

TENTATIVE LESSON PLAN: R1621031 METALLURGY & MATERIALS SCIENCE

Course Title: METALLURGY & MATERIALS SCIENCE			
Section : Sec A	Date : 10/06/2019	Page No : 01 of 04	
Revision No : 00	Prepared By : D.ROGNATHA RAO	Approved By : HOD	
Tools: Black board, PPTs			
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I Structure of Metals and Constitution of alloys CO1: To know the basic concepts of bonds in metals and alloys. To understand the basic requirements for the formation of solid solutions and other compounds. TB:			
1	Bonds in Solids	11-06-2019	Lecture interspersed with discussions
2	Metallic Bond	12-06-2019	
3	Crystallization of Metals	13-06-2019	
4	Grain and Grain Boundaries	14-06-2019	
5	Effect of Grain Boundaries on the Properties of Metal / Alloys	15-06-2019	
6	Determination of Grain Size	18-06-2019	
7	Necessity of Alloying	19-06-2019	
8	Types of Solid Solutions	20-06-2019	
9	Hume Rotherys Rules	21-06-2019	
10	Intermediate Alloy Phases, And Electron Compounds	22-06-2019	
UNIT-II Equilibrium Diagrams CO2: To understand the regions of stability of the phases that can occur in an alloy system in order to solve the problems in practical metallurgy. TB:			
11	Experimental Methods of Construction of Equilibrium Diagrams	24-06-2019	Lecture
12	Isomorphous Alloy Systems	25-06-2019	
13	Equilibrium Cooling and Heating of Alloys	26-06-2019	
14	Lever Rule, Coring Miscibility Gaps	27-06-2019	
15	Eutectic Systems	28-06-2019	
16	Congruent Melting Intermediate Phases	29-06-2019	

17	Peritectic Reaction	01-07-2019	interspersed with discussions
18	Transformations in the Solid State	02-07-2019	
19	Allotropy, Eutectoid, Peritectoid Reactions	04-07-2019	
20	Phase Rule	05-07-2019	
21	Relationship Between Equilibrium Diagrams and Properties of Alloys	06-07-2019	
22	Study of Important Binary Phase Diagrams of Cu-Ni	08-07-2019	
23	Study of Important Binary Phase Diagrams of Al-Cu, Bi-Cd, Cu-An	08-07-2019	
24	Study of Important Binary Phase Diagrams of Cu-Sn and Fe-Fe ₃ C	09-07-2019	

UNIT-III Cast Irons and Steels

CO3: To study the basic differences between cast irons and steels, their properties and practical applications.

TB:

25	Structure and Properties of White Cast Iron	11-07-2019	Lecture interspersed with discussions
26	Malleable Cast Iron	12-07-2019	
27	Grey Cast Iron, Spheroidal Graphite Cast Iron	13-07-2019	
28	Alloy Cast Irons. Classification of Steels	17-07-2019	
29	Structure And Properties of Plain Carbon Steels	19-07-2019	
30	Low Alloy Steels, Hadfield Manganese Steels	20-07-2019	
31	Tool and Die Steels	22-07-2019	

UNIT-IV Heat treatment of Alloys

CO4: To study the affect of various alloying elements on iron-iron carbide system. To understand the various heat treatment and strengthening processes used in practical applications.

TB:

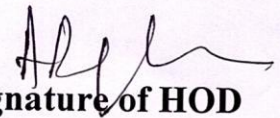
32	Effect of Alloying Elements on Fe-Fe ₃ C System,	23-07-2019	Lecture
33	Annealing, Normalizing, Hardening	25-07-2019	
34	TTT Diagrams	26-07-2019	
35	Tempering , Hardenability	27-07-2019	
36	Surface - Hardening Methods	29-07-2019	

37	Age Hardening Treatment	29-07-2019	interspersed with discussions
38	Cryogenic Treatment of Alloys	30-07-2019	
UNIT-V Non-ferrous Metals and Alloys			
CO5: To study the properties and applications of widely used non-ferrous metals and alloys so as to use the suitable material for practical applications.			
TB:			
39	Structure and Properties of Copper and its Alloys	01-08-2019	Lecture interspersed with discussions
40	Aluminium and its Alloys	02-08-2019	
41	Titanium and its Alloys.	03-08-2019	
42	Structure and Properties of Copper and its Alloys	05-08-2019	
43	Aluminium and its Alloys	09-08-2019	
44	Titanium and its Alloys.	10-08-2019	
45	Structure and Properties of Copper and its Alloys	13-08-2019	
46	Aluminium And Its Alloys	16-08-2019	
47	Titanium And Its Alloys.	17-09-2019	
UNIT-VI Ceramic and composite materials			
CO6: To study the properties and applications of ceramic, composite and other advanced materials so as to use the suitable material for practical applications.			
TB:			
48	Crystalline Ceramics, Glasses	19-08-2019	Lecture interspersed with discussions
49	Ceramics, Abrasive Materials	31-08-2019	
50	Nanomaterials – Definition	03-09-2019	
51	Properties And Applications Of The Above	04-09-2019	
52	Classification Of Composites	04-9-2019	
53	Various Methods Of Component Manufacture Of Composites	12-09-2019	
54	Particle – Reinforced Materials	13-09-2019	
55	Fiber Reinforced Materials	16-09-2019	

56	Metal Ceramic Mixtures	17-09-2019	
57	Metal – Matrix Composites	24-09-2019	
58	C – C Composites	25-09-2019	
59	Classification of Composites	26-09-2019	
60	Various Methods Of Component Manufacture of Composites	27-09-2019	
61	Revision of unit-I	27-09-2019	
62	Revision of unit-II	28-09-2019	
63	Revision of unit-III	28-09-2019	
64	Revision of unit-IV	01-09-2019	
65	Revision of unit-V	01-10-2019	



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TENTATIVE LESSON PLAN: R1621031 METALLURGY & MATERIALS SCIENCE

Course Title: METALLURGY & MATERIALS SCIENCE		
Section : Sec B	Date : 10/06/2019	Page No : 01 of 04
Revision No : 00	Prepared By : D.ROGNATHA RAO	Approved By : HOD

Tools: Black board, PPTs

No. of Periods	TOPIC	Date	Mode of Delivery
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CO2: To understand the regions of stability of the phases that can occur in an alloy system in order to solve the problems in practical metallurgy.			
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22	Study Of Important Binary Phase Diagrams Of Cu-Ni	06-07-2019	
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24	Study Of Important Binary Phase Diagrams Of Cu-Sn And Fe-Fe ₃ C	09-07-2019	

UNIT-III Cast Irons and Steels

CO3: To study the basic differences between cast irons and steels, their properties and practical applications.

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28	Alloy Cast Irons. Classification Of Steels	15-07-2019	
29	Structure And Properties Of Plain Carbon Steels	16-07-2019	
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31	Tool And Die Steels	18-07-2019	

UNIT-IV Heat treatment of Alloys

CO4: To study the affect of various alloying elements on iron-iron carbide system. To understand the various heat treatment and strengthening processes used in practical applications.

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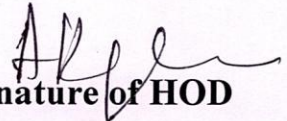
32	Effect of Alloying Elements on Fe-Fe ₃ C System,	19-07-2019	
33	Annealing, Normalizing, Hardening	20-07-2019	
34	TTT Diagrams	22-07-2019	
35	Tempering , Hardenability	23-07-2019	

36	Surface - Hardening Methods	24-07-2019	Lecture interspersed with discussions
37	Age Hardening Treatment	25-07-2019	
38	Cryogenic Treatment Of Alloys	26-07-2019	
UNIT-V Non-ferrous Metals and Alloys CO5: To study the properties and applications of widely used non-ferrous metals and alloys so as to use the suitable material for practical applications. TB:			
39	Structure and properties of copper and its alloys	27-07-2019	Lecture interspersed with discussions
40	Aluminium and its alloys	29-07-2019	
41	Titanium and its alloys.	30-07-2019	
42	Structure and properties of copper and its alloys	31-07-2019	
43	Aluminium and its alloys	01-08-2019	
44	Titanium and its alloys.	02-08-2019	
45	Structure and properties of copper and its alloys	03-08-2019	
46	Aluminium and its alloys	05-08-2019	
47	Titanium and its alloys.	06-09-2019	
UNIT-VI Ceramic and composite materials CO6: To study the properties and applications of ceramic, composite and other advanced materials so as to use the suitable material for practical applications. TB:			
48	Crystalline Ceramics, Glasses	07-08-2019	Lecture interspersed with discussions
49	Ceramics, Abrasive Materials	08-08-2019	
50	Nanomaterials – Definition	09-08-2019	
51	Properties And Applications Of The Above	13-08-2019	
52	Classification Of Composites	14-08-2019	
53	Various Methods Of Component Manufacture Of Composites	16-08-2019	
54	Particle – Reinforced Materials	17-08-2019	

55	Fiber Reinforced Materials	22-08-2019
56	Metal Ceramic Mixtures	26-08-2019
57	Metal – Matrix Composites And	29-08-2019
58	C – C Composites	04-09-2019
59	Classification Of Composites	06-09-2019
60	Various Methods Of Component Manufacture Of Composites	13-09-2019
61	Revision of unit-I	17-09-2019
62	Revision of unit-II	24-10-2019
63	Revision of unit-III	27-09-2019
64	Revision of unit-IV	28-09-2019
65	Revision of unit-V	01-10-2019



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TENTATIVE LESSON PLAN: R1621032

Course Title: MECHANICS OF SOLIDS (R1621032)		
Section : A	Date : 10-06-2019	Page No : 01 of 03
Revision No : 00	Prepared By : Z. Jitendra	Approved By : HOD

Tools : Black board, PPTs

No. of Periods	TOPIC	Date	Mode of Delivery
UNIT –I SIMPLE STRESS AND STRAINS			
<p>CO1: Student will know the basic terms like stress, strain poissons ratio etc and stresses in bars of varying cross sections, composite bars, thermal stress in members, stresses on inclined planes with analytical approach and graphical approach, strain energy under different loadings and alsoproblem solving techniques.</p> <p>TB : "STRENGTH OF MATERIALS" Dr. R. K. BANSAL, 4th Edition, LAXMI PUBLICATIONS.</p>			
1	SIMPLE STRESSES & STRAINS :	17/6/2019	Lecture interspersed with discussions
2	Types of stresses and strains	18/6/2019	
3.	Hooke's law – stress – strain diagram for mild steel	19/6/2019	
4.	Lateral strain, Poisson's ratio & volumetric strain	24/6/2019	
5.	Bars of varying section	25/6/2019	
6.	composite bars	26/6/2019	
7.	Temperature stresses- Complex Stresses	27/6/2019	
8.	Problems	29/6/2019	
9.	Stresses on an inclined plane under different uniaxial and biaxial stress conditions	1/7/2019	
10.	Principal planes and principal stresses	2/7/2019	
11.	Mohr's circle	4/7/2019	
12.	Relation between elastic constants	5/7/2019	
13.	Strain energy, Gradual, sudden	8/7/2019	
14.	impact and shock loadings	10/7/2019	
UNIT –II SHEAR FORCE AND BENDING MOMENT			
<p>CO2: Able to perform to construction of shear force diagrams and bending moment diagrams to the different loads for the different support arrangements and also problem solving techniques.</p> <p>TB : "STRENGTH OF MATERIALS" Dr. R. K. BANSAL, 4th Edition, LAXMI PUBLICATIONS.</p>			
15	SHEAR FORCE AND BENDING MOMENT	15/7/2019	Lecture interspersed with discussions
16	Definition of beam, Types of beams, Concept of shear force and bending moment	15/7/2019	
17	S.F and B.M diagrams for cantilever	18/7/2019	
18	S.F and B.M diagrams for simply supported	19/7/2019	

TENTATIVE LESSON PLAN: R1621032

Course Title: MECHANICS OF SOLIDS (R1621032)		
Section : A	Date : 10-06-2019	Page No : 02 of 03
Revision No : 00	Prepared By : Z. Jitendra	Approved By : HOD

Tools : Black board, PPTs

No. of Periods	TOPIC	Date	Mode of Delivery
19.	problems	20/7/2019	Lecture interspersed with discussions
20.	Point of contra flexure	22/7/2019	
21.	Relation between S.F., B.M and rate of loading at a section of a beam	22/7/2019	
22.	problems	24/7/2019	
23.	problems	25/7/2019	
24.	problems	26/7/2019	

UNIT - III FLEXURAL STRESSES AND SHEAR STRESSES

CO3 : Student can perform the bending and shear stress induced in the beams which are made with different cross sections like rectangular, circular, triangular, I, T angle sections and also problem solving techniques.

TB : "STRENGTH OF MATERIALS" Dr. R. K. BANSAL, 4th Edition, LAXMI PUBLICATIONS.

25.	FLEXURAL STRESSES	27/7/2019	Lecture interspersed with discussions
26.	Theory of simple bending – Assumptions	29/7/2019	
27.	Derivation of bending equation: $M/I = f/y = E/R$	31/7/2019	
28.	Determination bending stresses	1/8/2019	
29.	rectangular and circular sections	2/8/2019	
30.	I,T, Angle and Channel sections	3/8/2019	
31.	Derivation of Shear stress.	5/8/2019	
32.	Rectangular, triangular sections	7/8/2019	
33.	I, T sections	8/8/2019	
34.	Problems	16/7/2019	
35.	Problems	17/7/2019	

UNIT - V THIN CYLINDERS AND THICK CYLINDERS

CO5 : Student will know how a cylinder fails, what kind of stresses induced in cylinders subjected to internal, external pressures and also problem solving techniques.

TB : "STRENGTH OF MATERIALS" Dr. R. K. BANSAL, 4th Edition, LAXMI PUBLICATIONS.

36.	CYLINDERS	28/8/2019	Lecture interspersed with discussions
37.	Thin seamless cylindrical shells	29/8/2019	
38.	Derivation of formula for longitudinal and circumferential stresses	31/8/2019	
39.	hoop, longitudinal and Volumetric strains	4/9/2019	
40.	changes in dia, and volume of thin cylinders	5/9/2019	
41.	Problems	6/9/2019	
42.	Problems	7/9/2019	
43.	Problems	9/9/2019	
44.	Riveted boiler shells	11/9/2019	
45.	Thin spherical shells	12/9/2019	
46.	Problems	13/9/2019	

TENTATIVE LESSON PLAN: R1621032

Course Title: MECHANICS OF SOLIDS (R1621032)		
Section : A	Date : 10-06-2019	Page No : 03 of 03
Revision No : 00	Prepared By: Z. Jitendra	Approved By : HOD

Tools : Black board, PPTs

No. of Periods	TOPIC	Date	Mode of Delivery
47.	Problems	13/9/2019	Lecture interspersed with discussions
48.	lame's equation	16/9/2019	
49.	cylinders subjected to inside	16/9/2019	
50.	outside pressures	17/9/2019	
51.	compound cylinders	17/9/2019	
52.	Problems	18/9/2019	

UNIT - VI TORSION AND COLUMNS

CO6: Student can perform shear stresses induced in circular shafts, discussing columns in stability point of view and columns with different end conditions.

TB : "STRENGTH OF MATERIALS" Dr. R. K. BANSAL, 4th Edition, LAXMI PUBLICATIONS.


53.	TORSION AND COLUMNS	18/9/2019	Lecture interspersed with discussions
54.	Torsion of Circular shafts	19/9/2019	
55.	Problems	19/9/2019	
56.	Problems	20/9/2019	
57.	Shafts in series, Shafts in parallel.	20/9/2019	
58.	Problems	23/9/2019	
59.	Columns with Pinned ends	23/9/2019	
60.	Columns with other support Conditions	24/9/2019	
61.	Rankin's Formula	24/9/2019	
62.	Limitations of Euler's Formula	25/9/2019	
63.	Problems	25/9/2019	
64.	Problems	26/9/2019	

UNIT - IV DEFLECTION OF BEAMS

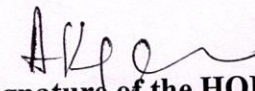
CO4 : Able to finding slope and deflection for different support arrangements by Double integration method, Macaulay's method and Moment-Area and also problem solving techniques.

TB : "STRENGTH OF MATERIALS" Dr. R. K. BANSAL, 4th Edition, LAXMI PUBLICATIONS.

65.	DEFLECTION OF BEAMS	26/9/2019	Lecture interspersed with discussions
66.	Bending into a circular arc	27/9/2019	
67.	methods Determination of slope and deflection	27/9/2019	
68.	Simply supports, point loads	28/9/2019	
69.	UDL, Mohr's	28/9/2019	
70.	Problems	30/9/2019	
71.	Problems	1/10/2019	
72.	Revision	2/10/2019	


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TENTATIVE LESSON PLAN: R1621032

Course Title: MECHANICS OF SOLIDS (R1621032)		
Section : B	Date : 10-06-2019	Page No : 01 of 03
Revision No : 00	Prepared By : Z. Jitendra	Approved By : HOD

Tools : Black board, PPTs

No. of Periods	TOPIC	Date	Mode of Delivery
UNIT –I SIMPLE STRESS AND STRAINS			
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3.	Hooke's law – stress – strain diagram for mild steel	19/6/2019	
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6.	composite bars	26/6/2019	
7.	Temperature stresses- Complex Stresses	27/6/2019	
8.	Problems	29/6/2019	
9.	Stresses on an inclined plane under different uniaxial and biaxial stress conditions	1/7/2019	
10.	Principal planes and principal stresses	2/7/2019	
11.	Mohr's circle	4/7/2019	
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UNIT –II SHEAR FORCE AND BENDING MOMENT			
<p>CO2: Able to perform to construction of shear force diagrams and bending moment diagrams to the different loads for the different support arrangements and also problem solving techniques.</p> <p>TB : "STRENGTH OF MATERIALS" Dr. R. K. BANSAL, 4th Edition, LAXMI PUBLICATIONS.</p>			
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TENTATIVE LESSON PLAN: R1621032

Course Title: MECHANICS OF SOLIDS (R1621032)		
Section : B	Date : 10-06-2019	Page No : 02 of 03
Revision No : 00	Prepared By : Z. Jitendra	Approved By : HOD

Tools : Black board, PPTs

No. of Periods	TOPIC	Date	Mode of Delivery
19.	problems	20/7/2019	Lecture interspersed with discussions
20.	Point of contra flexure	22/7/2019	
21.	Relation between S.F., B.M and rate of loading at a section of a beam	22/7/2019	
22.	problems	24/7/2019	
23.	problems	25/7/2019	
24.	problems	26/7/2019	

UNIT - III FLEXURAL STRESSES AND SHEAR STRESSES

CO3 : Student can perform the bending and shear stress induced in the beams which are made with different cross sections like rectangular, circular, triangular, I, T angle sections and also problem solving techniques.

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27.	Derivation of bending equation: $M/I = f/y = E/R$	31/7/2019	
28.	Determination bending stresses	1/8/2019	
29.	rectangular and circular sections	2/8/2019	
30.	I,T, Angle and Channel sections	3/8/2019	
31.	Derivation of Shear stress.	5/8/2019	
32.	Rectangular, triangular sections	7/8/2019	
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UNIT - V THIN CYLINDERS AND THICK CYLINDERS

CO5 : Student will know how a cylinder fails, what kind of stresses induced in cylinders subjected to internal, external pressures and also problem solving techniques.

TB : "STRENGTH OF MATERIALS" Dr. R. K. BANSAL, 4th Edition, LAXMI PUBLICATIONS.

36.	CYLINDERS	28/8/2019	Lecture interspersed with discussions
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39.	hoop, longitudinal and Volumetric strains	4/9/2019	
40.	changes in dia, and volume of thin cylinders	5/9/2019	
41.	Problems	6/9/2019	
42.	Problems	7/9/2019	
43.	Problems	9/9/2019	
44.	Riveted boiler shells	11/9/2019	
45.	Thin spherical shells	12/9/2019	
46.	Problems	13/9/2019	

TENTATIVE LESSON PLAN: R1621032

Course Title: MECHANICS OF SOLIDS (R1621032)		
Section : B	Date : 10-06-2019	Page No : 03 of 03
Revision No : 00	Prepared By: Z. Jitendra	Approved By : HOD

Tools : Black board, PPTs

No. of Periods	TOPIC	Date	Mode of Delivery
47.	Problems	13/9/2019	Lecture interspersed with discussions
48.	lame's equation	16/9/2019	
49.	cylinders subjected to inside	16/9/2019	
50.	outside pressures	17/9/2019	
51.	compound cylinders	17/9/2019	
52.	Problems	18/9/2019	

UNIT - VI TORSION AND COLUMNS

CO6: Student can perform shear stresses induced in circular shafts, discussing columns in stability point of view and columns with different end conditions.

TB : "STRENGTH OF MATERIALS" Dr. R. K. BANSAL, 4th Edition, LAXMI PUBLICATIONS.


