drop-wise condensation
20.	Boiling regimes, Free convective
21.	Nucleate and film boiling, Numericals
22.	Forced convection-Thermal and hydro-dynamic boundary layers
23.	Equation of continuity, Momentum and energy equations,
24.	Some results for flow over a flat plate and flow through tube
25.	Fluid friction and heat transfer ( Colburn analogy )
26.	Free convection from a vertical flat plate,
27.	Empirical relations for free convection from vertical and horizontal o\planes & cylinders, Numericals.
28.	The Stephen-Boltzmann law, The black body radiation, Shape factors and their relationships
29.	Heat exchange between non black bodies
30.	Electrical network for radiative exchange in an enclosure of two or three gray bodies, Radiation shields, Numericals
31.	Classification, Performance variables, Analysis of a parallel/counter flow heat exchanger
32.	Heat exchanger effectiveness
33.	Numerical on heat exchanger
34.	Laminar film condensation on a vertical plate, Drop-wise condensation



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