



# G H RAISONI COLLEGE OF ENGINEERING AND MANAGEMENT WAGHOLI PUNE

(An Autonomous Institute under UGC Act 1956 & Affiliated to Savitribai Phule Pune University)

Domkhel Road , GAT No.: 1200 Wagholi, Pune – 412207

## Course wise Teaching Plan for Session : Summer 2019

Course : HEAT TRANSFER

Faculty : nagareddy.gadlegaonkar@raisoni.net - NAGAREDDY GADLEGAONKAR

Unit	Topic Code	Topic Covered	Date	Course	Section
1	1	Introduction: Basic modes of heat transfer, conduction, convection and radiation	03/12/2018	BMEL310	C
1	2	Laws of heat transfer	04/12/2018	BMEL310	C
1	3	Three dimensional heat conduction equation in Cartesian	05/12/2018	BMEL310	C
1	4	Cylindrical (no derivation) and spherical coordinates (no derivation)	06/12/2018	BMEL310	C
1	5	Thermal conductivity and thermal diffusivity.	10/12/2018	BMEL310	C
1	6	One dimensional steady state conduction equation without heat generation: heat conduction in plane wall, composite wall	11/12/2018	BMEL310	C
1	7	Composite cylinder and composite sphere, electrical analogy	12/12/2018	BMEL310	C
1	8	Concept of thermal resistance and conductance, contact resistance	13/12/2018	BMEL310	C
1	9	Overall heat transfer coefficient	17/12/2018	BMEL310	C
1	10	Critical radius of insulation for cylinders and spheres	18/12/2018	BMEL310	C
2	11	One dimensional steady state heat conduction with internal heat generation : Heat Conduction with uniform heat generation in plane wall	19/12/2018	BMEL310	C
2	12	Cylinder and sphere with different boundary conditions	20/12/2018	BMEL310	C
2	13	Boundary and initial conditions: Temperature boundary condition	24/12/2018	BMEL310	C
2	14	Heat flux boundary condition, convection boundary condition	01/01/2019	BMEL310	C
2	15	Radiation boundary condition	02/01/2019	BMEL310	C
2	16	Unsteady state heat conduction: Lumped heat capacity analysis	03/01/2019	BMEL310	C
2	17	Biot number	07/01/2019	BMEL310	C
2	18	Fourier number and their significance, heister charts	08/01/2019	BMEL310	C
3	19	Extended surfaces: Types of fins	09/01/2019	BMEL310	C

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3	20	Governing equation for fins of uniform cross section area	14/01/2019	BMEL310	C
3	21	Solution (with derivation) for infinitely long and adequately long (with insulated end)	15/01/2019	BMEL310	C
3	22	Solution (with derivation) for infinitely long and adequately long (with insulated end)-Numericals	16/01/2019	BMEL310	C
3	23	Fin and short fin(without derivation)	17/01/2019	BMEL310	C
3	24	Fin and short fin(without derivation) -Numericals	21/01/2019	BMEL310	C
3	25	Fin efficiency and effectiveness of fin	22/01/2019	BMEL310	C
3	26	Fin efficiency and effectiveness of fin-Numericals	23/01/2019	BMEL310	C
4	27	Fundamentals of Convection: Mechanism of convection	24/01/2019	BMEL310	C
4	28	Local and average heat transfer coefficients	28/01/2019	BMEL310	C
4	29	Concept of velocity and thermal boundary layer thickness	29/01/2019	BMEL310	C
4	30	Forced convection: Physical signification of dimensionless numbers	30/01/2019	BMEL310	C
4	31	Flow of high moderate and low prandtl number	31/01/2019	BMEL310	C
4	32	Fluid flow over a flat surface, empirical correlations for external and internal flow for laminar flow	04/02/2019	BMEL310	C
4	33	Fluid flow over a flat surface, empirical correlations for external and internal flow for turbulent flow	05/02/2019	BMEL310	C
4	34	Free or Natural convection: Introduction	06/02/2019	BMEL310	C
4	35	Dimensionless numbers	07/02/2019	BMEL310	C
4	36	Empirical co relations for natural convection	11/02/2019	BMEL310	C
5	37	Thermal Radiation: Fundamental concept of radiation, black body radiation	12/02/2019	BMEL310	C
5	38	Laws of radiation, surface emission properties	13/02/2019	BMEL310	C



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5	39	Radiation shape factor, Heat exchange by radiation between two black and diffuse gray surfaces	14/02/2019	BMEL310	C
5	40	Numericals	25/02/2019	BMEL310	C
5	41	Electrical network analogy for thermal radiation (Irradiation, Radiosity)	26/02/2019	BMEL310	C
5	42	Numericals	27/02/2019	BMEL310	C
5	43	Radiation shields	28/02/2019	BMEL310	C
5	44	Numericals	05/03/2019	BMEL310	C
6	45	Heat exchanger: Classification, overall heat transfer coefficient	06/03/2019	BMEL310	C
6	46	Fouling factor, LMTD method of heat exchanger analysis for parallel	07/03/2019	BMEL310	C
6	47	Counter flow and cross flow arrangement	11/03/2019	BMEL310	C
6	48	Effectiveness- NTU method	12/03/2019	BMEL310	C
6	49	Heat exchanger analysis by NTU method, design aspects of heat exchangers	13/03/2019	BMEL310	C
6	50	Introduction to compact heat exchanger introduction to heat pipe	14/03/2019	BMEL310	C
6	51	Numericals	18/03/2019	BMEL310	C
6	52	Condensation and Boiling: Boiling heat transfer, types of boiling	19/03/2019	BMEL310	C
6	53	Pool boiling curve and force boiling phenomenon	20/03/2019	BMEL310	C
6	54	Film wise and drop wise condensation (no Numericals)	21/03/2019	BMEL310	C