53.	TORSION AND COLUMNS	18/9/2019	Lecture interspersed with discussions
54.	Torsion of Circular shafts	19/9/2019	
55.	Problems	19/9/2019	
56.	Problems	20/9/2019	
57.	Shafts in series, Shafts in parallel.	20/9/2019	
58.	Problems	23/9/2019	
59.	Columns with Pinned ends	23/9/2019	
60.	Columns with other support Conditions	24/9/2019	
61.	Rankin's Formula	24/9/2019	
62.	Limitations of Euler's Formula	25/9/2019	
63.	Problems	25/9/2019	
64.	Problems	26/9/2019	

UNIT - IV DEFLECTION OF BEAMS

CO4 : Able to finding slope and deflection for different support arrangements by Double integration method, Macaulay's method and Moment-Area and also problem solving techniques.

TB : "STRENGTH OF MATERIALS" Dr. R. K. BANSAL, 4th Edition, LAXMI PUBLICATIONS.

65.	DEFLECTION OF BEAMS	26/9/2019	Lecture interspersed with discussions
66.	Bending into a circular arc	27/9/2019	
67.	methods Determination of slope and deflection	27/9/2019	
68.	Simply supports, point loads	28/9/2019	
69.	UDL, Mohr's	28/9/2019	
70.	Problems	30/9/2019	
71.	Problems	1/10/2019	
72.	Revision	2/10/2019	


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TENTATIVE LESSON PLAN: R1631033

Course Title: THERMODYNAMICS		Course code: R1631033	
Section : Sec A	Date :10/6/2019	Page No : 01 to 03	
Revision No : 00	Prepared By: D. SREERAMPRASAD	Approved By : HOD	
Tools: BLACK BOARD,PPT			
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-IBASIC CONCEPTS			
CO1: The student will able to study the concept of various thermodynamic cycles and working of systems TB: "THERMODYNAMICS, by P.K.NAG 3 rd Edition, Tata McGraw Hill Education Private Limited publications.			
1	What is Thermodynamics	10/6/2019	Lecture interspersed with discussions
2	Macroscopic and Macroscopic approach	12/6/2019	
3	Types of systems	12/6/2019	
4	Property and types of properties	13/6/2019	
5	Process quasistatic process	15/6/2019	
6	Reversible and irreversible process	15/6/2019	
7	Pressure and temperature measurement	15/6/2019	
8	Problems on pressure and temperature measurement	19/6/2019	
9	Work and heat	19/6/2019	
10	Work and heat in different process	19/6/2019	
11	Zeroth law of thermodynamics	20/6/2019	
12	Principle of thermometry	22/6/2019	
13	Scale of temperature ,ideal gas scale-PMM1	22/6/2019	
14	Pressure measurement	22/6/2019	
15	Problems on temperature measurement	24/6/2019	
16	Problems on pressure measurement	26/6/2019	
UNIT-II First law of thermodynamics			
CO2: To study the concepts of first law of thermodynamics. TB: " THERMODYNAMICS, by P.K.NAG 3 rd Edition, Tata McGraw Hill Education Private Limited publications			
17	Law of conservation of energy concept,first law of thermodynamics	26/6/2019	Lecture interspersed with discussions
18	First law applied to different thermodynamic process	27/6/2019	
19	Concept of equality of temperature	29/6/2019	
20	Joule's experiment	03/7/2019	
21	Steady flow energy equation applied to boiler,heat exchanger, reciprocating pump	03/7/2019	
22	Steady flow energy equation	03/7/2019	

23	Steady flow energy equation applied to turbine,gas turbine, compressor	06/7/2019	
24	Steady flow energy equation applied to boiler,heat exchanger, reciprocating pump	06/7/2019	
25	Throttling and free expansion	06/7/2019	
26	Vander waal's equation of state	10/7/2019	
27	Variable specific heat and problems	10/7/2019	
28	problems	10/7/2019	
29	Problems	17/7/2019	
UNIT-III CO3: second law of thermodynamics			
TB1: "THERMODYNAMICS, by P.K.NAG 3rdEdition, Tata McGraw Hill Education Private Limited publications.			
30	Limitations of first law-Thermal reservoir,heatengine,heat pump	20/7/2019	
31	Second law of thermodynamics-Kelvin-plank and clausius statements and their equivalence	24/7/2019	
32	PMM of second kind, carnot's principle and it's specialties	25/7/2019	
33	Thermodynamics scale of temperature, clausius inequality	27/7/2019	Lecture interspersed with discussions
34	Entropy and principle of entropy	27/7/2019	
35	Availability and irreversibility	27/7/2019	
36	Thermodynamic potential ,Gibbs and Helmholtz functions	01/7/2019	
37	Maxwell relations	01/7/2019	
38	Elementary treatment of the third of thermodynamics	01/7/2019	
39	problems	03/7/2019	
40	problems	03/8/2019	
UNIT-4properties of steam			
Co4.To study and understand the process steam formation and its representation on property diagram			
B:" THERMODYNAMICS" by P.K.NAG 3rdEdition, Tata McGraw Hill Education Private Limited publications			
41	Pure substances, P-V-T surfaces	21/8/2019	Lecture interspersed with discussions
42	T-S,h-s diagrams ,mollier chart	21/8/2019	
43	Phase transformation-triple point at critical	22/8/2019	

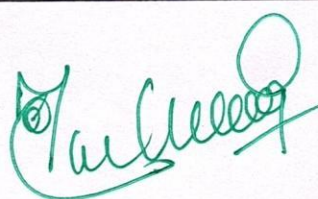
	state properties		
44	Dryness fraction	28/8/2019	
45	Clausius-clapeyron equation property tables-mollier chart-various Thermodynamics process	28/8/2019	
46	Steam calorimetry	28/8/2019	
UNIT-V Gas mixtures and psychrometry			
CO5: To understand and able to use psychometric chart and calculate psychometric properties of air			
TB: THERMODYNAMICS, by P.K.NAG 3 rd Edition, Tata McGraw Hill Education Private Limited publications			
47	Mixture of perfect gases -mole fraction, mass fraction, gravimetric and volumetric analysis	31/8/2019	Lecture interspersed with discussions
48	Dalton's law of partial pressures-Avogadro's law of additive volumes-mole fraction, volume fraction and partial pressure	04/9/2019	
49	Internal energy, enthalpy, sp. Heats and entropy of perfect gases and vapor	04/9/2019	
50	Psychrometry properties -driven temperature, wet bulb temperature, dew point temperature	05/9/2019	
51	Specific humidity, relative humidity, saturated air and vapor pressure	05/9/2019	
52	Degree of saturation-adiabatic saturation		
53	Carrier's equation- psychrometry charts		
54			
UNIT-VI power cycles			
CO6: To understand the concepts of air standard cycles and should be able to calculate the efficiency and the performance parameters of system that use this cycles			
TB: "THERMODYNAMICS, by P.K.NAG 3 rd Edition, Tata McGraw Hill Education Private Limited publications			
55	Otto and Diesel cycles	12/9/2019	Lecture interspersed with discussions
56	Dual combustion cycle, Sterling cycle	12/9/2019	
57	Erickson cycle and Lenoir cycle	18/9/2019	
58	Comparison of cycles	18/9/2019	
59	Refrigeration cycles -Brayton cycle and Rankine cycle and performance evaluation	21/9/2019	
60	Bell-Coleman cycle	21/9/2019	
61	Vapor compression cycle, performance evaluation	01/10/2019	
62	Problems	02/10/2019	

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Date: 21/10/2019

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Date: 21/10/2019



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TENTATIVE LESSON PLAN: R1631033

Course Title: THERMODYNAMICS		Course code: R1631033	
Section : Sec B	Date :10/6/2019	Page No : 01 to 03	
Revision No : 00	Prepared By: D. SREERAMPRASAD	Approved By : HOD	
Tools: BLACK BOARD,PPT			
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-IBASIC CONCEPTS CO1: The student will able to study the concept of various thermodynamic cycles and working of systems TB: "THERMODYNAMICS, by P.K.NAG 3 rd Edition, Tata McGraw Hill Education Private Limited publications.			
1	What is Thermodynamics	10/6/2019	Lecture interspersed with discussions
2	Macroscopic and Macroscopic approach	12/6/2019	
3	Types of systems	12/6/2019	
4	Property and types of properties	13/6/2019	
5	Process quasistatic process	15/6/2019	
6	Reversible and irreversible process	15/6/2019	
7	Pressure and temperature measurement	15/6/2019	
8	Problems on pressure and temperature measurement	19/6/2019	
9	Work and heat	19/6/2019	
10	Work and heat in different process	19/6/2019	
11	Zeroth law of thermodynamics	20/6/2019	
12	Principle of thermometry	22/6/2019	
13	Scale of temperature ,ideal gas scale-PMM1	22/6/2019	
14	Pressure measurement	22/6/2019	
15	Problems on temperature measurement	24/6/2019	
16	Problems on pressure measurement	26/6/2019	
UNIT-II First law of thermodynamics CO2: To study the concepts of first law of thermodynamics. TB: ". THERMODYNAMICS, by P.K.NAG 3 rd Edition, Tata McGraw Hill Education Private Limited publications			
17	Law of conservation of energy concept,first law of thermodynamics	26/6/2019	Lecture interspersed with discussions
18	First law applied to different thermodynamic process	27/6/2019	
19	Concept of equality of temperature	29/6/2019	
20	Joule's experiment	03/7/2019	
21	Steady flow energy equation applied to boiler,heat exchanger, reciprocating pump	03/7/2019	
22	Steady flow energy equation	03/7/2019	

23	Steady flow energy equation applied to turbine, gas turbine, compressor	06/7/2019	
24	Steady flow energy equation applied to boiler, heat exchanger, reciprocating pump	06/7/2019	
25	Throttling and free expansion	06/7/2019	
26	Vander waal's equation of state	10/7/2019	
27	Variable specific heat and problems	10/7/2019	
28	problems	10/7/2019	
29	Problems	17/7/2019	

UNIT-III : SECOND LAW OF THERMODYNAMICS

CO3:

TB1: "THERMODYNAMICS, by P.K.NAG 3rd Edition, Tata McGraw Hill Education Private Limited publications.

30	Limitations of first law-Thermal reservoir, heat engine, heat pump	20/7/2019	
31	Second law of thermodynamics-Kelvin-Planck and Clausius statements and their equivalence	24/7/2019	
32	PMM of second kind, Carnot's principle and its specialties	25/7/2019	
33	Thermodynamics scale of temperature, Clausius inequality	27/7/2019	Lecture interspersed with discussions
34	Entropy and principle of entropy	27/7/2019	
35	Availability and irreversibility	27/7/2019	
36	Thermodynamic potential, Gibbs and Helmholtz functions	01/7/2019	
37	Maxwell relations	01/7/2019	
38	Elementary treatment of the third of thermodynamics	01/7/2019	
39	problems	03/7/2019	
40	problems	03/8/2019	

UNIT- 4 PROPERTIES OF STEAM

Co4. To study and understand the process steam formation and its representation on property diagram

B: "THERMODYNAMICS, by P.K.NAG 3rd Edition, Tata McGraw Hill Education Private Limited publications

41	Pure substances, P-V-T surfaces	21/8/2019	Lecture interspersed with
42	T-S, h-s diagrams, Mollier chart	21/8/2019	

43	Phase transformation-triple point at critical state properties	22/8/2019	discussions
44	Dryness fraction	28/8/2019	
45	Clausius-clapeyron equation property tables-mollier chart-various Thermodynamics process	28/8/2019	
46	Steam calorimetry	28/8/2019	

UNIT-V GAS MIXTURES AND PSYCHROMETRY

CO5: To understand and able to use psychometric chart and calculate psychometric properties of air

TB: THERMODYNAMICS, by P.K.NAG 3rd Edition, Tata McGraw Hill Education Private Limited publications

47	Mixture of perfect gases -mole fraction, mass fraction, gravimetric and volumetric analysis	31/8/2019	Lecture interspersed with discussions
48	Dalton's law of partial pressures-Avogadro's law of additive volumes-mole fraction, volume fraction and partial pressure	04/9/2019	
49	Internal energy, enthalpy, sp. Heats and entropy of perfect gases and vapor	04/9/2019	
50	Psychrometry properties -driven temperature, wet bulb temperature, dew point temperature	05/9/2019	
51	Specific humidity, relative humidity, saturated air and vapor pressure	05/9/2019	
52	Degree of saturation-adiabatic saturation		
53	Carrier's equation- psychrometry charts		
54			

UNIT-VI POWER CYCLES

CO6: To understand the concepts of air standard cycles and should be able to calculate the efficiency and the performance parameters of system that use this cycles

TB: "THERMODYNAMICS, by P.K.NAG 3rd Edition, Tata McGraw Hill Education Private Limited publications

55	Otto and Diesel cycles	12/9/2019	Lecture interspersed with discussions
56	Dual combustion cycle, Sterling cycle	12/9/2019	
57	Ericsson cycle and Lenoir cycle	18/9/2019	
58	Comparison of cycles	18/9/2019	
59	Refrigeration cycles -brayton cycle and rankine cycle and performance evaluation	21/9/2019	
60	Bell-coleman cycle	21/9/2019	
61	Vapour compression cycle, performance evaluation	01/10/2019	
62	Problems	01/10/2019	

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Date: 2/10/2019

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Date: 2/10/2019

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TENTATIVE LESSON PLAN: RT22034 FLUID MECHANICS AND HYDRAULIC MACHINES

Course Title: FLUID MECHANICS AND HYDRAULIC MACHINES			
Section : Sec II	Date : 10/06/2019	Page No : 01 of 04	
Revision No : 00	Prepared By : M. CHAITANYA	Approved By : HOD	
Tools: Black board, PPTs			
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I FLUID STATICS			
CO1: Comprehend different concepts of fluid and its properties, manometry, hydrostatic forces acting on different surfaces and also problem solving techniques.			
TB: Fluid mechanics and Hydraulic machines-Dr.R.K.Bansal			
1	Introduction: physical properties of fluids- density ,specific weight, specific gravity, specific volume	11-06-2019	Lecture interspersed with discussions
2	viscosity and its significance	12-06-2019	
3	surface tension	13-06-2019	
4	Capillarity-capillary rise, capillary fall	14-06-2019	
5	Measurement of pressure-vapor pressure, Atmospheric gauge and vacuum pressure	15-06-2019	
6	Manometers- Piezometer, U-tube	18-06-2019	
7	Inverted and differential manometers.	19-06-2019	
8	Pascal's law, hydrostatic law.	20-06-2019	
9	Buoyancy and floatation- Meta center, meta-centric height	21-06-2019	
10	Determination of met centric height	22-06-2019	
11	Stability of floating body. Submerged bodies	24-06-2019	
12	Stability analysis and applications.	25-06-2019	
UNIT-II FLUID KINEMATICS, FLUID DYNAMICS			
CO2: Understand the topics of basic laws of fluids, flow patterns, viscous flow through ducts and their corresponding problems.			
TB: Fluid mechanics and Hydraulic machines-Dr.R.K.Bansal			
13	Introduction, flow types	26-06-2019	Lecture interspersed with
14	Stream line, path line and streak lines and stream tube.	27-06-2019	
15	Equation of continuity for one Dimensional flow.	28-06-2019	
16	Stream function and velocity potential function, differences and relation between them	29-06-2019	
17	Condition for irrotational flow	01-07-2019	

18	circulation and vorticity	02-07-2019	discussions
19	flow net, source and sink,	04-07-2019	
20	doublet and vortex flow	05-07-2019	
20	surface and body forces –Euler’s equation Bernoulli’s equation for flow along a stream line	06-07-2019	
21	Applications of Bernoulli’s equation	08-07-2019	
22	Momentum equation and its applications-force on pipe bend.	09-07-2019	
23	Closed conduit flow: Reynolds experiment-	11-07-2019	
24	Darcy Weisbach equation	12-07-2019	
25	Minor losses in pipes-losses due to sudden expansion, contraction, pipe bend, couplings e.t.c	13-07-2019	
26	pipes in series and pipes in parallel	17-07-2019	
27	Total energy line-,hydraulic gradient line.	19-07-2019	
UNIT-III BOUNDARY LAYER THEORY, DIMENSIONAL ANALYSIS CO3: Analyze different concepts related to boundary layer theory, flow separation, basic concepts of velocity profiles, dimensionless numbers and dimensional analysis. TB: Fluid mechanics and Hydraulic machines-Dr.R.K.Bansal			
28	Introduction: Boundary layer, Boundary layer formation over flat plate	20-07-2019	Lecture interspersed with discussions
29	Displacement, momentum, energy thickness	22-07-2019	
30	momentum integral equation,	23-07-2019	
31	Separation of boundary layer, control of flow separation,	25-07-2019	
32	Stream lined body, Bluff body and its applications	26-07-2019	
33	Basic concepts of velocity profiles.	27-07-2019	
34	Dimensionless numbers-reynold’s ,weber, froud’s, mach numbers	29-07-2019	
UNIT-IV BASICS OF TURBO MACHINERY CO4: Able to determine hydrodynamic forces on various types of vanes B: Fluid mechanics and Hydraulic machines-Dr.R.K.Bansal			
35	hydrodynamic force of jets on stationary flat, inclined, and curved vanes	29-07-2019	

36	hydrodynamic force of jets on moving flat, inclined curved vanes	30-07-2019	Lecture interspersed with discussions
37	Force of jet on moving curved vanes at centre, at tip and velocity diagram concept	01-08-2019	
38	Flow over radial vanes.	02-08-2019	
UNIT-V CENTRIFUGAL PUMPS , RECIPROCATING PUMPS			
CO5: Able to understand the working of pumps and study their characteristics			
TB: Fluid mechanics and Hydraulic machines-Dr.R.K.Bansal			
39	Classification of pumps	03-08-2019	Lecture interspersed with discussions
40	working, work done of centrifugal pump	05-08-2019	
41	Heads of a pump-manometric head, suction head, delivery head, static head	09-08-2019	
42	losses and efficiencies	10-08-2019	
43	specific speed-derivation	13-08-2019	
44	pumps in series and parallel	16-08-2019	
45	cavitation & NPSH.	17-09-2019	
46	Reciprocating pumps classification and Working	19-08-2019	
47	Discharge, slip	31-08-2019	
48	Indicator diagrams.	03-09-2019	
UNIT-VI HYDRAULIC TURBINES, PERFORMANCE OF HYDRAULIC TURBINES			
CO6: Able to design various components of turbines and study their characteristics and also evaluate the performance of turbines.			
TB: Fluid mechanics and Hydraulic machines-Dr.R.K.Bansal			
49	Classification of turbines	04-09-2019	Lecture interspersed with discussions
50	Impulse- Pelton wheel, working, work done, efficiency	04-9-2019	
51	Reaction turbine-Francis turbine, working, work done, efficiency	12-09-2019	
52	Kaplan turbine-,working, work done, efficiency	13-09-2019	
53	draft tube- theory	16-09-2019	
54	characteristic curves- main characteristic curves, operating, constant efficiency curves	17-09-2019	

55	governing of turbines, selection of type of turbine	24-09-2019
56	cavitation, surge tank, water hammer	25-09-2019
57	Hydraulic systems-hydraulic ram, hydraulic lift	26-09-2019
58	hydraulic coupling, Fluidics – amplifiers	27-09-2019
59	Revision of unit-I	27-09-2019
60	Revision of unit-II	28-09-2019
61	Revision of unit-III	28-09-2019
62	Revision of unit-IV	01-09-2019
63	Revision of unit-V	01-10-2019
64	Revision of unit-I	27-09-2019

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TENTATIVE LESSON PLAN: RT22034 FLUID MECHANICS AND HYDRAULIC MACHINES

Course Title: FLUID MECHANICS AND HYDRAULIC MACHINES		
Section : Sec I	Date : 10/06/2019	Page No : 01 of 04
Revision No : 00	Prepared By : M. CHAITANYA	Approved By : HOD

Tools: Black board, PPTs

No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I FLUID STATICS			
CO1: Comprehend different concepts of fluid and its properties, manometry, hydrostatic forces acting on different surfaces and also problem solving techniques.			
TB: Fluid mechanics and Hydraulic machines-Dr.R.K.Bansal			
1	Introduction: physical properties of fluids- density ,specific weight, specific gravity, specific volume	11-06-2019	Lecture interspersed with discussions
2	viscosity and its significance	12-06-2019	
3	surface tension	13-06-2019	
4	Capillarity-capillary rise, capillary fall	14-06-2019	
5	Measurement of pressure-vapor pressure, Atmospheric gauge and vacuum pressure	15-06-2019	
6	Manometers- Piezometer, U-tube	17-06-2019	
7	Inverted and differential manometers.	18-06-2019	
8	Pascal's law, hydrostatic law.	19-06-2019	
9	Buoyancy and floatation- Meta center, meta-centric height	20-06-2019	
10	Determination of met centric height	21-06-2019	
11	Stability of floating body. Submerged bodies	22-06-2019	
12	Stability analysis and applications.	24-06-2019	
UNIT-II FLUID KINEMATICS, FLUID DYNAMICS			
CO2: Understand the topics of basic laws of fluids, flow patterns, viscous flow through ducts and their corresponding problems.			
TB: Fluid mechanics and Hydraulic machines-Dr.R.K.Bansal			
13	Introduction, flow types	25-06-2019	Lecture interspersed with discussions
14	Stream line, path line and streak lines and stream tube.	26-06-2019	
15	Equation of continuity for one Dimensional flow.	27-06-2019	
16	Stream function and velocity potential function, differences and relation between them	28-06-2019	
17	Condition for irrotational flow	29-06-2019	
18	circulation and vorticity		

		02-07-2019	
19	flow net, source and sink,	03-07-2019	
20	doublet and vortex flow	04-07-2019	
20	surface and body forces –Euler’s equation Bernoulli’s equation for flow along a stream line	05-07-2019	
21	Applications of Bernoulli’s equation	06-07-2019	
22	Momentum equation and its applications-force on pipe bend.	08-07-2019	
23	Closed conduit flow: Reynolds experiment-	10-07-2019	
24	Darcy Weisbach equation	11-07-2019	
25	Minor losses in pipes-losses due to sudden expansion, contraction, pipe bend, couplings e.t.c	12-07-2019	
26	pipes in series and pipes in parallel	15-07-2019	
27	Total energy line-,hydraulic gradient line.	16-07-2019	

UNIT-III BOUNDARY LAYER THEORY, DIMENSIONAL ANALYSIS

CO3: Analyze different concepts related to boundary layer theory, flow separation, basic concepts of velocity profiles, dimensionless numbers and dimensional analysis.

TB: Fluid mechanics and Hydraulic machines-Dr.R.K.Bansal

28	Introduction: Boundary layer, Boundary layer formation over flat plate	17-07-2019	Lecture interspersed with discussions
29	Displacement, momentum, energy thickness	18-07-2019	
30	momentum integral equation,	19-07-2019	
31	Separation of boundary layer, control of flow separation,	20-07-2019	
32	Stream lined body, Bluff body and its applications	22-07-2019	
33	Basic concepts of velocity profiles.	23-07-2019	
34	Dimensionless numbers-reynold’s, weber, froud’s, mach numbers	24-07-2019	

UNIT-IV BASICS OF TURBO MACHINERY

CCO4: Able to determine hydrodynamic forces on various types of vanes

TB: Fluid mechanics and Hydraulic machines-Dr.R.K.Bansal

35	hydrodynamic force of jets on stationary flat, inclined, and curved vanes	25-07-2019	
36			

	hydrodynamic force of jets on moving flat, inclined curved vanes	26-07-2019	Lecture interspersed with discussions
37	Force of jet on moving curved vanes at centre, at tip and velocity diagram concept	27-07-2019	
38	Flow over radial vanes.	29-07-2019	

UNIT-V CENTRIFUGAL PUMPS , RECIPROCATING PUMPS

CO5: Able to understand the working of pumps and study their characteristics

TB: Fluid mechanics and Hydraulic machines-Dr.R.K.Bansal

39	Classification of pumps	30-07-2019	Lecture interspersed with discussions
40	working, work done of centrifugal pump	31-07-2019	
41	Heads of a pump-manometric head, suction head, delivery head, static head	01-08-2019	
42	losses and efficiencies	02-08-2019	
43	specific speed-derivation	03-08-2019	
44	pumps in series and parallel	05-08-2019	
45	cavitation & NPSH.	06-09-2019	
46	Reciprocating pumps classification and Working	07-08-2019	
47	Discharge, slip	08-08-2019	
48	Indicator diagrams.	09-08-2019	

UNIT-VI HYDRAULIC TURBINES, PERFORMANCE OF HYDRAULIC TURBINES

CO6: Able to design various components of turbines and study their characteristics and also evaluate the performance of turbines.

TB: Fluid mechanics and Hydraulic machines-Dr.R.K.Bansal

49	Classification of turbines	13-08-2019	Lecture interspersed with discussions
50	Impulse- Pelton wheel, working, work done, efficiency	14-08-2019	
51	Reaction turbine-Francis turbine, working, work done, efficiency	16-08-2019	
52	Kaplan turbine-,working, work done, efficiency	17-08-2019	
53	draft tube- theory	22-08-2019	
54	characteristic curves- main characteristic curves, operating, constant efficiency curves	26-08-2019	
55	governing of turbines, selection of type of turbine	29-08-2019	
56	cavitation, surge tank, water hammer		

56	cavitation, surge tank, water hammer	04-09-2019
57	Hydraulic systems-hydraulic ram, hydraulic lift	06-09-2019
58	hydraulic coupling, Fluidics – amplifiers	13-09-2019
59	Revision of unit-I	17-09-2019
60	Revision of unit-II	24-09-2019
61	Revision of unit-III	27-09-2019
62	Revision of unit-IV	28-09-2019
63	Revision of unit-V	01-10-2019
64	Revision of unit-I	02-10-2019

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TENTATIVE LESSON PLAN: RT RT21026 MANAGERIAL ECONOMICS & FINANCIAL ANALYSIS

Course Title: MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS		
Section : Sec A	Date : 10/06/2019	Page No : 01 of 05
Revision No : 00	Prepared By : G.SREELALITHA	Approved By : HOD

Tools: Black board

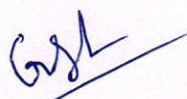
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT –I INTRODUCTION TO MANAGERIAL ECONOMICS			
CO1: To acquaint the student with basic knowledge of managerial economics, managerial decision areas, basic economics tools, concept of demand, law of demand, elasticity of demand, types of elasticity measurements of elasticity and demand forecasting.			
TB :: A.R.Arya sri, “Managerial Economics & Financial Analysis”, 2005, TMH.			
1	Introduction to ME, Def, Characteristics of ME	14-06-2019	Lecture interspersed with discussions
2	Nature and Scope of Managerial Economics	14-06-2019	
3	Managerial Economics related to Other Areas	18-06-2019	
4	Basic Economic Tools in ME	18-06-2019	
5	Introduction to Demand – Meaning & Definition, Features of Demand	19-06-2019	
6	Determinants of Demand	20-06-2019	
7	Law of Demand & Its exceptions, Demand Function	21-06-2019	
8	Introduction to Elasticity of Demand	24-06-2019	
9	Types of Elasticity of Demand	25-06-2019	
10	Types of price Elasticity of Demand	26-06-2019	
11	Measurement of Price Elasticity of Demand	27-06-2019	
12	Introduction Demand Forecasting	30-06-2019	
13	Importance of Demand Forecasting	01-07-2019	
14	Demand Forecasting Methods	03-07-2019	

UNIT –II PRODUCTION, PRODUCTION FUNCTION&COST ANALYSIS			
CO2: TO acquaint the student with basic knowledge of production, factors of production, various production functions, least cost combinations of inputs, cost concepts, breakeven analysis to avoid losses.			
TB: A.R.Arya sri, “Managerial Economics & Financial Analysis”, 2005, TMH.			
15	Introduction to Production : Meaning & Definition, Production Function	06/07/2019	Lecture interspersed with discussions
16	Factors of production, production function with one variable factor	06/07/2019	
17	Law of Variable Proportions	07/07/2019	
18	Factors of production, production function with two variable factors	10/07/2019	
19	Concept of Isocosts, Isoquants	09/07/2019	
20	MRTS, Least Cost Combination	14/07/2019	
21	Cobb-Douglas Production Function	14/07/2019	
22	Economies of Scale& diseconomies of scale	15/07/2019	
23	Returns to Scale & returns to factors	15/07/2019	
24	Concept of cost & Various Cost Concepts	16/07/2019	
25	Introduction to Break Even Analysis	18/07/2019	
26	Determination of Break Even Point with Graph	18/07/2019	
27	Calculation of Break Even Point (BEP) algebraic method	30/07/2019	
28	Tutorial	30/07/2019	
UNIT - III MARKETS AND COMPETITION , PRICING POLICIES			
CO3: Gain knowledge about market, types of markets, competition, price determination under different market conditions, And various pricing methods.			

TB: A.R.Arya sri, "Managerial Economics & Financial Analysis", 2005, TMH.			
29	Introduction to Markets: Meaning & Definition, Features	01/08/2019	Lecture interspersed with discussions
30	Types of markets, market structure	02/08/2019	
31	Price Determination under perfect competition	03/08/2019	
32	Equilibrium point of firm and industry	05/08/2019	
33	Price Determination under Monopoly	07/08/2019	
34	Equilibrium point of firm and industry in monopoly	12/08/2019	
35	Price Determination under Monopolistic Competition	12/08/2019	
36	Price Determination under Oligopoly	13/08/2019	
37	Managerial Theories of the Firm	13/08/2019	
38	Marries and Williamson theory of firm	14/08/2019	
39	Pricing, pricing objectives.	14/08/2019	
40	Various Methods of Pricing	16/08/2019	
UNIT – IV FORMS OF BUSINESS ORGANIZATIONS AND BUSINESS CYCLE			
CO4: TO understand about business, types of business like sole trader ship, partnership, joint stock companies, business cycle.			
TB: A.R.Arya sri, "Managerial Economics & Financial Analysis", 2005, TMH			
41	Introduction to Business: Definition, Features	23-08-2019	Lecture interspersed with discussions
42	Sole Proprietorship : Features, Merits, Demerits	25-08-2019	
43	Partnership : Features, Merits, Demerits,kinds of partners	26-08-2019	
44	Joint Stock Company : Features, Merits, Demerits	27-08-2019	
45	Public limited and pvt ltd companies, features		

		29-08-2019	
46	Public Enterprises : Features, Merits, Demerits	29-08-2019	
47	Phases of Business Cycles	30-08-2019	
UNIT – V INTRODUCTION TO FINANCIAL ACCOUNTING			
CO5: TO know and understand about accounting process, types of accounts, principles of accounting, preparation of journal, ledger, trail balance and final accounts			
TB: A.R.Arya sri, “Managerial Economics & Financial Analysis”, 2005, TMH			
48	Introduction to Accounting : Meaning & Definition, Classification of Accounts	03/09/2019	Lecture interspersed with discussions
49	Accounting Process	04/09/2019	
50	Principles of accounting(GAAP)	05/09/2019	
51	Accounting cycle	05/09/2019	
52	Preparation of Journal : Problems	06/09/2019	
53	Preparation of Ledger : Problems	06/09/2019	
54	Preparation of Trail Balance : Problems	06/09/2019	
55	Final Accounts (Trading ,profit & loss A/C, Balance Sheet)	09/09/2019	
56	Final Accounts with Adjustments	10/09/2019	
57	Treatment of adjustments in preparation of final accounts.	10/09/2019	
58	Introduction to Financial Statement Analysis: Importance, Objectives.	10/09/2019	
59	Classification of Ratios : Liquidity Ratios	12/09/2019	
60	Classification of Ratios : Activity Ratios	12/09/2019	
61	Classification of Ratios : Solvency Ratios	13/09/2019	
62	Preparation of Changes in Working Capital	13/09/2019	

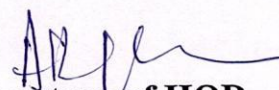
63	Preparation of & Cash Funds Flow Statement	13/09/2019	
UNIT – VI CAPITAL, CAPITAL BUDGETING DECISIONS			
CO6: TO understand about Capital, types of capital, capital budgeting decisions, process of capital budgeting, methods or techniques of capital budgeting.			
TB: A.R.Arya sri, “Managerial Economics & Financial Analysis”, 2005, TMH			
64	Introduction to Capital Budgeting: Meaning, Definition, Need.	13/10/2019	Lecture interspersed with discussions
65	Methods of Capital Budgeting: Pay Back Period (PBP),	14/10/2019	
66	Calculation of Accounting Rate of Return (ARR)	15/10/2019	
67	Calculation of Net Present Value (NPV)	16/10/2019	
68	Calculation of Internal Rate of Return (IRR)	19/10/2019	
69	Calculation of Profitability Index	23/10/2019	
70	Merits and Demerits of Capital Budgeting Techniques.	25/10/2019	
71	Previous QP problems solution	25/10/2019	



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TENTATIVE LESSON PLAN: RT RT21026 MANAGERIAL ECONOMICS & FINANCIAL ANALYSIS

Course Title: MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS		
Section : Sec B	Date : 10/06/2019	Page No : 01 of 05
Revision No : 00	Prepared By : G.SREELALITHA	Approved By : HOD

Tools: Black board

No. of Periods	TOPIC	Date	Mode of Delivery
UNIT –I INTRODUCTION TO MANAGERIAL ECONOMICS			
CO1: To acquaint the student with basic knowledge of managerial economics, managerial decision areas, basic economics tools, concept of demand, law of demand, elasticity of demand, types of elasticity measurements of elasticity and demand forecasting.			
TB :: A.R.Arya sri, “Managerial Economics & Financial Analysis”, 2005, TMH.			
1	Introduction to ME, Def, Characteristics of ME	11-06-2019	Lecture interspersed with discussions
2	Nature and Scope of Managerial Economics	12-06-2019	
3	Managerial Economics related to Other Areas	13-06-2019	
4	Introduction to Demand – Meaning & Definition, Features of Demand	14-06-2019	
5	Determinants of Demand	15-06-2019	
6	Law of Demand & Its exceptions, Demand Function	17-06-2019	
7	Introduction to Elasticity of Demand	18-06-2019	
8	Types of Elasticity & price Elasticity of Demand	19-06-2019	
9	Introduction Demand Forecasting	20-06-2019	
10	Importance & Methods of Demand Forecasting	21-06-2019	

UNIT –II PRODUCTION, PRODUCTION FUNCTION & COST ANALYSIS

CO2: TO acquaint the student with basic knowledge of production, factors of production, various production functions, least cost combinations of inputs, cost concepts, breakeven analysis to avoid losses.

TB: A.R.Arya sri, "Managerial Economics & Financial Analysis", 2005, TMH.

11	Introduction to Production : Meaning & Definition, Production Function	22-06-2019	Lecture interspersed with discussions
12	Factors of production, production function with one variable factor	24-06-2019	
13	Law of Variable Proportions	25-06-2019	
14	Factors of production, production function with two variable factors	26-06-2019	
15	Concept of Isocosts, Isoquants	27-06-2019	
16	MRTS, Least Cost Combination	28-06-2019	
17	Cobb-Douglas Production Function	29-06-2019	
18	Economies of Scale & diseconomies of scale	02-07-2019	
19	Returns to Scale & returns to factors	03-07-2019	
20	Concept of cost & Various Cost Concepts	04-07-2019	
21	Introduction to Break Even Analysis	05-07-2019	
22	Determination of Break Even Point with Graph	06-07-2019	
23	Calculation of Break Even Point (BEP) algebraic method	08-07-2019	
24	Tutorial	09-07-2019	
UNIT - III MARKETS AND COMPETITION , PRICING POLICIES			
CO3: Gain knowledge about market, types of markets, competition, price determination under different market conditions, And various pricing methods.			
TB: A.R.Arya sri, "Managerial Economics & Financial Analysis", 2005, TMH.			
25	Introduction to Markets: Meaning & Definition, Features	10-07-2019	
26	Types of markets, market structure	11-07-2019	
27	Price Determination under perfect competition	01/08/2019	

28	Equilibrium point of firm and industry	02/08/2019	Lecture interspersed with discussions
29	Price Determination under Monopoly	03/08/2019	
30	Equilibrium point of firm and industry in monopoly	05/08/2019	
31	Price Determination under Monopolistic Competition	07/08/2019	
32	Price Determination under Oligopoly	12/08/2019	
33	Managerial Theories of the Firm	12/08/2019	
34	Marries and Williamson theory of firm	13/08/2019	
35	Pricing, pricing objectives.	13/08/2019	
36	Various Methods of Pricing	14/08/2019	

UNIT – IV FORMS OF BUSINESS ORGANIZATIONS AND BUSINESS CYCLE

CO4: TO understand about business, types of business like sole trader ship, partnership, joint stock companies, business cycle.

TB: A.R.Arya sri, “Managerial Economics & Financial Analysis”, 2005, TMH

37	Introduction to Business: Definition, Features	23-08-2019	Lecture interspersed with discussions
38	Sole Proprietorship : Features, Merits, Demerits	25-08-2019	
39	Partnership : Features, Merits, Demerits,kinds of partners	26-08-2019	
40	Joint Stock Company : Features, Merits, Demerits	27-08-2019	
41	Public limited and pvt ltd companies, features	29-08-2019	
42	Public Enterprises : Features, Merits, Demerits	29-08-2019	
43	Phases of Business Cycles	30-08-2019	

UNIT – V INTRODUCTION TO FINANCIAL ACCOUNTING

CO5: TO know and understand about accounting process, types of accounts, principles of accounting, preparation of journal, ledger, trail balance and final accounts

TB: A.R.Arya sri, “Managerial Economics & Financial Analysis”, 2005, TMH

44	Introduction to Accounting : Meaning & Definition, Classification of Accounts	03/09/2019	Lecture interspersed with discussions
45	Accounting Process	04/09/2019	
46	Principles of accounting(GAAP)	05/09/2019	
47	Accounting cycle	05/09/2019	
48	Preparation of Journal : Problems	06/09/2019	
49	Preparation of Ledger : Problems	06/09/2019	
50	Preparation of Trail Balance : Problems	06/09/2019	
51	Final Accounts (Trading ,profit & loss A/C, Balance Sheet)	09/09/2019	
52	Final Accounts with Adjustments	10/09/2019	
53	Treatment of adjustments in preparation of final accounts.	10/09/2019	
54	Introduction to Financial Statement Analysis: Importance, Objectives.	10/09/2019	
55	Classification of Ratios : Liquidity Ratios	10/09/2019	
56	Classification of Ratios : Activity Ratios	12/09/2019	
57	Classification of Ratios : Solvency Ratios	12/09/2019	
58	Classification of Ratios :Profitability Ratios	13/09/2019	
59	Preparation of Changes in Working Capital	13/09/2019	
60	Preparation of Cash& Funds Flow Statement	13/09/2019	

UNIT – VI CAPITAL, CAPITAL BUDGETING DECISIONS

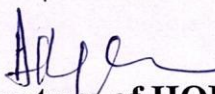
CO6: TO understand about Capital, types of capital, capital budgeting decisions, process of capital budgeting, methods or techniques of capital budgeting.

TB: A.R.Arya sri, "Managerial Economics & Financial Analysis", 2005, TMH

62	Introduction to Capital Budgeting: Meaning, Definition, Need.	13/10/2019	Lecture interspersed with discussions
63	Methods of Capital Budgeting: Pay Back Period (PBP),	14/10/2019	
64	Calculation of Accounting Rate of Return (ARR)	15/10/2019	
65	Calculation of Net Present Value (NPV)	16/10/2019	
66	Calculation of Internal Rate of Return (IRR)	19/10/2019	
67	Calculation of Profitability Index	23/10/2019	
68	Merits and Demerits of Capital Budgeting Techniques.	25/10/2019	
69	Previous QP problems solution	25/10/2019	


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TENTATIVE LESSON PLAN: R1631031 DYNAMICS OF MACHINERY


Course Title: DYNAMICS OF MACHINERY		
Section : A	Date : 12.06.2019	Page No : 01 of 03
Revision No : 00	Prepared By : Mr. BALA CHINALINGAM VANAM	Approved By : HOD

Tools: Black board, PPTs

No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I PRECESSION			
CO1: Able to identify stabilization of sea vehicles, aircrafts and automobile vehicles.			
TB : "Theory of machines" / Khurmi / S.Chand.			
1	Introduction	12.06.2019	Lecture interspersed with discussions
2	Gyroscope effect on areoplanes with problems	12.06.2019	
3	Gyroscope effect on naval ships with problems	13.06.2019	
4	Gyroscope effect on 2-wheeler vehicle	15.06.2019	
5	Illustrative problems on 2-wheeler vehicle	16.06.2019	
6	Gyroscope effect on 4-wheeler vehicle with problems	17.06.2019	
7	Gyroscope effect on disc with problems	19.06.2019	
8	Gyroscope effect on bearings with problems	19.06.2019	
9	Static force & Dynamic force analysis on planar mechanism	20.06.2019	
10	Illustrative problems on static force & dynamic force analysis	22.06.2019	
UNIT-II FRICTION, CLUTCHES, BRAKES & DYNAMOMETERS			
CO2: Able to identify frictional losses, torque transmission of mechanical systems.			
TB : "Theory of Machines" / S.S Ratan/ Mc. Graw Hill Publ.			
11	FRICTION: Introduction, Inclined plane	23.06.2019	Lecture interspersed with discussions
12	Friction of screw and nuts with problems	24.06.2019	
13	Pivot and collar, Uniform pressure, Uniform wear	29.06.2019	
14	Friction circle & Friction axis	01.07.2019	
15	Lubricating surfaces & Boundary friction	01.07.2019	
16	Illustrative problems on film lubrication	03.07.2019	
17	CLUTCHES: Introduction-Friction clutches	03.07.2019	
18	Single disc (or) Plate clutch	04.07.2019	
19	Multidisc clutch with problems	07.07.2019	
20	Cone clutch with problems	07.07.2019	
21	Centrifugal clutch with problems	10.07.2019	
22	Brakes and Dynamometers: Introduction	11.07.2019	
23	Simple block brakes	13.07.2019	

24	Illustrative problems on simple block brakes	14.07.2019	
25	Internal expanding brake with problems	15.07.2019	
26	Band brake on vehicles with problems	17.07.2019	
27	General description & operation of dynamometers	18.07.2019	
28	Prony dynamometer	19.07.2019	
29	Rope brake dynamometer with problems	20.07.2019	
30	Epicyclic & Bevis-Gibson dynamometers with problems	21.07.2019	
31	Bevis-Gibson dynamometers with problems	24.07.2019	
UNIT-III TURNING MOMENT DIAGRAMS			
CO3: Able to design dynamic force analysis of slider crank mechanism and design of flywheel.			
TB : "Theory of Machines" / S.S Ratan/ Mc. Graw Hill Publ.			
32	Introduction	24.07.2019	Lecture interspersed with discussions
33	Dynamic force analysis of slider crank mechanism	25.07.2019	
34	Inertia torque, angular velocity of connecting rod	26.07.2019	
35	Acceleration of connecting rod, crank effort	28.07.2019	
36	Turning moment diagram of fluctuation of energy	29.07.2019	
37	Coefficient of fluctuation of speed	31.07.2019	
38	Fly wheel and their design with problems	01.08.2019	
39	Fly wheel and their design & Turning moment diagrams with problems	05.08.2019	
40	Illustrative problems on Turning moment diagram	07.08.2019	
UNIT-IV GOVERNORS			
CO4: Able to design of governor its working in different condition.			
TB : "Theory of Machines" / S.S Ratan/ Mc. Graw Hill Publ.			
41	Introduction & Different types of governors	21.08.2019	Lecture interspersed with discussions
42	Watt governor with problems	21.08.2019	
43	Porter governor with problems	22.08.2019	
44	Proell governor with problems	25.08.2019	
45	Spring loaded governors	28.08.2019	
46	Hartnell governor with auxiliary springs with problems	28.08.2019	
47	Hartung governor with auxiliary springs with problems	29.08.2019	
48	Sensitiveness, Isochronisms & Hunting	02.09.2019	
UNIT-V BALANCING			
CO5: Able to design balancing of reciprocating and rotary masses.			
TB: "Theory of machines" / Khurmi / S.Chand.			
49	Introduction	04.09.2019	

50	Balancing of rotating mass single & multiple planes	05.09.2019	Lecture interspersed with discussions
51	Use of analytical & graphical methods	07.09.2019	
52	Illustrative problems on single planes on rotating masses	08.09.2019	
53	Illustrative problems on different planes on rotating masses	09.09.2019	
54	Primary, secondary & higher balancing of reciprocating mass	11.09.2019	
55	Analytical & Graphical methods with forces & couples diagrams	12.09.2019	
56	Locomotive balancing	14.09.2019	
57	Hammer blow, swaying couple & variation of tractive efforts	18.09.2019	
UNIT-VI VIBRATIONS			
CO6: Able to the identify frequencies of continuous systems starting from the general equation of displacement.			
TB : "Theory of Machines" / S.S Ratan/ Mc. Graw Hill Publ.			
58	Introduction, Types of vibrations, Free vibration of simple mass system	18.09.2019	Lecture interspersed with discussions
59	Oscillation of pendulum, centers of oscillations & suspensions, transverse loads, variation of beams with UDL	19.09.2019	
60	Dunkerley's & Rayleigh's method	21.09.2019	
61	Illustrative problems on Transverse loads with UDL	22.09.2019	
62	Illustrative problems on Dunkerley's method	23.09.2019	
63	Illustrative problems on Rayleigh's method	25.09.2019	
64	Illustrative problems on Forced damped vibration	26.09.2019	
65	Illustrative problems on Forced damped vibration	26.09.2019	
66	Whirling of shafts, critical speeds	26.09.2019	
67	Torsional vibrations-Two and Three rotor systems	28.09.2019	
68	Illustrative problems on Two rotor system	29.09.2019	
69	Illustrative problems on Forced damped vibration & vibration isolation	06.10.2019	
70	Illustrative problems on vibration isolation & Transmissibility	07.10.2019	


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TENTATIVE LESSON PLAN: R1631031 DYNAMICS OF MACHINERY

Course Title: DYNAMICS OF MACHINERY		
Section : B	Date : 12.06.2019	Page No : 01 of 03
Revision No : 00	Prepared By : Mr. BALA CHINALINGAM VANAM	Approved By : HOD

Tools: Black board, PPTs

No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I PRECESSION			
CO1: Able to identify stabilization of sea vehicles, aircrafts and automobile vehicles.			
TB : "Theory of machines" / Khurmi / S.Chand.			
1	Introduction	12.06.2019	Lecture interspersed with discussions
2	Gyroscope effect on areoplanes with problems	12.06.2019	
3	Gyroscope effect on naval ships with problems	13.06.2019	
4	Gyroscope effect on 2-wheeler vehicle	15.06.2019	
5	Illustrative problems on 2-wheeler vehicle	16.06.2019	
6	Gyroscope effect on 4-wheeler vehicle with problems	17.06.2019	
7	Gyroscope effect on disc with problems	19.06.2019	
8	Gyroscope effect on bearings with problems	19.06.2019	
9	Static force & Dynamic force analysis on planar mechanism	20.06.2019	
10	Illustrative problems on static force & dynamic force analysis	22.06.2019	
UNIT-II FRICTION, CLUTCHES, BRAKES & DYNAMOMETERS			
CO2: Able to identify frictional losses, torque transmission of mechanical systems.			
TB : "Theory of Machines" / S.S Ratan/ Mc. Graw Hill Publ.			
11	FRICTION: Introduction, Inclined plane	23.06.2019	Lecture interspersed with discussions
12	Friction of screw and nuts with problems	24.06.2019	
13	Pivot and collar, Uniform pressure, Uniform wear	29.06.2019	
14	Friction circle & Friction axis	01.07.2019	
15	Lubricating surfaces & Boundary friction	01.07.2019	
16	Illustrative problems on film lubrication	03.07.2019	
17	CLUTCHES: Introduction-Friction clutches	03.07.2019	
18	Single disc (or) Plate clutch	04.07.2019	
19	Multidisc clutch with problems	07.07.2019	
20	Cone clutch with problems	07.07.2019	
21	Centrifugal clutch with problems	10.07.2019	
22	Brakes and Dynamometers: Introduction	11.07.2019	
23	Simple block brakes	13.07.2019	

24	Illustrative problems on simple block brakes	14.07.2019	
25	Internal expanding brake with problems	15.07.2019	
26	Band brake on vehicles with problems	17.07.2019	
27	General description & operation of dynamometers	18.07.2019	
28	Prony dynamometer	19.07.2019	
29	Rope brake dynamometer with problems	20.07.2019	
30	Epicyclic & Bevis-Gibson dynamometers with problems	21.07.2019	
31	Bevis-Gibson dynamometers with problems	24.07.2019	
UNIT-III TURNING MOMENT DIAGRAMS			
CO3: Able to design dynamic force analysis of slider crank mechanism and design of flywheel.			
TB : "Theory of Machines" / S.S Ratan/ Mc. Graw Hill Publ.			
32	Introduction	24.07.2019	Lecture interspersed with discussions
33	Dynamic force analysis of slider crank mechanism	25.07.2019	
34	Inertia torque, angular velocity of connecting rod	26.07.2019	
35	Acceleration of connecting rod, crank effort	28.07.2019	
36	Turning moment diagram of fluctuation of energy	29.07.2019	
37	Coefficient of fluctuation of speed	31.07.2019	
38	Fly wheel and their design with problems	01.08.2019	
39	Fly wheel and their design & Turning moment diagrams with problems	05.08.2019	
40	Illustrative problems on Turning moment diagram	07.08.2019	
UNIT-IV GOVERNORS			
CO4: Able to design of governor its working in different condition.			
TB : "Theory of Machines" / S.S Ratan/ Mc. Graw Hill Publ.			
41	Introduction & Different types of governors	21.08.2019	Lecture interspersed with discussions
42	Watt governor with problems	21.08.2019	
43	Porter governor with problems	22.08.2019	
44	Proell governor with problems	25.08.2019	
45	Spring loaded governors	28.08.2019	
46	Hartnell governor with auxiliary springs with problems	28.08.2019	
47	Hartung governor with auxiliary springs with problems	29.08.2019	
48	Sensitiveness, Isochronisms & Hunting	02.09.2019	
UNIT-V BALANCING			
CO5: Able to design balancing of reciprocating and rotary masses.			
TB: "Theory of machines" / Khurmi / S.Chand.			
49	Introduction	04.09.2019	

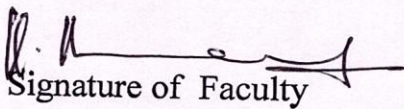
50	Balancing of rotating mass single & multiple planes	05.09.2019	Lecture interspersed with discussions
51	Use of analytical & graphical methods	07.09.2019	
52	Illustrative problems on single planes on rotating masses	08.09.2019	
53	Illustrative problems on different planes on rotating masses	09.09.2019	
54	Primary, secondary & higher balancing of reciprocating mass	11.09.2019	
55	Analytical & Graphical methods with forces & couples diagrams	12.09.2019	
56	Locomotive balancing	14.09.2019	
57	Hammer blow, swaying couple & variation of tractive efforts	18.09.2019	

UNIT-VI VIBRATIONS

CO6: Able to the identify frequencies of continuous systems starting from the general equation of displacement.

TB : "Theory of Machines" / S.S Ratan/ Mc. Graw Hill Publ.

58	Introduction, Types of vibrations, Free vibration of simple mass system	18.09.2019	Lecture interspersed with discussions
59	Oscillation of pendulum, centers of oscillations & suspensions, transverse loads, variation of beams with UDL	19.09.2019	
60	Dunkerley's & Rayleigh's method	21.09.2019	
61	Illustrative problems on Transverse loads with UDL	22.09.2019	
62	Illustrative problems on Dunkerley's method	23.09.2019	
63	Illustrative problems on Rayleigh's method	25.09.2019	
64	Illustrative problems on Forced damped vibration	26.09.2019	
65	Illustrative problems on Forced damped vibration	26.09.2019	
66	Whirling of shafts, critical speeds	26.09.2019	
67	Torsional vibrations-Two and Three rotor systems	28.09.2019	
68	Illustrative problems on Two rotor system	29.09.2019	
69	Illustrative problems on Forced damped vibration & vibration isolation	06.10.2019	
70	Illustrative problems on vibration isolation & Transmissibility	07.10.2019	


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TENTATIVE LESSON PLAN: R1631032

Course Title: METAL CUTTING AND MACHINE TOOLS		Course code: R1631032	
Section : Sec I	Date : 10/6/2019	Page No : 01 to 03	
Revision No : 00	Prepared By: R. KARUN KUMAR	Approved By : HOD	
Tools: BLACK BOARD			
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I FUNDAMENTAL OF MACHINING CO1: Students will be able to understand apply cutting mechanics to metal machining based on cutting force and power consumption. TB: "MANUFACTURING PROCESSES" / JP KAUSHISH/ PHI Publishers-2nd Edition			
1	Elementary treatment of metal cutting	11/6/2019	Lecture interspersed with discussions
2	Elements of cutting processes	12/6/2019	
3	Geometry of single point cutting tool	13/6/2019	
4	Tool angles, chip formation, types of chips	14/6/2019	
5	Built-up edge and its effects	15/6/2019	
6	Chip breakers , mechanics of orthogonal cutting	18/6/2019	
7	Merchants force diagram, cutting forces	19/6/2019	
8	Cutting speed, feed and depth of cut	20/6/2019	
9	Tool life , tool wear, machinability	21/6/2019	
10	Economics of machining, coolants, tool material and properties.	22/6/2019	
UNIT-II LATHE MACHINES CO2: Students will be able to operate lathe, milling machines, drill press, grinding machines, etc. TB: " MANUFACTURING PROCESSES" / JP KAUSHISH/ PHI Publishers-2nd Edition.			
11	Principle of working, specifications of lathes	25/6/2019	Lecture interspersed with discussions
12	Types of lathes, work holders and tool holders	26/6/2019	
13	Box tools, taper turning	27/6/2019	
14	Thread cutting for lathes	28/6/2019	
15	Constructional features of speed and feed gear box	29/6/2019	
16	Turret and capstan lathes, collet chucks	29/6/2019	
17	Other work and tool holding devices	03/07/2019	
18	Principle features of automatic lathes	05/07/2019	
19	Classification of automatic lathes, single and multi spindle lathes	06/07/2019	
20	Tool layout and cam design for automates	10/07/2019	

UNIT-III SHAPING, SLOTTING, PLANNER, DRILLING AND BORING MACHINES

CO3: Students will be able to select cutting tool materials and tool geometries for different metals.

TB: "MANUFACTURING PROCESSES" / JP KAUSHISH/ PHI Publishers-2nd Edition.

21	Working principle and principle parts of shaper	17/7/2019	Lecture interspersed with discussions
22	Specifications & principle of operation of shaper	18/7/2019	
23	Machining time calculations of shaper	19/7/2019	
24	Principle parts, operations performed on slotter	20/7/2019	
25	Machining time calculations of slotter & principle of working of planner	20/7/2019	
26	Principle parts , operations performed on planner	23/7/2019	
27	Working specifications, types of drilling machines	24/7/2019	
28	Operations performed and tool holding devices of drilling machines	25/7/2019	
29	Twist drills and types	26/7/2019	
30	Machining time calculations of planner	27/7/2019	
31	Boring machines, fine boring machines	30/7/2019	
32	Jig boring machine, deep hole drilling machines	01/08/2019	

UNIT-IV MILLING MACHINES

CO4: Students will be able to select appropriate machining processes and conditions for different metals.

TB: "MANUFACTURING PROCESSES" / JP KAUSHISH/ PHI Publishers-2nd Edition.

33	Principles of working of milling machines	02/8/2019	Lecture interspersed with discussions
34	Specifications, classification of milling machines	03/8/2019	
35	Principle features of horizontal and vertical milling machines	16/8/2019	
36	Universal milling machines	17/8/2019	
37	Machining operations, types of cutter	17/8/2019	
38	Geometry of milling cutter	20/8/2019	
39	Methods of indexing	21/8/2019	
40	Accessories to milling machines	22/8/2019	


UNIT-V FINISHING PROCESSES

CO5: Students will be able to learn machining economics

TB: "MANUFACTURING PROCESSES" / JP KAUSHISH/ PHI Publishers-2nd Edition.

41	Theory of grinding	23/8/2019	Lecture interspersed
42	Classification of grinding machines	24/8/2019	

43	Cylindrical & surface grinding machines	24/8/2019	with discussions
44	Tools and cutter grinding machines	28/8/2019	
45	Different types of abrasives	30/08/2019	
46	Bonds and specifications	31/08/2019	
47	Selection of grinding wheel	04/09/2019	
48	Lapping , honing operations	05/09/2019	
49	Broaching operations	12/09/2019	
50	Lapping , honing, broaching operation compared to grinding	13/09/2019	
UNIT-VI JIGS & FIXTURES AND CNC MACHINE TOOLS			
CO6: Students will be able to design jigs and Fixtures for simple parts and principles of CNC Machines			
TB: "MANUFACTURING PROCESSES" / JP KAUSHISH/ PHI Publishers-2nd Edition.			
51	Principles of design of jigs and fixtures	17/09/2019	Lecture interspersed with discussions
52	Uses of jigs and fixtures	18/09/2019	
53	Classification of jigs and fixtures	20/09/2019	
54	Principle of location and clamping	20/09/2019	
55	Types of clamping	21/09/2019	
56	Work holding devices	21/09/2019	
57	Typical examples of jigs and fixtures	21/09/2019	
58	CNC machine tools	24/09/2019	
59	Working principle of CNC	25/09/2019	
60	Classification of CNC	26/09/2019	
61	Constructional features of CNC	27/09/2019	
62	CNC controllers and types of motion controls	28/09/2019	
63	Types of motion controls in CNC	28/09/2019	
64	Applications of CNC machines	01/10/2019	


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Date:



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TENTATIVE LESSON PLAN: R1631032

Course Title: METAL CUTTING AND MACHINE TOOLS		Course code: R1631032	
Section : Sec II	Date : 10/6/2019	Page No : 01 to 03	
Revision No : 00	Prepared By: R. KARUN KUMAR	Approved By : HOD	
Tools: BLACK BOARD			
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I FUNDAMENTAL OF MACHINING CO1: Students will be able to understand apply cutting mechanics to metal machining based on cutting force and power consumption. TB: "MANUFACTURING PROCESSES" / JP KAUSHISH/ PHI Publishers-2nd Edition			
1	Elementary treatment of metal cutting	10/6/2019	Lecture interspersed with discussions
2	Elements of cutting processes	12/6/2019	
3	Geometry of single point cutting tool	12/6/2019	
4	Tool angles, chip formation, types of chips	13/6/2019	
5	Built-up edge and its effects	15/6/2019	
6	Chip breakers , mechanics of orthogonal cutting	19/6/2019	
7	Merchant's force diagram, cutting forces	19/6/2019	
8	Cutting speed, feed and depth of cut	19/6/2019	
9	Tool life , tool wear, machinability	20/6/2019	
10	Economics of machining, coolants, tool material and properties.	22/6/2019	
UNIT-II LATHE MACHINES CO2: Students will be able to operate lathe, milling machines, drill press, grinding machines, etc. TB: "MANUFACTURING PROCESSES" / JP KAUSHISH/ PHI Publishers-2nd Edition.			
11	Principle of working, specifications of lathes	22/6/2019	Lecture interspersed with discussions
12	Types of lathes, work holders and tool holders	22/6/2019	
13	Box tools, taper turning	24/6/2019	
14	Thread cutting for lathes	26/6/2019	
15	Constructional features of speed and feed gear box	26/6/2019	
16	Turret and capstan lathes, collet chucks	27/06/2019	
17	Other work and tool holding devices	29/06/2019	
18	Principle features of automatic lathes	03/07/2019	
19	Classification of automatic lathes, single and multi spindle lathes	03/07/2019	
20	Tool layout and cam design for automates	03/07/2019	

UNIT-III SHAPING, SLOTTING, PLANNER, DRILLING AND BORING MACHINES

CO3: Students will be able to select cutting tool materials and tool geometries for different metals.

TB: "MANUFACTURING PROCESSES" / JP KAUSHISH/ PHI Publishers-2nd Edition.

21	Working principle and principle parts of shaper	06/7/2019	Lecture interspersed with discussions
22	Specifications & principle of operation of shaper	06/7/2019	
23	Machining time calculations of shaper	06/7/2019	
24	Principle parts, operations performed on slotter	10/7/2019	
25	Machining time calculations of slotter & principle of working of planner	10/7/2019	
26	Principle parts , operations performed on planner	17/7/2019	
27	Working specifications, types of drilling machines	17/7/2019	
28	Operations performed and tool holding devices of drilling machines	17/7/2019	
29	Twist drills and types	18/7/2019	
30	Machining time calculations of planner	20/7/2019	
31	Boring machines, fine boring machines	20/7/2019	
32	Jig boring machine, deep hole drilling machines	24/07/2019	

UNIT-IV MILLING MACHINES

CO4: Students will be able to select appropriate machining processes and conditions for different metals.

TB: "MANUFACTURING PROCESSES" / JP KAUSHISH/ PHI Publishers-2nd Edition.

33	Principles of working of milling machines	24/07/2019	Lecture interspersed with discussions
34	Specifications, classification of milling machines	24/07/2019	
35	Principle features of horizontal and vertical milling machines	25/07/2019	
36	Universal milling machines	27/07/2019	
37	Machining operations, types of cutter	27/07/2019	
38	Geometry of milling cutter	27/07/2019	
39	Methods of indexing	01/8/2019	
40	Accessories to milling machines	03/8/2019	


UNIT-V FINISHING PROCESSES

CO5: Students will be able to learn machining economics

TB: "MANUFACTURING PROCESSES" / JP KAUSHISH/ PHI Publishers-2nd Edition.

41	Theory of grinding	03/8/2019	Lecture interspersed
42	Classification of grinding machines	03/8/2019	

43	Cylindrical & surface grinding machines	21/8/2019	with discussions
44	Tools and cutter grinding machines	21/8/2019	
45	Different types of abrasives	21/08/2019	
46	Bonds and specifications	22/08/2019	
47	Selection of grinding wheel	28/08/2019	
48	Lapping , honing operations	28/08/2019	
49	Broaching operations	28/08/2019	
50	Lapping , honing, broaching operation compared to grinding	31/08/2019	
UNIT-VI JIGS & FIXTURES AND CNC MACHINE TOOLS			
CO6: Students will be able to design jigs and Fixtures for simple parts and principles of CNC Machines			
TB: "MANUFACTURING PROCESSES" / JP KAUSHISH/ PHI Publishers-2nd Edition.			
51	Principles of design of jigs and fixtures	31/08/2019	Lecture interspersed with discussions
52	Uses of jigs and fixtures	31/08/2019	
53	Classification of jigs and fixtures	04/09/2019	
54	Principle of location and clamping	04/09/2019	
55	Types of clamping	04/09/2019	
56	Work holding devices	05/09/2019	
57	Typical examples of jigs and fixtures	12/09/2019	
58	CNC machine tools	18/09/2019	
59	Working principle of CNC	18/09/2019	
60	Classification of CNC	18/09/2019	
61	Constructional features of CNC	18/09/2019	
62	CNC controllers and types of motion controls	21/09/2019	
63	Types of motion controls in CNC	21/09/2019	
64	Applications of CNC machines	01/10/2019	


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Date:


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TENTATIVE LESSON PLAN: R1631033

Course Title: DESIGN OF MACHINE MEMBERS-II		Course code: R1631033	
Section : Sec I	Date : 10/6/2019	Page No : 01 to 03	
Revision No : 00	Prepared By: V. KRANTHI KUMAR	Approved By : HOD	
Tools: BLACK BOARD, PPTs			
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I BEARINGS			
CO1: The student will able to select the suitable bearing based on the application of the loads and predict the life of the bearing.			
TB: "DESIGN OF MACHINE ELEMENTS", V.B.BHANDARI, 3rdEdition, Tata McGraw Hill Education Private Limited publications.			
1	Classification of bearings	10/6/2019	Lecture interspersed with discussions
2	applications. types of journal bearings	12/6/2019	
3	lubrication — bearing modulus	12/6/2019	
4	full and partial — clearance ratio	13/6/2019	
5	clearance ratio , heat dissipation of bearings	15/6/2019	
6	bearing materials	15/6/2019	
7	Journal bearing	15/6/2019	
8	design of ball bearings	19/6/2019	
9	design of roller bearings	19/6/2019	
10	static loading of ball bearings	19/6/2019	
11	static loading of roller bearings	20/6/2019	
12	bearing life	22/6/2019	
13	problems	22/6/2019	
14	Problems on bearings	22/6/2019	
15	problems	24/6/2019	
16	problems	26/6/2019	
UNIT-II ENGINE PARTS			
CO2: Able to design the IC Engines parts.			
TB: "DESIGN OF MACHINE ELEMENTS", V.B.BHANDARI, 3rdEdition, Tata McGraw Hill Education Private Limited publications.			
17	Connecting Rod	26/6/2019	Lecture interspersed with discussions
18	Thrust in connecting rod	27/6/2019	
19	stress due to whipping action on connecting rod	29/6/2019	
20	Problems on stress due to whipping action on connecting rod	03/7/2019	
21	cranks and crank shafts	03/7/2019	
22	strength and proportions of over hung cranks	03/7/2019	
23	strength and proportions of over center cranks	06/7/2019	
24	crank pins,Crank shafts,Pistons, forces acting on	06/7/2019	

	piston		
25	construction design and proportions of piston,cylinder,Bore and length of cylinder	06/7/2019	
26	Thickness of cylinder wall,Stresses in cylinder wall,Cylinder head,	10/7/2019	
27	Design of studs for cylinder head,problems,problems	10/7/2019	
28	Pistons, piston materials,Thickness of piston head , piston ribs and cup,Piston rings , piston barrel, skirt	10/7/2019	
29	Piston pin , problems, problems	17/7/2019	

UNIT-III Design of curved beams

CO3: Able to design the curved beams, calculation of stresses in curved beams and expression for radius of neutral axis for curved beams with different cross-sections.

TB1: "DESIGN OF MACHINE ELEMENTS", V.B.BHANDARI, 3rdEdition, Tata McGraw Hill Education Private Limited publications.

TB2: "STRENGTH OF MATERIALS", Dr. R.K. BANSAL, 4th Edition,Laxmi Publications(P) Ltd.


30	Design of curved beams	20/7/2019	Lecture interspersed with discussions
31	Introduction , stresses in beams	24/7/2019	
32	Expression for radius of neutral axis rectangular section	25/7/2019	
33	Expression for radius of neutral axis circular section	27/7/2019	
34	Expression for radius of neutral axis trapezoidal section	27/7/2019	
35	Expression for radius of neutral axis t-section	27/7/2019	
36	Design of crane hook	01/7/2019	
37	Design of c- clamp	01/7/2019	
38	Problems on radius of neutral axis rectangular section, circular section, trapezoidal section, t-section	01/7/2019	
39	Problems on crane hook	03/7/2019	
40	Problems on c- clamp	03/8/2019	

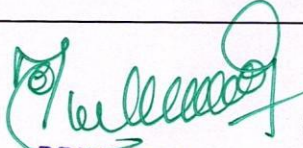
UNIT-IV POWER TRANSMISSIONS SYSTEMS, PULLEYS

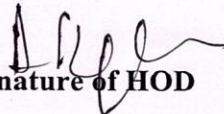
CO4: Able to design power transmission elements such as gears, belts, chains, pulleys, ropes, levers and power screws.

TB: "DESIGN OF MACHINE ELEMENTS", V.B.BHANDARI, 3rdEdition, Tata McGraw

Hill Education Private Limited publications.			
41	Transmission of power by belt and drives transmission efficiencies	21/8/2019	Lecture interspersed with discussions
42	belts — flat and v types	21/8/2019	
43	ropes - pulleys for belt and rope drives	22/8/2019	
44	materials, chain drives	28/8/2019	
45	DESIGN OF POWER SCREWS : Design of screw	28/8/2019	
46	square ACME, buttress screws, problems	28/8/2019	
47	design of nut, compound screw	31/8/2019	
48	differential screw, ball screw	31/8/2019	
49	possible failures, Problems	31/8/2019	
UNIT-V SPUR & HELICAL GEAR DRIVES			
CO5: Able to design the spur & helical gear for different engineering applications.			
TB:“DESIGN OF MACHINE ELEMENTS”, V.B.BHANDARI, 3rdEdition, Tata McGraw Hill Education Private Limited publications.			
50	Spur gears- helical gears, load concentration factor, flange couplings	31/8/2019	Lecture interspersed with discussions
51	Dynamic load factor, surface compressive strength — bending strength,	04/9/2019	
52	design analysis of spur gears — estimation of centre distance,	04/9/2019	
53	Module and face width, check for plastic creek for dynamic wear considerations, Problems	05/9/2019	
UNIT-VI MACHINE TOOL ELEMENTS			
CO6: Able to design the Levers , brackets and Wire Ropes.			
TB:“DESIGN OF MACHINE ELEMENTS”, V.B.BHANDARI, 3rdEdition, Tata McGraw Hill Education Private Limited publications.			
54	Levers and brackets: design of levers	12/9/2019	Lecture interspersed with discussions
55	hand lever — cranked lever	18/9/2019	
56	Lever of a lever loaded safety valve- rocker arm straight	18/9/2019	
57	Angular design of a crank pin	18/9/2019	
58	Wire Ropes	21/9/2019	
59	Construction, Designation, Stresses in wire ropes	21/9/2019	
60	sheaves and & drums	01/10/2019	


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TENTATIVE LESSON PLAN: R1631033

Course Title: DESIGN OF MACHINE MEMBERS-II		Course code: R1631033	
Section : Sec II	Date : 10/6/2019	Page No : 01 to 03	
Revision No : 00	Prepared By: V. KRANTHI KUMAR	Approved By : HOD	
Tools: BLACK BOARD, PPTs			
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I BEARINGS			
CO1: The student will able to select the suitable bearing based on the application of the loads and predict the life of the bearing.			
TB: "DESIGN OF MACHINE ELEMENTS", V.B.BHANDARI, 3rdEdition, Tata McGraw Hill Education Private Limited publications.			
1	Classification of bearings	10/6/2019	Lecture interspersed with discussions
2	applications. types of journal bearings	12/6/2019	
3	lubrication — bearing modulus	12/6/2019	
4	full and partial — clearance ratio	13/6/2019	
5	clearance ratio , heat dissipation of bearings	15/6/2019	
6	bearing materials	15/6/2019	
7	Journal bearing	15/6/2019	
8	design of ball bearings	19/6/2019	
9	design of roller bearings	19/6/2019	
10	static loading of ball bearings	19/6/2019	
11	static loading of roller bearings	20/6/2019	
12	bearing life	22/6/2019	
13	problems	22/6/2019	
14	Problems on bearings	22/6/2019	
15	problems	24/6/2019	
16	problems	26/6/2019	
UNIT-II ENGINE PARTS			
CO2: Able to design the IC Engines parts.			
TB:"DESIGN OF MACHINE ELEMENTS", V.B.BHANDARI, 3rdEdition, Tata McGraw Hill Education Private Limited publications.			
17	Connecting Rod	26/6/2019	Lecture interspersed with discussions
18	Thrust in connecting rod	27/6/2019	
19	stress due to whipping action on connecting rod	29/6/2019	
20	Problems on stress due to whipping action on connecting rod	03/7/2019	
21	cranks and crank shafts	03/7/2019	
22	strength and proportions of over hung cranks	03/7/2019	
23	strength and proportions of over center cranks	06/7/2019	
24	crank pins,Crank shafts,Pistons, forces acting on piston	06/7/2019	

25	construction design and proportions of piston,cylinder,Bore and length of cylinder	06/7/2019	
26	Thickness of cylinder wall,Stresses in cylinder wall,Cylinder head,	10/7/2019	
27	Design of studs for cylinder head,problems,problems	10/7/2019	
28	Pistons, piston materials,Thickness of piston head , piston ribs and cup,Piston rings , piston barrel, skirt	10/7/2019	
29	Piston pin , problems, problems	17/7/2019	

UNIT-III Design of curved beams

CO3: Able to design the curved beams, calculation of stresses in curved beams and expression for radius of neutral axis for curved beams with different cross-sections.

TB1: "DESIGN OF MACHINE ELEMENTS", V.B.BHANDARI, 3rd Edition, Tata McGraw Hill Education Private Limited publications.

TB2: "STRENGTH OF MATERIALS", Dr. R.K. BANSAL, 4th Edition, Laxmi Publications(P) Ltd.

30	Design of curved beams	20/7/2019	Lecture interspersed with discussions
31	Introduction , stresses in beams	24/7/2019	
32	Expression for radius of neutral axis rectangular section	25/7/2019	
33	Expression for radius of neutral axis circular section	27/7/2019	
34	Expression for radius of neutral axis trapezoidal section	27/7/2019	
35	Expression for radius of neutral axis t-section	27/7/2019	
36	Design of crane hook	01/7/2019	
37	Design of c- clamp	01/7/2019	
38	Problems on radius of neutral axis rectangular section, circular section, trapezoidal section, t-section	01/7/2019	
39	Problems on crane hook	03/7/2019	
40	Problems on c- clamp	03/8/2019	

UNIT-IV POWER TRANSMISSIONS SYSTEMS, PULLEYS

CO4: Able to design power transmission elements such as gears, belts, chains, pulleys, ropes, levers and power screws.

TB: "DESIGN OF MACHINE ELEMENTS", V.B.BHANDARI, 3rd Edition, Tata McGraw Hill Education Private Limited publications.

41	Transmission of power by belt and drives transmission efficiencies	21/8/2019	Lecture interspersed with discussions
42	belts — flat and v types	21/8/2019	
43	ropes - pulleys for belt and rope drives	22/8/2019	
44	materials, chain drives	28/8/2019	
45	DESIGN OF POWER SCREWS : Design of screw	28/8/2019	
46	square ACME, buttress screws, problems	28/8/2019	
47	design of nut, compound screw	31/8/2019	
48	differential screw, ball screw	31/8/2019	
49	possible failures, Problems	31/8/2019	

UNIT-V SPUR & HELICAL GEAR DRIVES

CO5: Able to design the spur & helical gear for different engineering applications.

TB:“DESIGN OF MACHINE ELEMENTS”, V.B.BHANDARI, 3rdEdition, Tata McGraw Hill Education Private Limited publications.

50	Spur gears- helical gears, load concentration factor, flange couplings	31/8/2019	Lecture interspersed with discussions
51	Dynamic load factor, surface compressive strength — bending strength,	04/9/2019	
52	design analysis of spur gears — estimation of centre distance.	04/9/2019	
53	Module and face width, check for plastic creek for dynamic wear considerations, Problems	05/9/2019	

UNIT-VI MACHINE TOOL ELEMENTS

CO6: Able to design the Levers , brackets and Wire Ropes.

TB:“DESIGN OF MACHINE ELEMENTS”, V.B.BHANDARI, 3rdEdition, Tata McGraw Hill Education Private Limited publications.

54	Levers and brackets: design of levers	12/9/2019	Lecture interspersed with discussions
55	hand lever — cranked lever	18/9/2019	
56	lever of a lever loaded safety valve- rocker arm straight	18/9/2019	
57	Angular design of a crank pin	18/9/2019	
58	Wire Ropes	21/9/2019	
59	Construction, Designation, Stresses in wire ropes	21/9/2019	
60	sheaves and & drums	01/10/2019	

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TENTATIVE LESSON PLAN - R1631034

Course Title: OPERATIONS RESEARCH		
Section : ME-A	Date : 10/06/2019	Page No : 01 of 03
Revision No : 00	Prepared By : V.PRASANTHI	Approved By : HOD

Tools : Black board

No. of Periods	TOPIC	Date	Mode of Delivery
UNIT- I : DEVELOPMENT OF OR & ALLOCATION			
<p>CO1: To understand the need of using OR – a quantitative approach for effective decision making, know various definitions of OR, its characteristics and various phases of scientific study. To gain knowledge of situations in which LPP can be applied and understand fundamental concepts and able to solve LPP by using different methods.</p> <p>TB1 : OPERATIONS RESEARCH By S.D. Sharma – Kedarnath.</p>			
1.	Development of OR – definition	10-6-2019	Lecture interspersed with discussions
2.	characteristics and phases of OR	11-6-2019	
3.	OR models and applications.	12-6-2019	
4.	Linear programming problem formulation	13-6-2019 14-6-2019	
5.	Sol.of LPP by graphical solution	15-6-2019 17-6-2019	
6.	Sol.of LPP by simplex method	18-6-2019 19-6-2019 20-6-2019	
7.	Sol.of LPP by Big-M method	21-6-2019 22-6-2019 24-6-2019	
8.	Sol.of LPP by two–phase method	25-6-2019	
9.	Duality principle	26-6-2019	
10.	Problems-Revision	27-6-2019	
UNIT- II : TRANSPORTATION PROBLEM & SEQUENCING			
<p>CO2: To recognize and formulate a transportation problem involving a large no. of shipping routes and Assignment problems. To derive initial basic feasible solution & optimal solution using several methods and able to solve travelling salesman problem.</p> <p>TB1 : OPERATIONS RESEARCH By S.D. Sharma – Kedarnath.</p>			
11.	Introduction and Formulation of TP	28-6-2019	Lecture interspersed with discussions
12.	Sol.of TP by NWC rule	29-6-2019 1-7-2019	
13.	Sol.of TP by LCC method	2-7-2019 3-7-2019	
14.	Sol.of TP by VAM	4-7-2019 5-7-2019	
15.	Sol.of TP by UV method	6-7-2019 8-7-2019 9-7-2019	

	Unbalanced transportation problem – degeneracy	10-7-2019 11-7-2019	
17.	Assignment problem – formulation	12-7-2019	
18.	Optimal solution by Hungarian method	13-7-2019	
19.	Traveling salesman problem	15-7-2019	
20.	Introduction to flow –shop sequencing	16-7-2019	
21.	n jobs through two machines, problems	17-7-2019	
22.	n jobs through three machines, problems	18-7-2019	
23.	Two jobs through ‘ m ’ machines, problems	19-7-2019	
24.	Revision	20-7-2019	

UNIT III- REPLACEMENT THEORY

CO3 : Be able to realize the need to study replacement policies & make distinctions among various types of failure.

TB1 : OPERATIONS RESEARCH By S.D. Sharma – Kedarnath.

25.	Introduction – replacement of items that deteriorate with time when money value is not counted	22-7-2019 23-7-2019	Lecture interspersed with discussions
26.	Problems	24-7-2019 25-7-2019	
27.	Replacement of items that deteriorate with time when money value is counted	26-7-2019 27-7-2019	
28.	Problems	29-7-2019 30-7-2019	
29.	replacement of items that fail completely, group replacement.	31-7-2019 1-8-2019	
30.	Problems	2-8-2019 3-8-2019	

UNIT – IV THEORY OF GAMES & WAITING LINES

CO4 : To understand how optimal strategies are formulated in conflict and competitive environment & apply various methods to select and execute various optimal strategies to win the game.

To understand distinction among several queuing models and derive performance measures for each of them.

TB1 : OPERATIONS RESEARCH By S.D. Sharma – Kedarnath.

TB2 : OPERATIONS RESEARCH Theory & Applications by J K Sharma.

31.	Introduction to game theory, Definations, Kendall's Notation	13-8-2019 14-8-2019	Lecture interspersed with discussions
32.	mini. max (max. mini) – criterion	16-8-2019 17-8-2019	
33.	Rectangular games without saddle points – 2 x 2 games	19-8-219 20-8-2019	
34.	Dominance principle	21-8-2019	
35.	$m \times 2$ games -graphical method.	22-8-2019	

	2 x n games -graphical method.	24-8-2019
37.	Problems	26-8-2019
38.	Introduction to queueing theory	27-8-2019
39.	M/M/1:∞/FIFO model	28-8-2019
40.	M/M/1:N/FIFO model	29-8-2019
41.	M/M/C:∞/FIFO model	30-8-2019

UNIT -V INVENTORY

CO 5: To understand the meaning of inventory control, to use EOQ to minimize total inventory cost. Be able to use various selective control techniques to classify inventory items into broad categorie

TB1 : OPERATIONS RESEARCH By S.D. Sharma – Kedarnath.

TB2 : OPERATIONS RESEARCH Theory & Applications by J K Sharma.

42.	Introduction to Inventory control, Costs involved in Inventory theory	31-8-2019 3-9-2019	Lecture interspersed with discussions
43.	EOQ Model without shortage, Problems	4-9-2019 5-9-2019	
44.	EOQ Model without shortage, Problems	6-9-2019 9-9-2019	
45.	EOQ Model without shortage, Problems	9-9-2019 11-9-2019	
46.	EOQ Model with shortages, Problems	12-9-2019	
47.	EOQ Model with shortages, Problems	13-9-2019	
48.	Purchase inventory model with one price break	14-9-2019	
49.	Purchase inventory model with multiple price breaks	16-9-2019	
50.	Instantaneous demand, no set-up cost, Problems	17-9-2019	
51.	Uniform demand, no set-up cost, Problems	18-9-2019	

UNIT - VI : DYNAMIC PROGRAMMING & SIMULATION

CO 6 : To understand various dynamic programming models and their applications in solving a decision-problem. To apply Monte-Carlo simulation technique for solving various types of problems.

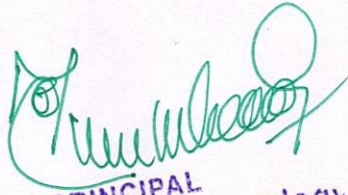
TB1 : OPERATIONS RESEARCH By S.D. Sharma – Kedarnath.

TB2 : OPERATIONS RESEARCH Theory & Applications by J K Sharma.

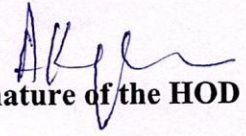
54.	Introduction – Bellman’s principle of optimality	19-9-2019	Lecture interspersed with discussions
55.	Applications of dynamic programming	20-9-2019	
56.	Capital budgeting problem	21-9-2019 23-9-2019	
57.	Shortest path problem	24-9-2019 25-9-2019	
58.	Linear programming problem.	26-9-2019 27-9-2019	
59.	Problems	28-9-2019	
60.	Definition – types of simulation models	30-9-2019	
61.	Phases of simulation, applications of simulation	1-10-2019	

62.	Advantages and disadvantages of simulation, Simulation languages	3-10-2019	
63.	Inventory problems	4-10-2019	
64.	Queuing problems	5-10-2019	

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TENTATIVE LESSON PLAN - R1631034

Course Title: OPERATIONS RESEARCH		
Section : ME-B	Date : 10/06/2019	Page No : 01 of 03
Revision No : 00	Prepared By : V.PRASANTHI	Approved By : HOD

Tools : Black board

No. of Periods	TOPIC	Date	Mode of Delivery
UNIT- I : DEVELOPMENT OF OR & ALLOCATION			
<p>CO1: To understand the need of using OR – a quantitative approach for effective decision making, know various definitions of OR, its characteristics and various phases of scientific study. To gain knowledge of situations in which LPP can be applied and understand fundamental concepts and able to solve LPP by using different methods.</p> <p>TB1 : OPERATIONS RESEARCH By S.D. Sharma – Kedarnath.</p>			
1.	Development of OR – definition	10-6-2019	Lecture interspersed with discussions
2.	characteristics and phases of OR	11-6-2019	
3.	OR models and applications.	12-6-2019	
4.	Linear programming problem formulation	13-6-2019 14-6-2019	
5.	Sol.of LPP by graphical solution	15-6-2019 17-6-2019	
6.	Sol.of LPP by simplex method	18-6-2019 19-6-2019 20-6-2019	
7.	Sol.of LPP by Big-M method	21-6-2019 22-6-2019 24-6-2019	
8.	Sol.of LPP by two–phase method	25-6-2019	
9.	Duality principle	26-6-2019	
10.	Problems-Revision	27-6-2019	
UNIT- II : TRANSPORTATION PROBLEM & SEQUENCING			
<p>CO2: To recognize and formulate a transportation problem involving a large no. of shipping routes and Assignment problems. To derive initial basic feasible solution & optimal solution using several methods and able to solve travelling salesman problem.</p> <p>TB1 : OPERATIONS RESEARCH By S.D. Sharma – Kedarnath.</p>			
11.	Introduction and Formulation of TP	28-6-2019	Lecture interspersed with discussions
12.	Sol.of TP by NWC rule	29-6-2019 1-7-2019	
13.	Sol.of TP by LCC method	2-7-2019 3-7-2019	
14.	Sol.of TP by VAM	4-7-2019 5-7-2019	
15.	Sol.of TP by UV method	6-7-2019 8-7-2019 9-7-2019	

	Unbalanced transportation problem – degeneracy	10-7-2019 11-7-2019	
17.	Assignment problem – formulation	12-7-2019	
18.	Optimal solution by Hungarian method	13-7-2019	
19.	Traveling salesman problem	15-7-2019	
20.	Introduction to flow –shop sequencing	16-7-2019	
21.	n jobs through two machines, problems	17-7-2019	
22.	n jobs through three machines, problems	18-7-2019	
23.	Two jobs through ‘m’ machines, problems	19-7-2019	
24.	Revision	20-7-2019	

UNIT III- REPLACEMENT THEORY

CO3 : Be able to realize the need to study replacement policies & make distinctions among various types of failure.

TB1 : OPERATIONS RESEARCH By S.D. Sharma – Kedarnath.

25.	Introduction – replacement of items that deteriorate with time when money value is not counted	22-7-2019 23-7-2019	Lecture interspersed with discussions
26.	Problems	24-7-2019 25-7-2019	
27.	Replacement of items that deteriorate with time when money value is counted	26-7-2019 27-7-2019	
28.	Problems	29-7-2019 30-7-2019	
29.	replacement of items that fail completely, group replacement.	31-7-2019 1-8-2019	
30.	Problems	2-8-2019 3-8-2019	

UNIT – IV THEORY OF GAMES & WAITING LINES

CO4 : To understand how optimal strategies are formulated in conflict and competitive environment & apply various methods to select and execute various optimal strategies to win the game.

To understand distinction among several queuing models and derive performance measures for each of them.

TB1 : OPERATIONS RESEARCH By S.D. Sharma – Kedarnath.

TB2 : OPERATIONS RESEARCH Theory & Applications by J K Sharma.

31.	Introduction to game theory, Definitions, Kendall's Notation	13-8-2019 14-8-2019	Lecture interspersed with discussions
32.	mini. max (max. mini) – criterion	16-8-2019 17-8-2019	
33.	Rectangular games without saddle points – 2 x 2 games	19-8-2019 20-8-2019	
34.	Dominance principle	21-8-2019	
35.	$m \times 2$ games -graphical method.	22-8-2019	

	2 x n games -graphical method.	24-8-2019
37.	Problems	26-8-2019
38.	Introduction to queueing theory	27-8-2019
39.	M/M/1:∞/FIFO model	28-8-2019
40.	M/M/1:N/FIFO model	29-8-2019
41.	M/M/C:∞/FIFO model	30-8-2019

UNIT –V INVENTORY

CO 5: To understand the meaning of inventory control, to use EOQ to minimize total inventory cost. Be able to use various selective control techniques to classify inventory items into broad categorie

TB1 : OPERATIONS RESEARCH By S.D. Sharma – Kedarnath.

TB2 : OPERATIONS RESEARCH Theory & Applications by J K Sharma.

42.	Introduction to Inventory control, Costs involved in Inventory theory	31-8-2019 3-9-2019	Lecture interspersed with discussions
43.	EOQ Model without shortage, Problems	4-9-2019 5-9-2019	
44.	EOQ Model without shortage, Problems	6-9-2019 9-9-2019	
45.	EOQ Model without shortage, Problems	9-9-2019 11-9-2019	
46.	EOQ Model with shortages, Problems	12-9-2019	
47.	EOQ Model with shortages, Problems	13-9-2019	
48.	Purchase inventory model with one price break	14-9-2019	
49.	Purchase inventory model with multiple price breaks	16-9-2019	
50.	Instantaneous demand, no set-up cost, Problems	17-9-2019	
51.	Uniform demand, no set-up cost, Problems	18-9-2019	

UNIT - VI : DYNAMIC PROGRAMMING & SIMULATION

CO 6 : To understand various dynamic programming models and their applications in solving a decision-problem. To apply Monte-Carlo simulation technique for solving various types of problems.

TB1 : OPERATIONS RESEARCH By S.D. Sharma – Kedarnath.

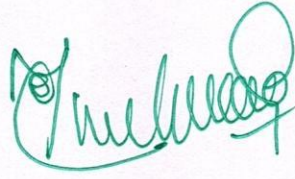
TB2 : OPERATIONS RESEARCH Theory & Applications by J K Sharma.

54.	Introduction – Bellman’s principle of optimality	19-9-2019	Lecture interspersed with discussions
55.	Applications of dynamic programming	20-9-2019	
56.	Capital budgeting problem	21-9-2019 23-9-2019	
57.	Shortest path problem	24-9-2019 25-9-2019	
58.	Linear programming problem.	26-9-2019 27-9-2019	
59.	Problems	28-9-2019	
60.	Definition – types of simulation models	30-9-2019	
61.	Phases of simulation, applications of simulation	1-10-2019	

62.	Advantages and disadvantages of simulation, Simulation languages	3-10-2019	
63.	Inventory problems	4-10-2019	
64.	Queuing problems	5-10-2019	

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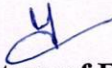
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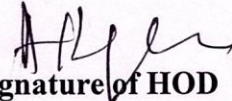
TENTATIVE PLAN: R1631035

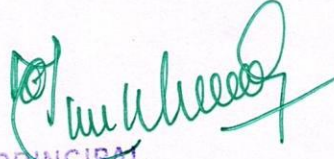
Course Title: THERMAL ENGINEERING-II		Course code: R1631035	
Section : Sec I	Date : 11-06-2019	Page No : 01 to 03	
Revision No : 00	Prepared By : Y.DURGA BHAVANI	Approved By : HOD	
Tools: BLACK BOARD			
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I INTRODUCTION TO BASIC CONCEPTS CO1: Become familiar with a basic concepts of Rankine cycle. TB: "THERMAL ENGINEERING-II", PAKIRAPPA.			
	UNIT-I-BASIC CONCEPTS		Lecture interspersed with discussions
1	Rankine cycle - schematic layout	11-06-2019	
2	thermodynamic analysis	12-06-2019	
3	Problems on Rankine cycle	14-06-2019	
4	concept of mean temperature of heat addition	15-06-2019	
5	methods to improve cycle performance	15-06-2019	
6	regeneration	15-06-2019	
7	Problems on regeneration	18-06-2019	
8	reheating	19-06-2019	
9	Problems on reheating	21-06-2019	
10	combustion: fuels and combustion	22-06-2019	
11	concepts of heat of reaction	22-06-2019	
12	adiabatic flame temperature	22-06-2019	
13	Stoichiometry, flue gas analysis	25-06-2019	
14	Problem	26-06-2019	
UNIT-II BOILERS CO2: Understand working of boilers including water tube, fire tube and high pressure boilers and determine efficiencies. TB: "THERMAL ENGINEERING-II", PAKIRAPPA.			
	UNIT-II -BOILERS		Lecture interspersed with discussions
15	Classification	28-06-2019	
16	working principles of L.P & H.P boilers with sketches	29-06-2019	
17	working principles of L.P & H.P boilers with sketches	29-06-2019	
18	mountings- working principles	29-06-2019	
19	accessories- working principles	03-07-2019	
20	boiler horse power, equivalent evaporation, efficiency	05-07-2019	
21	heat balance	06-07-2019	
22	draught, classification	06-07-2019	
23	height of chimney for given draught and discharge	06-07-2019	
24	condition for maximum discharge, efficiency of chimney	10-07-2019	
25	Problem	12-07-2019	
UNIT-III STEAM NOZZLES & STEAM TURBINES CO3: Analyze the flow of steam through nozzles TB: "THERMAL ENGINEERING-II", PAKIRAPPA.			
	UNIT-III - STEAM NOZZLES & STEAM TURBINES		Lecture interspersed

26	STEAM NOZZLES :Function of a nozzle – applications - types,	16-07-2019	with discussions
27	flow through nozzles, thermodynamic analysis – assumptions	17-07-2019	
28	velocity of fluid at nozzle exit-Ideal and actual expansion in a nozzle	19-07-2019	
29	velocity coefficient, condition for maximum discharge	23-07-2019	
30	critical pressure ratio, criteria to decide nozzle shape	24-07-2019	
31	Super saturated flow, its effects, degree of super saturation	26-07-2019	
32	degree of under cooling - Wilson line	27-07-2019	
33	STEAM TURBINES: Classification – impulse turbine; mechanical details	27-07-2019	
34	velocity diagram – effect of friction – power developed	27-07-2019	
35	axial thrust, blade or diagram efficiency – condition for maximum efficiency	30-07-2019	
36	De-laval turbine - methods to reduce rotor speed-	02-08-2019	
37	velocity compounding, pressure compounding and velocity & pressure compounding	03-08-2019	
38	velocity and pressure variation along the flow – combined velocity diagram for a velocity compounded impulse turbine, condition for maximum efficiency	03-08-2019	
UNIT-IV REACTIONTURBINE & STEAM CONDENSERS			
CO4: Evaluate the performance of condensers and steam turbines.			
TB: “THERMAL ENGINEERING-II”, PAKIRAPPA.			
	UNIT-IV-REACTIONTURBINE & STEAM CONDENSERS:		
39	REACTIONTURBINE: Mechanical details – principle of operation	03-08-2019	Lecture interspersed with discussions
40	thermodynamic analysis of a stage, degree of reaction	16-08-2019	
41	velocity diagram – Parson’s reaction turbine	17-08-2019	
42	condition for maximum efficiency	17-08-2019	
43	calculation of blade height	17-08-2019	
44	STEAM CONDENSERS: Requirements of steam condensing plant	20-08-2019	
45	classification of condensers – working principle of different types	21-08-2019	
46	vacuum efficiency and condenser efficiency – air leakage, sources and its affects	23-08-2019	
47	air pump- cooling water requirement	24-08-2019	
48	problems	24-08-2019	
UNIT-V GAS TURBINES			
CO5: Evaluate the performance of gas turbines.			
TB: “THERMAL ENGINEERING-II”, PAKIRAPPA.			
	UNIT-V- GAS TURBINES		
49	Simple gas turbine plant – ideal cycle	24-08-2019	Lecture interspersed with discussions
50	essential components	27-08-2019	
51	parameters of performance – actual cycle	28-08-2019	
52	regeneration, inter cooling	30-08-2019	
53	reheating –closed and semi-closed cycles	31-08-2019	
54	reheating –closed and semi-closed cycles	31-08-2019	

55	merits and demerits	31-08-2019	
56	types of combustion chambers	04-09-2019	
57	types of combustion chambers	13-09-2019	
58	problems	18-09-2019	
59	problems	21-09-2019	
60	problems	21-09-2019	
UNIT-VI JET PROPULSIONS & ROCKETS			
CO6: Understand working of jet propulsions and rockets and related problems.			
TB: "THERMAL ENGINEERING-II", PAKIRAPPA.			
	UNIT-VI- JET PROPULSIONS & ROCKETS		Lecture interspersed with discussions
61	JET PROPULSIONS -Principle of operation.	21-09-2019	
62	classification of jet propulsive engines	24-09-2019	
63	working principles with schematic diagrams and representation on t-s diagram	25-09-2019	
64	thrust, thrust power and propulsion efficiency	27-09-2019	
65	problems	28-09-2019	
66	turbo jet engines – needs and demands met by turbo jet	28-09-2019	
67	performance evaluation, thrust augmentation – methods	28-09-2019	
68	Rockets : Application	01-10-2019	


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TENTATIVE PLAN: R1631035

Course Title: THERMAL ENGINEERING-II		Course code: R1631035	
Section : Sec II	Date : 11-06-2019	Page No : 01 to 03	
Revision No : 00	Prepared By : Y.DURGA BHAVANI	Approved By : HOD	
Tools: BLACK BOARD			
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I INTRODUCTION TO BASIC CONCEPTS CO1: Become familiar with a basic concepts of Rankine cycle. TB: "THERMAL ENGINEERING-II", PAKIRAPPA.			
UNIT-I-BASIC CONCEPTS			
1	Rankine cycle - schematic layout	11-06-2019	Lecture interspersed with discussions
2	thermodynamic analysis	12-06-2019	
3	Problems on Rankine cycle	14-06-2019	
4	concept of mean temperature of heat addition	15-06-2019	
5	methods to improve cycle performance	15-06-2019	
6	regeneration	15-06-2019	
7	Problems on regeneration	18-06-2019	
8	reheating	19-06-2019	
9	Problems on reheating	21-06-2019	
10	combustion: fuels and combustion	22-06-2019	
11	concepts of heat of reaction	22-06-2019	
12	adiabatic flame temperature	22-06-2019	
13	Stoichiometry, flue gas analysis	25-06-2019	
14	Problem	26-06-2019	
UNIT-II BOILERS CO2: Understand working of boilers including water tube, fire tube and high pressure boilers and determine efficiencies. TB: "THERMAL ENGINEERING-II", PAKIRAPPA.			
UNIT-II -BOILERS			
15	Classification	28-06-2019	Lecture interspersed with discussions
16	working principles of L.P & H.P boilers with sketches	29-06-2019	
17	working principles of L.P & H.P boilers with sketches	29-06-2019	
18	mountings- working principles	29-06-2019	
19	accessories- working principles	03-07-2019	
20	boiler horse power, equivalent evaporation, efficiency	05-07-2019	
21	heat balance	06-07-2019	
22	draught, classification	06-07-2019	
23	height of chimney for given draught and discharge	06-07-2019	
24	condition for maximum discharge, efficiency of chimney	10-07-2019	
25	Problem	12-07-2019	
UNIT-III STEAM NOZZLES & STEAM TURBINES CO3: Analyze the flow of steam through nozzles TB: "THERMAL ENGINEERING-II", PAKIRAPPA.			
UNIT-III - STEAM NOZZLES & STEAM TURBINES			Lecture interspersed

26	STEAM NOZZLES :Function of a nozzle – applications - types,	16-07-2019	with discussions
27	flow through nozzles, thermodynamic analysis – assumptions	17-07-2019	
28	velocity of fluid at nozzle exit-Ideal and actual expansion in a nozzle	19-07-2019	
29	velocity coefficient, condition for maximum discharge	23-07-2019	
30	critical pressure ratio, criteria to decide nozzle shape	24-07-2019	
31	Super saturated flow, its effects, degree of super saturation	26-07-2019	
32	degree of under cooling - Wilson line	27-07-2019	
33	STEAM TURBINES: Classification – impulse turbine; mechanical details	27-07-2019	
34	velocity diagram – effect of friction – power developed	27-07-2019	
35	axial thrust, blade or diagram efficiency – condition for maximum efficiency	30-07-2019	
36	De-laval turbine - methods to reduce rotor speed-	02-08-2019	
37	velocity compounding, pressure compounding and velocity & pressure compounding	03-08-2019	
38	velocity and pressure variation along the flow – combined velocity diagram for a velocity compounded impulse turbine, condition for maximum efficiency	03-08-2019	

UNIT-IV REACTIONTURBINE & STEAM CONDENSERS

CO4: Evaluate the performance of condensers and steam turbines.

TB: “THERMAL ENGINEERING-II”, PAKIRAPPA.

UNIT-IV-REACTIONTURBINE & STEAM CONDENSERS:			Lecture interspersed with discussions
39	REACTIONTURBINE: Mechanical details – principle of operation	03-08-2019	
40	thermodynamic analysis of a stage, degree of reaction	16-08-2019	
41	velocity diagram – Parson’s reaction turbine	17-08-2019	
42	condition for maximum efficiency	17-08-2019	
43	calculation of blade height	17-08-2019	
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45	classification of condensers – working principle of different types	21-08-2019	
46	vacuum efficiency and condenser efficiency – air leakage, sources and its affects	23-08-2019	
47	air pump- cooling water requirement	24-08-2019	
48	problems	24-08-2019	

UNIT-V GAS TURBINES

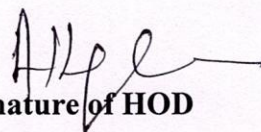
CO5: Evaluate the performance of gas turbines.

TB: “THERMAL ENGINEERING-II”, PAKIRAPPA.

UNIT-V- GAS TURBINES			Lecture interspersed with discussions
49	Simple gas turbine plant – ideal cycle	24-08-2019	
50	essential components	27-08-2019	
51	parameters of performance – actual cycle	28-08-2019	
52	regeneration, inter cooling	30-08-2019	
53	reheating –closed and semi-closed cycles	31-08-2019	
54	reheating –closed and semi-closed cycles	31-08-2019	

55	merits and demerits	31-08-2019	
56	types of combustion chambers	04-09-2019	
57	types of combustion chambers	13-09-2019	
58	problems	18-09-2019	
59	problems	21-09-2019	
60	problems	21-09-2019	
UNIT-VI JET PROPULSIONS & ROCKETS			
CO6: Understand working of jet propulsions and rockets and related problems.			
TB: "THERMAL ENGINEERING-II", PAKIRAPPA.			
	UNIT-VI- JET PROPULSIONS & ROCKETS		Lecture interspersed with discussions
61	JET PROPULSIONS -Principle of operation.	21-09-2019	
62	classification of jet propulsive engines	24-09-2019	
63	working principles with schematic diagrams and representation on t-s diagram	25-09-2019	
64	thrust, thrust power and propulsion efficiency	27-09-2019	
65	problems	28-09-2019	
66	turbo jet engines – needs and demands met by turbo jet	28-09-2019	
67	performance evaluation, thrust augmentation – methods	28-09-2019	
68	Rockets : Application	01-10-2019	


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TENTATIVE LESSON PLAN

Course Title: MECHATRONICS		Course Code: R1641031
Section : Sec A	Date : 11/6/2019	Page No : 01 of 03
Revision No : 00	Prepared By: A.STANLY KUMAR	Approved By : HOD

Tools: Black board, PPTs

No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I INTRODUCTION TO MECHATRONICS SYSTEMS			
CO1: Able to UNNDERSTAND BASICS OF MECHATRONICS.			
T TB: Mechatronics Integrated Mechacal Electronics Systems,K.P.Ramachandran G.K.Vijayaraghavan,M.S.Balasundaram/Wiley India			
1	INTRODUCTION Mechatronics	20 19/6/2019	Lecture interspersed with discussions
2	Mechatronics.	19/6/2019	
3	Elements & levels of mechatronics system,	20/6/2019	
4	Mechatronics design process, system	21/6/2019	
5	Measurement systems, control systems	22/6/2019	
6	Microprocessor-based controllers	23/6/2019	
7	Systems advantages, and disadvantages of mechatronics systems	24/6/2019	
8	Sensors and transducers, types,	25/6/2019	
9	Displacement, position, proximity, velocity	26/6/2019	
10	Motion, force, acceleration, torque, fluid pressure,	27/6/2019	
11	Liquid flow, liquid level, temperature, and light sensors.	28/6/2019	
12	Revision	29/6/2019	
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-II SOLID STATE ELECTERONIC DEVICES			
CO1: Able to SOLID STATE ELECTERONIC DEVICES T TB: Mechatronics Integrated			

Mechacal Electronics Systems,K.P.Ramachandran			
G.K.Vijayaraghavan,M.S.Balasundaram/Wiley India			
No. of Periods	TOPIC	Date	Mode of Delivery
1	UNIT-II Solid state electronic devices .., noise reduction, filtering.	30/6/2019	Lecture interspersed with discussions
2	PN junction diode	1/7/2019	
3	BJT	2/7/2019	
4	FET	3/7/2019	
5	DIAC	4/7/2019	
6	TRIAC and LEDs	5/7/2019	
7	Analog signal conditioning	6/7/2019	
8	Operational amplifiers	7/7/2019	
9	Operational amplifiers,	8/7/2019	
10	Noise reduction,	9/7/2019	
11	Solid state electronic devices .., noise reduction, filtering.	10/7/2019	
12	PN junction diode	11/7/2019	
13	BJT	12/7/2019	
UNIT-III HYDRAULIC AND PNEUMATIC ACTUATING SYSTEMS			
CO1: Able to HYDRAULIC AND PNEUMATIC ACTUATING SYSTEMS			
T TB: Mechatronics Integrated Mechacal Electronics Systems,K.P.Ramachandran			
G.K.Vijayaraghavan,M.S.Balasundaram/Wiley India			
1	UNIT-III Hydraulic and pneumatic actuating systems – Fluid systems,	13/7/2019	Lecture interspersed with discussions
2	Hydraulic systems,	14/7/2019	
3	Pneumatic systems	15/7/2019	
4	Components	16/7/2019	
5	Electro-pneumatic	17/7/2019	

6	Hydro-pneumatic,	18/7/2019	
7	Electro-hydraulic servo systems.	19/7/2019	
8	Mechanical actuating systems and electrical actuating systems	20/7/2019	
9	Basic principles and elements.	21/7/2019	
10	Hydraulic and pneumatic actuating systems – Fluid systems,	22/7/2019	
11	Hydraulic systems,	23/7/2019	
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-IV Digital electronics and systems. CO1: Able to Digital electronics and systems. T TB: Mechatronics Integrated Mechacal Electronics Systems,K.P.Ramachandran G.K.Vijayaraghavan,M.S.Balasundaram/Wiley India			
1	UNIT-IV Digital electronics and systems.	24/7/2019	
2	Digital logic control	25/7/2019	Lecture interspersed with discussions
3	Micro controllers	26/7/2019	
4	Microprocessors and, programming	27/7/2019	
5	Process controllers	28/7/2019	
6	Programmable logic controllers,	29/7/2019	
7	PLCs versus computers	30/7/2019	
No. of Periods	TOPIC	Date	
UNIT-V System and interfacing and data acquisition CO1: Able to UNNDERSTAND System and interfacing and data acquisition T TB: Mechatronics Integrated Mechacal Electronics Systems,K.P.Ramachandran G.K.Vijayaraghavan,M.S.Balasundaram/Wiley India			
1	System and interfacing and data acquisition.	1/8/2019	

2	Data Acquisition Systems	2/8/2019	Lecture interspersed with discussions
3	Analog to Digital and Digital to Analog conversions.	3/8/2019	
4	Digital Signal Processing	4/8/2019	
5	Data flow in DSPs, block diagrams	5/8/2019	
6	Typical layouts	6/8/2019	
7	Interfacing motor drives	7/8/2019	
No. of Periods	TOPIC	Date	
UNIT-VI Dynamic models and analogies. CO1: Able to Dynamic models and analogies. T TB: Mechatronics Integrated Mechacal Electronics Systems,K.P.Ramachandran G.K.Vijayaraghavan,M.S.Balasundaram/Wiley India			
1	Dynamic models and analogies.	8/8/2019	Lecture interspersed with discussions
2	System response	9/8/2019	
3	Process Controllers	10/8/2019	
4	Digital Controllers	11/8/2019	
5	Programmable Logic Controllers,	12/8/2019	
6	Design of mechatronics systems	13/8/2019	
7	Future trends.	14/8/2019	
8	Revision	15/8/2019	

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TENTATIVE LESSON PLAN

Course Title: MECHATRONICS		Course Code: R1641031
Section : Sec B	Date : 11/6/2019	Page No : 01 of 03
Revision No : 00	Prepared By: A.STANLY KUMAR	Approved By : HOD

Tools: Black board, PPTs

No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I INTRODUCTION TO MECHATRONICS SYSTEMS CO1: Able to UNNDERSTAND BASICS OF MECHATRONICS. T TB: Mechatronics Integrated Mechacal Electronics Systems,K.P.Ramachandran G.K.Vijayaraghavan,M.S.Balasundaram/Wiley India			
1	INTRODUCTION Mechatronics	19 19/6/2019	Lecture interspersed with discussions
2	Mechatronics.	19/6/2019	
3	Elements & levels of mechatronics system,	20/6/2019	
4	Mechatronics design process, system	21/6/2019	
5	Measurement systems, control systems	22/6/2019	
6	Microprocessor-based controllers	23/6/2019	
7	Systems advantages, and disadvantages of mechatronics systems	24/6/2019	
8	Sensors and transducers, types,	25/6/2019	
9	Displacement, position, proximity, velocity	26/6/2019	
10	Motion, force, acceleration, torque, fluid pressure,	27/6/2019	
11	Liquid flow, liquid level, temperature, and light sensors.	28/6/2019	
12	Revision	29/6/2019	
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-II SOLID STATE ELECTERONIC DEVICES CO2: Able to SOLID STATE ELECTERONIC DEVICES TB: Mechatronics Integrated Mechacal Electronics Systems,K.P.Ramachandran			

G.K.Vijayaraghavan,M.S.Balasundaram/Wiley India

No. of Periods	TOPIC	Date	Mode of Delivery
1	UNIT-II Solid state electronic devices .., noise reduction, filtering.	30/6/2019	Lecture interspersed with discussions
2	PN junction diode	1/7/2019	
3	BJT	2/7/2019	
4	FET	3/7/2019	
5	DIAC	4/7/2019	
6	TRIAC and LEDs	5/7/2019	
7	Analog signal conditioning	6/7/2019	
8	Operational amplifiers	7/7/2019	
9	Operational amplifiers,	8/7/2019	
10	Noise reduction,	9/7/2019	
11	Solid state electronic devices .., noise reduction, filtering.	10/7/2019	
12	PN junction diode	11/7/2019	
13	BJT	12/7/2019	
UNIT-III HYDRAULIC AND PNEUMATIC ACTUATING SYSTEMS CO3: Able to HYDRAULIC AND PNEUMATIC ACTUATING SYSTEMS T TB: Mechatronics Integrated Mechacal Electronics Systems,K.P.Ramachandran G.K.Vijayaraghavan,M.S.Balasundaram/Wiley India			
1	UNIT-III Hydraulic and pneumatic actuating systems – Fluid systems,	13/7/2019	Lecture interspersed with discussions
2	Hydraulic systems,	14/7/2019	
3	Pneumatic systems	15/7/2019	
4	Components	16/7/2019	
5	Electro-pneumatic	17/7/2019	
6	Hydro-pneumatic,	18/7/2019	

7	Electro-hydraulic servo systems.	19/7/2019	
8	Mechanical actuating systems and electrical actuating systems	20/7/2019	
9	Basic principles and elements.	21/7/2019	
10	Hydraulic and pneumatic actuating systems – Fluid systems,	22/7/2019	
11	Hydraulic systems,	23/7/2019	
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-IV Digital electronics and systems. CO4: Able to Digital electronics and systems. T TB: Mechatronics Integrated Mechacal Electronics Systems,K.P.Ramachandran G.K.Vijayaraghavan,M.S.Balasundaram/Wiley India			
1	UNIT-IV Digital electronics and systems.	24/7/2019	
2	Digital logic control	25/7/2019	
3	Micro controllers	26/7/2019	Lecture
4	Microprocessors and, programming	27/7/2019	interspersed
5	Process controllers	28/7/2019	with
6	Programmable logic controllers,	29/7/2019	discussions
7	PLCs versus computers	30/7/2019	
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-V System and interfacing and data acquisition CO5: Able to UNNDERSTAND System and interfacing and data acquisition T TB: Mechatronics Integrated Mechacal Electronics Systems,K.P.Ramachandran G.K.Vijayaraghavan,M.S.Balasundaram/Wiley India			
1	System and interfacing and data acquisition.	1/8/2019	
2	Data Acquisition Systems	2/8/2019	Lecture

25	Hydro-pneumatic,	TB1
26	Electro-hydraulic servo systems.	TB1
26	Mechanical actuating systems and electrical actuating systems	TB1
28	Basic principles and elements.	TB1
UNIT- 4	UNIT-IV Digital electronics and systems.	TB1
29	Digital logic control	TB1
30	Micro controllers	TB1
31	Microprocessors and, programming	TB1
32	Process controllers	TB1
33	Programmable logic controllers,	TB1
34	PLCs versus computers	TB1
35	Application of PLCs for control.	TB1
UNIT- 5	UNIT-V System and interfacing and data acquisition.	TB1
36	Data Acquisition Systems	TB1
37	Analog to Digital and Digital to Analog conversions.	TB1
38	Digital Signal Processing	TB1
39	Data flow in DSPs, block diagrams	TB1
40	Typical layouts	TB1
41	Interfacing motor drives	TB1
UNIT- 6	Dynamic models and analogies.	TB2
24	System response	TB2
25	Process Controllers	TB2
26	Digital Controllers	TB1
27	Programmable Logic Controllers,	TB2
28	Design of mechatronics systems	TB1
29	Future trends.	TB2

TB1: Mechatronics Integrated Mechacal Electronics Systems,K.P.Ramachandran

G.K.Vijayaraghavan,M.S.Balasundaram/Wiley India

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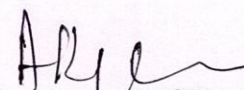
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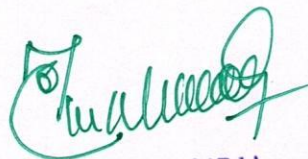


3	Analog to Digital and Digital to Analog conversions.	3/8/2019	interspersed with discussions
4	Digital Signal Processing	4/8/2019	
5	Data flow in DSPs, block diagrams	5/8/2019	
6	Typical layouts	6/8/2019	
7	Interfacing motor drives	7/8/2019	
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-VI Dynamic models and analogies. CO6: Able to Dynamic models and analogies. T TB: Mechatronics Integrated Mechacal Electronics Systems,K.P.Ramachandran G.K.Vijayaraghavan,M.S.Balasundaram/Wiley India			
1	Dynamic models and analogies.	8/8/2019	Lecture interspersed with discussions
2	System response	9/8/2019	
3	Process Controllers	10/8/2019	
4	Digital Controllers	11/8/2019	
5	Programmable Logic Controllers,	12/8/2019	
6	Design of mechatronics systems	13/8/2019	
7	Future trends.	14/8/2019	
8	Revision	15/8/2019	

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TENTATIVE LESSON PLAN

Course Title: CAD / CAM		Course Code: R1641032
Section : Sec A	Date : 11/6/2019	Page No : 01 of 03
Revision No : 00	Prepared By : R SAMBATH KUMAR	Approved By : HOD

Tools: Black board, PPTs

No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I INTRODUCTION CAD CAM			
CO1: Able to UNNDERSTAND CAD CAM BASIC			
T TB: IBRAHIM ZAHEED CAD CAM THEORY			
1	CAD CAM BASIC	18/6/2019	Lecture interspersed with discussions
2	Computers in industrial manufacturing, product cycle	19/6/2019	
3	CAD / CAM Hardware	20/6/2019	
4	basic structure, CPU	21/6/2019	
5	memory types, input devices	22/6/2019	
6	display devices, hard copy devices	23/6/2019	
7	Raster scan graphics coordinate system	24/6/2019	
8	database structure for graphics modeling	25/6/2019	
9	transformation of geometry	26/6/2019	
10	3D transformations, mathematics of projections	27/6/2019	
11	clipping	28/6/2019	
12	hidden surface removal	29/6/2019	
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-II GEOMETRIC MODELLING/DRAFTING AND MODELLING			
CO1: Able to UNNDERSTAND GEOMETRIC MODLLING AND DRAFTING			
T TB: PRINCIPLES CAD CAM BY PEARSON			
1	geometric modeling: Requirements	30/6/2019	Lecture interspersed with discussions
2	geometric models	1/7/2019	
3	geometric construction models	2/7/2019	
4	curve representation methods	3/7/2019	
5	surface representation methods	4/7/2019	
6	Modeling facilities desired.	5/7/2019	
7	Basic geometric commands	6/7/2019	

8	layers	7/7/2019	
9	display control commands	8/7/2019	
10	editing	9/7/2019	
11	dimensioning	10/7/2019	
12	Solid modelling	11/7/2019	
13	solid modeling	12/7/2019	
No. of Periods	TOPIC	Date	Mode of Delivery


UNIT-III PART PROGRAMMING
CO1: Able to UNNDERSTAND PROGRAMMING
T TB: IBRAHIM ZAHEED CAD CAM THEORY

1	NC, NC modes	13/7/2019	Lecture interspersed with discussions
2	NC elements	14/7/2019	
3	structure of CNC machine tools	15/7/2019	
4	features of Machining center	16/7/2019	
5	CNC Part Programming	17/7/2019	
6	manual part programming methods	2019/7/2019 9	
7	Computer Aided Part Programming	19/7/2019	
8	Direct Numerical Control	20/7/2019	
9	Adaptive Control	21/7/2019	
10	CNC machine tools	22/7/2019	
11	turning center	23/7/2019	
No. of Periods	TOPIC	Date	Mode of Delivery

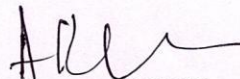
UNIT-IV GROUP TECHNOLOGY
CO1: Able to UNNDERSTAND group technology
T TB: cnc and programming by thomson

1	group technology: Part family	24/7/2019	Lecture interspersed with discussions
2	coding and classification	25/7/2019	
3	production flow analysis	26/7/2019	
4	types and advantages	27/7/2019	
5	Computer aided processes planning	28/7/2019	
6	Computer aided processes planning importance	29/7/2019	

7	Computer aided processes planning types	30/7/2019	
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-V computer aided quality control			
CO1: Able to UNNDERSTAND computer aided quality control			
T TB: product manufacturing by chang			
1	computer aided quality control	1/8/2019	Lecture interspersed with discussions
2	Terminology used in quality control	2/8/2019	
3	use of computers in Quality control	3/8/2019	
4	Inspection methods	4/8/2019	
5	contact and noncontact types	5/8/2019	
6	computer aided testing	6/8/2019	
7	integration of CAQC with CAD/CAM	7/8/2019	
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-VI COMPUTER INTEGRATED MANUFACTURING SYSTEM			
CO1: Able to UNNDERSTAND CIM SYSTEM			
T TB: cnc and programming by thomson			
1	Types of manufacturing systems	8/8/2019	Lecture interspersed with discussions
2	machine tools and related equipment	9/8/2019	
3	material handling systems	10/8/2019	
4	material requirement planning	11/8/2019	
5	computer control systems	12/8/2019	
6	human labor in manufacturing systems	13/8/2019	
7	CIMS benefits	14/8/2019	
8	Revision	15/8/2019	


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TENTATIVE LESSON PLAN

Course Title: CAD / CAM		Course Code: R1641032
Section : Sec B	Date : 11/6/202019	Page No : 01 of 03
Revision No : 00	Prepared By : R SAMBATH KUMAR	Approved By : HOD

Tools: Black board, PPTs

No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I INTRODUCTION CAD CAM			
CO1: Able to UNNDERSTAND CAD CAM BASIC			
T TB: IBRAHIM ZAHEED CAD CAM THEORY			
1	CAD CAM BASIC	18/6/2019	Lecture interspersed with discussions
2	Computers in industrial manufacturing, product cycle	19/6/2019	
3	CAD / CAM Hardware	20/6/2019	
4	basic structure, CPU	21/6/2019	
5	memory types, input devices	22/6/2019	
6	display devices, hard copy devices	23/6/2019	
7	Raster scan graphics coordinate system	24/6/2019	
8	database structure for graphics modeling	25/6/2019	
9	transformation of geometry	26/6/2019	
10	3D transformations, mathematics of projections	27/6/2019	
11	clipping	28/6/2019	
12	hidden surface removal	29/6/2019	
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-II GEOMETRIC MODELLING/DRAFTING AND MODELLING			
CO1: Able to UNNDERSTAND GEOMETRIC MODLLING AND DRAFTING			
T TB: PRINCIPLES CAD CAM BY PEARSON			
1	geometric modeling: Requirements	30/6/2019	Lecture interspersed with discussions
2	geometric models	1/7/2019	
3	geometric construction models	2/7/2019	
4	curve representation methods	3/7/2019	
5	surface representation methods	4/7/2019	

6	Modeling facilities desired.	5/7/2019	
7	Basic geometric commands	6/7/2019	
8	layers	7/7/2019	
9	display control commands	8/7/2019	
10	editing	9/7/2019	
11	dimensioning	10/7/2019	
12	Solid modelling	11/7/2019	
13	solid modeling	12/7/2019	
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-III PART PROGRAMMING			
CO1: Able to UNNDERSTAND PROGRAMMING			
T TB: IBRAHIM ZAHEED CAD CAM THEORY			
1	NC, NC modes	13/7/2019	Lecture interspersed with discussions
2	NC elements	14/7/2019	
3	structure of CNC machine tools	15/7/2019	
4	features of Machining center	16/7/2019	
5	CNC Part Programming	17/7/2019	
6	manual part programming methods	19/7/2019	
7	Computer Aided Part Programming	19/7/2019	
8	Direct Numerical Control	20/7/2019	
9	Adaptive Control	21/7/2019	
10	CNC machine tools	22/7/2019	
11	turning center	23/7/2019	
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-IV GROUP TECHNOLOGY			
CO1: Able to UNNDERSTAND group technology			
T TB: cnc and programming by thomson			
1	group technology: Part family	24/7/2019	Lecture interspersed
2	coding and classification	25/7/2019	
3	production flow analysis	26/7/2019	

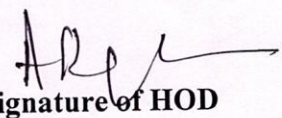
4	types and advantages	27/7/2019	with discussions
5	Computer aided processes planning	28/7/2019	
6	Computer aided processes planning importance	29/7/2019	
7	Computer aided processes planning types	30/7/2019	
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-V computer aided quality control			
CO1: Able to UNNDERSTAND computer aided quality control			
T TB: product manufacturing by chang			
1	computer aided quality control	1/8/2019	Lecture interspersed with discussions
2	Terminology used in quality control	2/8/2019	
3	use of computers in Quality control	3/8/2019	
4	Inspection methods	4/8/2019	
5	contact and noncontact types	5/8/2019	
6	computer aided testing	6/8/2019	
7	integration of CAQC with CAD/CAM	7/8/2019	
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-VI COMPUTER INTEGRATED MANUFACTURING SYSTEM			
CO1: Able to UNNDERSTAND CIM SYSTEM			
T TB: cnc and programming by thomson			
1	Types of manufacturing systems	8/8/2019	Lecture interspersed with discussions
2	machine tools and related equipment	9/8/2019	
3	material handling systems	10/8/2019	
4	material requirement planning	11/8/2019	
5	computer control systems	12/8/2019	
6	human labor in manufacturing systems	13/8/2019	
7	CIMS benefits	14/8/2019	
8	Revision	15/8/2019	


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TENTATIVE LESSON PLAN: R1641033
FINITE ELEMENT METHODS

Course Title: Finite Element Methods		
Section : Sec I	Date : 10/06/19	Page No : 01 of 04
Revision No : 00	Prepared By : V.Pavan Kumar	Approved By : HOD

Tools: Black board, PPTs

No. of Periods	TOPIC	Date	Mode of Delivery
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UNIT-I INTRODUCTION TO FEM

CO1: To make the student learn and understand the basic principles of finite element analysis procedure

TB: Introduction to Finite Elements in Engineering / Chandraputla, Ashok and Belegundu / Prentice – Hall.

1	Introduction to finite element method	10/6/19	Lecture interspersed with discussions
2	stress and equilibrium	11/6/19	
3	strain – displacement relations	12/6/19	
4	stress – strain relations	14/6/19	
5	plane stress and plane strain conditions	17/6/19	
6	variational and weighted residual methods	19/6/19	
7	concept of potential energy	20/6/19	
8	one dimensional problems.	21/6/19	
9	one dimensional problems.	24/6/19	
10	one dimensional problems.	26/6/19	
11	one dimensional problems.	28/6/19	
12	one dimensional problems.	01/7/19	
13	one dimensional problems.	02/7/19	

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UNIT-II 1-D Problems**CO2: To learn the theory and characteristics of finite elements that represent engineering structures.****TB: Introduction to Finite Elements in Engineering / Chandraputla, Ashok and Belegundu / Prentice – Hall..C.S/World Scientific publications**

14	Discretization of domain	3/7/19	Lecture interspersed with discussions
15	element shapes	4/7/19	
16	discretization procedures	5/7/19	
17	assembly of stiffness matrix	8/7/19	
18	band width, node numbering, mesh generation	9/7/19	
19	interpolation functions, local and global coordinates	10/7/19	
20	interpolation functions, local and global coordinates	11/7/19	
21	convergence requirements	12/7/19	

UNIT-III Analysis of Trusses and beams:**CO3: To make the student learn about analysis of Trusses and beams:, and their applications.****TB: Introduction to Finite Elements in Engineering / Chandraputla, Ashok and Belegundu / Prentice – Hall.**

22	Finite element modeling	15/7/19	Lecture interspersed with discussions
23	coordinates and shape functions	16/7/19	
24	assembly of global stiffness matrix and load vector	17/7/19	
25	assembly of global stiffness matrix and load vector	19/7/19	
26	finite element equations	22/7/19	
27	simple problems on beams	24/7/19	
28	simple problems on beams	26/7/19	

UNIT-IV Finite element modeling of two dimensional stress analysis; CST CO4:
To make students learn about Finite element modeling of two dimensional stress analysis; CST and formulation of axisymmetric problems.

TB: Introduction to Finite Elements in Engineering / Chandraputla, Ashok and Belegundu / Prentice – Hall.

29	Finite element modeling of two dimensional stress analysis with constant strain triangles	29/7/19	Lecture interspersed with discussions
30	Finite element modeling of two dimensional stress analysis with constant strain triangles	31/7/19	
31	treatment of boundary conditions	2/8/19	
32	treatment of boundary conditions	5/8/19	
33	formulation of axisymmetric problems	6/8/19	
34	formulation of axisymmetric problems	8/8/19	
35	Problems on CST	12/8/19	
36	Problems on CST	14/8/19	
37	Problems on CST	16/8/19	
38	Problems on CST	19/8/19	
39	Problems on CST	20/8/19	

UNIT-V Higher order and isoparametric elements

CO5: To make students learn about Higher order and isoparametric elements

TB: Introduction to Finite Elements in Engineering / Chandraputla, Ashok and Belegundu / Prentice – Hall.

40	Higher order and isoparametric elements	22/8/19	Lecture interspersed with discussions
41	Higher order and isoparametric elements	26/8/19	
42	One dimensional quadratic and cubic elements in natural coordinates	27/8/19	
43	One dimensional quadratic and cubic elements in natural coordinates	28/8/19	
44	two dimensional four noded isoparametric elements	30/8/19	
45	two dimensional four noded isoparametric elements	2/9/19	
46	numerical integration	4/9/19	

UNIT-VI Steady state heat transfer analysis and dynamic analysis**CO6: To make students to learn about Steady state heat transfer analysis and dynamic analysis****TB: Introduction to Finite Elements in Engineering / Chandraputla, Ashok and Belegundu / Prentice – Hall**

47	Steady state heat transfer analysis : one dimensional analysis of a fin	9/9/19	Lecture interspersed with discussions
48	two dimensional analysis of thin plate	11/9/19	
49	analysis of a uniform shaft subjected to torsion	16/9/19	
50	analysis of a uniform shaft subjected to torsion	19/9/19	
51	Problems on heat transfer problems	24/9/19	
52	Problems on heat transfer problems	26/9/19	
53	Problems on heat transfer problems	27/9/19	
54	Problems on heat transfer problems	28/9/19	
55	Dynamic Analysis: Formulation of finite	30/9/19	
56	Element consistent and lumped mass	30/9/19	
57	Element consistent and lumped mass matrix	1/10/19	
58	Evaluation of eigen values and eigen vectors	1/10/19	

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TENTATIVE LESSON PLAN: R1641033
FINITE ELEMENT METHODS

Course Title: Finite Element Methods		
Section : Sec II	Date : 10/06/19	Page No : 01 of 04
Revision No : 00	Prepared By : V.Pavan Kumar	Approved By : HOD

Tools: Black board, PPTs

No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I INTRODUCTION TO FEM			
CO1: To make the student learn and understand the basic principles of finite element analysis procedure			
TB: Introduction to Finite Elements in Engineering / Chandraputla, Ashok and Belegundu / Prentice – Hall.			
1	Introduction to finite element method	10/6/19	Lecture interspersed with discussions
2	stress and equilibrium	11/6/19	
3	strain – displacement relations	12/6/19	
4	stress – strain relations	14/6/19	
5	plane stress and plane strain conditions	15/6/19	
6	variational and weighted residual methods	18/6/19	
7	concept of potential energy	20/6/19	
8	one dimensional problems.	22/6/19	
9	one dimensional problems.	25/6/19	
10	one dimensional problems.	27/6/19	
11	one dimensional problems.	28/6/19	
12	one dimensional problems.	29/6/19	
13	one dimensional problems.	01/7/19	

UNIT-II 1-D Problems**CO2: To learn the theory and characteristics of finite elements that represent engineering structures.****TB: Introduction to Finite Elements in Engineering / Chandraputla, Ashok and Belegundu / Prentice – Hall..C.S/World Scientific publications**

14	Discretization of domain	3/7/19	Lecture interspersed with discussions
15	element shapes	4/7/19	
16	discretization procedures	5/7/19	
17	assembly of stiffness matrix	6/7/19	
18	band width, node numbering, mesh generation	9/7/19	
19	interpolation functions, local and global coordinates	10/7/19	
20	interpolation functions, local and global coordinates	11/7/19	
21	convergence requirements	12/7/19	

UNIT-III Analysis of Trusses and beams:**CO3: To make the student learn about analysis of Trusses and beams:, and their applications.****TB: Introduction to Finite Elements in Engineering / Chandraputla, Ashok and Belegundu / Prentice – Hall.**

22	Finite element modeling	15/7/19	Lecture interspersed with discussions
23	coordinates and shape functions	16/7/19	
24	assembly of global stiffness matrix and load vector	17/7/19	
25	assembly of global stiffness matrix and load vector	19/7/19	
26	finite element equations	22/7/19	
27	simple problems on beams	24/7/19	
28	simple problems on beams	26/7/19	

**UNIT-IV Finite element modeling of two dimensional stress analysis; CST CO4:
To make students learn about Finite element modeling of two dimensional stress
analysis; CST and formulation of axisymmetric problems.**

**TB: Introduction to Finite Elements in Engineering / Chandraputla, Ashok and Belegundu /
Prentice – Hall.**

29	Finite element modeling of two dimensional stress analysis with constant strain triangles	29/7/19	Lecture interspersed with discussions
30	Finite element modeling of two dimensional stress analysis with constant strain triangles	31/7/19	
31	treatment of boundary conditions	2/8/19	
32	treatment of boundary conditions	5/8/19	
33	formulation of axisymmetric problems	6/8/19	
34	formulation of axisymmetric problems	8/8/19	
35	Problems on CST	12/8/19	
36	Problems on CST	14/8/19	
37	Problems on CST	16/8/19	
38	Problems on CST	19/8/19	
39	Problems on CST	20/8/19	

UNIT-V Higher order and isoparametric elements

CO5: To make students learn about Higher order and isoparametric elements

**TB: Introduction to Finite Elements in Engineering / Chandraputla, Ashok and Belegundu /
Prentice – Hall.**

40	Higher order and isoparametric elements	22/8/19	Lecture interspersed with discussions
41	Higher order and isoparametric elements	26/8/19	
42	One dimensional quadratic and cubic elements in natural coordinates	27/8/19	
43	One dimensional quadratic and cubic elements in natural coordinates	28/8/19	
44	two dimensional four noded isoparametric elements	30/8/19	
45	two dimensional four noded isoparametric elements	2/9/19	
46	numerical integration	4/9/19	

UNIT-VI Steady state heat transfer analysis and dynamic analysis**CO6: To make students to learn about Steady state heat transfer analysis and dynamic analysis****TB: Introduction to Finite Elements in Engineering / Chandraputla, Ashok and Belegundu / Prentice – Hall**

47	Steady state heat transfer analysis : one dimensional analysis of a fin	9/9/19	Lecture interspersed with discussions
48	two dimensional analysis of thin plate	11/9/19	
49	analysis of a uniform shaft subjected to torsion	16/9/19	
50	analysis of a uniform shaft subjected to torsion	19/9/19	
51	Problems on heat transfer problems	24/9/19	
52	Problems on heat transfer problems	26/9/19	
53	Problems on heat transfer problems	27/9/19	
54	Problems on heat transfer problems	28/9/19	
55	Dynamic Analysis: Formulation of finite	30/9/19	
56	Element consistent and lumped mass	30/9/19	
57	Element consistent and lumped mass matrix	1/10/19	
58	Evaluation of eigen values and eigen vectors	1/10/19	

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TENTATIVE PLAN: R1641034

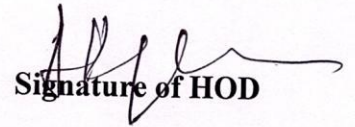
Course Title: POWER PLANT ENGINEERING		Course code: R1641034		
Section: Sec I	Date: 10-06-2019	Page No: 01 to 03		
Revision No: 00	Prepared By: U. TANOJ	Approved By: HOD		
Tools: BLACK BOARD				
No. of Periods	TOPIC	Date	Mode of Delivery	
UNIT-I STEAM POWER PLANT CO1: Able to understand fundamentals of power plant layout & its equipment's & their uses TB: "POWER PLANT ENGINEERING", Er P.K.NAG.				
UNIT-1: Steam Power Plant				
1	Steam Power Plant Layout	12/6/19	Lecture interspersed with discussions	
2	Working of different circuits	12/6/19		
3	Fuel and handling equipment's	13/6/19		
4	Types of coals, Coal handling	14/6/19		
5	Choice of handling equipment	14/6/19		
6	Coal storage, ash handling systems	15/6/19		
7	Combustion properties of coal	15/6/19		
8	Overfeed and underfeed fuel beds	16/6/19		
9	Travelling gate stokers, spreader stokers, retort stokers	18/6/19		
10	Pulverized fuel burning systems and its components	19/6/19		
11	Combustion needs and draught systems	20/6/19		
12	Cyclone furnace, design and construction	21/6/19		
13	Dust collectors, cooling towers and heat rejection	22/6/19		
14	Corrosion and feed water treatment	22/6/19		
UNIT-II INTERNAL COMBUSTION & GAS TURBINE POWER PLANTS CO2: Gain knowledge & become familiar with combustion of engines & Gas turbine plants TB: "POWER PLANT ENGINEERING", Er P.K.NAG.				
UNIT - 2: Internal combustion				
15	Internal combustion & Gas turbine power plants introduction	24/6/19	Lecture interspersed with discussions	
16	Introduction about diesel engines	26/6/19		
17	Plant layout with auxiliaries	27/6/19		
18	Fuel supply systems	28/6/19		
19	Air starting equipment,	29/6/19		
20	Supercharging	03/7/19		
Gas Turbine Power Plants				
21	Gas turbine power plant, introduction	05/7/19		
22	Classification,	06/7/19		
23	construction layout with auxiliaries	06/7/19		
24	Combined cycle power plants and comparison	10/7/19		
25	Problems on Gas turbine plants	10/7/19		
UNIT-III HYDRO ELECTRIC POWER PLANT & PROJECTS CO3: Able to understand fundamentals of Hydro Electric Power Plant layout & its projects TB: "POWER PLANT ENGINEERING", Er Arora & Domkundwar.				
UNIT - 3: Hydro Electric Power Plant				
25	Hydro Electric Power Plant introduction		Lecture interspersed with discussions	
26	Water power			
27	Hydrological cycle/flow measurement	18/7/19		
28	Drainage area characteristics,	19/7/19		
29	hydrographs, storage and pondage	20/7/19		

30	Classification of dams and spill ways	22/7/19	
	Hydro Projects Plant		
31	Hydroelectric projects and plant-classification, typical layouts	25/7/19	
32	Typical layouts	26/7/19	
33	Plant auxiliaries,	27/7/19	
34	Plant operation,	30/7/19	
35	Pumped storage plants	30/7/19	
36	Pumped storage plants	01/8/19	
UNIT-IV NUCLEAR POWER STATION & TYPES OF REACTORS			
CO4: Able to understand fundamentals of Nuclear power station & its reactors principle			
TB: "POWER PLANT ENGINEERING", Er Arora & Domkundwar.			
	UNIT – 4 NUCLEAR POWER STATION & REACTORS		
37	Nuclear power station introduction	02/8/19	Lecture interspersed with discussions
38	Nuclear fuel, breeding and fertile materials	03/8/19	
39	Nuclear reactor, reactor operation	16/8/19	
40	Types of reactors-pressurized water reactors	17/8/19	
41	Boiling water reactor	20/8/19	
42	Sodium graphite reactor	20/8/19	
43	fast breeder reactor	21/8/19	
44	homogeneous reactor	22/8/19	
UNIT-V COMBINED OPERATIONS OF DIFFERENT POWER PLANTS & POWER PLANT INSTRUMENTATION & CONTROL			
CO5: Gain knowledge & become familiar with combined operations of power plants & its instrumentation control			
TB: "POWER PLANT ENGINEERING", Er P.C. SHARMA.			
	UNIT – 5 COMBINED OPERATIONS OF DIFFERENT POWER PLANTS & POWER PLANT INSTRUMENTATION & CONTROL		
45	Combined operations of different power plants-introduction	23/8/19	Lecture interspersed with discussions
46	Advantages of combined working,	24/8/19	
47	Load distortion between power stations	25/8/19	
48	Storage type hydroelectric power plant	25/8/19	
49	Pumped storage plant	04/8/19	
50	Coordination of hydro electric and gas turbine stations	05/8/19	
51	Coordination of hydroelectric and nuclear power station stations	06/8/19	
52	Coordination of different types of power plants	07/8/19	
53	Power plant instrumentation and control	08/8/19	
54	Importance of power plant	09/8/19	
55	Instrumentation in power plant	10/8/19	
56	Measurement of gas purity	11/8/19	
57	Gas analysis, oxygen and carbon dioxide	11/8/19	
58	Measurements, nuclear measurements	12/8/19	
UNIT-VI POWER PLANT ECONOMICS & ENVIRONMENTAL CONSIDERATIONS			
CO6: Able to understand fundamentals of Power Plant Economics & Environmental considerations			
TB: "POWER PLANT ENGINEERING", Er P.C. SHARMA.			
	UNIT – 6 POWER PLANT ECONOMICS & ENVIRONMENTAL CONSIDERATIONS		
59	Power plant economics and environmental considerations,	17/9/19	Lecture interspersed with discussions

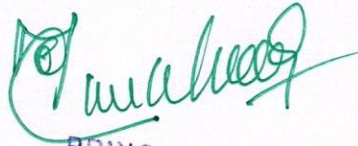
60	Capital cost	17/9/19
61	General arrangement of power distribution	18/9/19
62	Load curves	19/9/19
63	Load duration curve	20/9/19
64	Definition of connected load	24/9/19
65	Maximum demand	25/9/19
66	Demand factor,	26/9/19
67	Average load, Load factor	26/9/19
68	Diversity factor	27/9/19
69	Effluents from power plants	28/9/19
70	Related exercises	28/9/19
71	Impact on environment	28/9/19
72	Load duration curve	29/9/19
73	Definition of connected load	29/9/19
74	Instrumentation in power plant	01/10/19
75	Measurement of gas purity	01/10/19



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TENTATIVE PLAN: R1641034

Course Title: POWER PLANT ENGINEERING		Course code: R1641034	
Section: Sec II	Date: 10-06-2019		Page No: 01 to 03
Revision No: 00	Prepared By: U. TANOJ		Approved By: HOD
Tools: BLACK BOARD			
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I STEAM POWER PLANT			
CO1: Able to understand fundamentals of power plant layout & its equipment's & their uses			
TB: "POWER PLANT ENGINEERING", Er P.K.NAG.			
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1	Steam Power Plant Layout	12/6/19	
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13	Dust collectors, cooling towers and heat rejection	22/6/19	
14	Corrosion and feed water treatment	22/6/19	
UNIT-II INTERNAL COMBUSTION & GAS TURBINE POWER PLANTS			
CO2: Gain knowledge & become familiar with combustion of engines & Gas turbine plants			
TB: "POWER PLANT ENGINEERING", Er P.K.NAG.			
	UNIT - 2: Internal combustion		Lecture interspersed with discussions
15	Internal combustion & Gas turbine power plants introduction	24/6/19	
16	Introduction about diesel engines	25/6/19	
17	Plant layout with auxiliaries	26/6/19	
18	Fuel supply systems	28/6/19	
19	Air starting equipment,	29/6/19	
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	Gas Turbine Power Plants		
21	Gas turbine power plant, introduction	05/7/19	
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25	Problems on Gas turbine plants	10/7/19	
UNIT-III HYDRO ELECTRIC POWER PLANT & PROJECTS			
CO3: Able to understand fundamentals of Hydro Electric Power Plant layout & its projects			
TB: "POWER PLANT ENGINEERING", Er Arora & Domkundwar.			
	UNIT - 3: Hydro Electric Power Plant		Lecture interspersed with discussions
25	Hydro Electric Power Plant introduction	17/7/19	
26	Water power	18/7/19	
27	Hydrological cycle/flow measurement	19/7/19	
28	Drainage area characteristics,	19/7/19	
29	hydrographs, storage and pondage	20/7/19	
30	Classification of dams and spill ways	22/7/19	

Hydro Projects Plant		
31	Hydroelectric projects and plant-classification, typical layouts	2/7/19
32	Typical layouts	26/7/19
33	Plant auxiliaries,	27/7/19
34	Plant operation,	30/7/19
35	Pumped storage plants	30/7/19
36	Pumped storage plants	01/8/19
UNIT-IV NUCLEAR POWER STATION & TYPES OF REACTORS		
CO4: Able to understand fundamentals of Nuclear power station & its reactors principle		
TB: "POWER PLANT ENGINEERING", Er Arora & Domkundwar.		
UNIT – 4 NUCLEAR POWER STATION & REACTORS		
37	Nuclear power station introduction	02/8/19
38	Nuclear fuel, breeding and fertile materials	03/8/19
39	Nuclear reactor, reactor operation	16/8/19
40	Types of reactors-pressurized water reactors	17/8/19
41	Boiling water reactor	20/8/19
42	Sodium graphite reactor	20/8/19
43	fast breeder reactor	21/8/19
44	homogeneous reactor	22/8/19
Lecture interspersed with discussions		
UNIT-V COMBINED OPERATIONS OF DIFFERENT POWER PLANTS & POWER PLANT INSTRUMENTATION & CONTROL		
CO5: Gain knowledge & become familiar with combined operations of power plants & its instrumentation control		
TB: "POWER PLANT ENGINEERING", Er P.C. SHARMA.		
UNIT – 5 COMBINED OPERATIONS OF DIFFERENT POWER PLANTS & POWER PLANT INSTRUMENTATION & CONTROL		
45	Combined operations of different power plants-introduction	23/8/19
46	Advantages of combined working,	24/8/19
47	Load distortion between power stations	25/8/19
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49	Pumped storage plant	04/8/19
50	Coordination of hydro electric and gas turbine stations	05/8/19
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52	Coordination of different types of power plants	07/8/19
53	Power plant instrumentation and control	08/8/19
54	Importance of power plant	09/8/19
55	Instrumentation in power plant	10/8/19
56	Measurement of gas purity	11/8/19
57	Gas analysis, oxygen and carbon dioxide	11/8/19
58	Measurements, nuclear measurements	12/8/19
Lecture interspersed with discussions		
UNIT-VI POWER PLANT ECONOMICS & ENVIRONMENTAL CONSIDERATIONS		
CO6: Able to understand fundamentals of Power Plant Economics & Environmental considerations		
TB: "POWER PLANT ENGINEERING", Er P.C. SHARMA.		
UNIT – 6 POWER PLANT ECONOMICS & ENVIRONMENTAL CONSIDERATIONS		
59	Power plant economics and environmental considerations,	17/9/19
60	Capital cost	17/9/19

61	General arrangement of power distribution	18/9/19	Lecture interspersed with discussions
62	Load curves	19/9/19	
63	Load duration curve	20/9/19	
64	Definition of connected load	24/9/19	
65	Maximum demand	25/9/19	
66	Demand factor,	26/9/19	
67	Average load, Load factor	26/9/19	
68	Diversity factor	27/9/19	
69	Effluents from power plants	28/9/19	
70	Related exercises	28/9/19	
71	Impact on environment	28/9/19	
72	Load duration curve	29/9/19	
73	Definition of connected load	29/9/19	
74	Instrumentation in power plant	02/10/19	
75	Measurement of gas purity	02/10/19	

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TENTATIVE LESSON PLAN: R164103C ADDITIVE MANUFACTURING

Course Title: Additive Manufacturing		
Section : Sec A	Date : 10/06/19	Page No : 01 of 04
Revision No : 00	Prepared By : P. Bhagya Lakshmi	Approved By : HOD

Tools: Black board, PPTs

No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I INTRODUCTION, LIQUID-BASED RAPID PROTOTYPING SYSTEMS CO1: Able to understand prototyping fundamentals, advantages and limitations of rapid prototyping, classifications of RP. And also able to identify the use of SLA, SGC for manufacturing of complex components. TB: Rapid prototyping: Principles and Applications /Chua C.K., Leong K.F. and LIM C.S/World Scientific publications			
1	INTRODUCTION: Prototyping fundamentals	10/6/19	Lecture interspersed with discussions
2	historical development	11/6/19	
3	fundamentals of rapid prototyping	12/6/19	
4	advantages and limitations of rapid prototyping	14/6/19	
5	commonly used terms, classification of RP process	15/6/19	
6	LIQUID-BASED RAPID PROTOTYPING SYSTEMS: Stereo lithography Apparatus (SLA): models and specifications	17/6/19	
7	process, working principle	18/6/19	
8	photopolymers, photo polymerization	19/6/19	
9	layering technology, laser and laser scanning	21/6/19	
10	applications, advantages and disadvantages	22/6/19	
11	case studies	24/6/19	
12	Solid Ground Curing (SGC): models and specifications	25/6/19	
13	process, working principle	26/6/19	
14	applications, advantages and disadvantages	28/6/19	

15	case studies.	29/6/19	
UNIT-II SOLID-BASED RAPID PROTOTYPING SYSTEMS			
CO2: Able to identify the use of LOM, FDM for manufacturing of complex components			
TB: Rapid prototyping: Principles and Applications /Chua C.K., Leong K.F. and LIM C.S/World Scientific publications			
16	Laminated object manufacturing (LOM) - models and specifications	1/7/19	Lecture interspersed with discussions
17	, process, working principle	2/7/19	
18	applications, advantages and disadvantages	3/7/19	
19	case studies	5/7/19	
20	Fused deposition modelling (FDM) - models and specifications	6/7/19	
21	process, working principle	8/7/19	
22	applications, advantages and disadvantages	9/7/19	
23	case studies	10/7/19	
UNIT-III POWDER BASED RAPID PROTOTYPING SYSTEMS			
CO3: Able to identify the use of SLS, 3DP for manufacturing of complex components			
TB: Rapid prototyping: Principles and Applications /Chua C.K., Leong K.F. and LIM C.S/World Scientific publications			
24	Selective laser sintering (SLS): models and specifications	13/7/19	Lecture interspersed with discussions
25	process, working principle	15/7/19	
26	applications, advantages and disadvantages	16/7/19	
27	case studies	17/7/19	
28	three dimensional printing (3DP): models and specifications	20/7/19	
29	process, working principle	22/7/19	
30	applications, advantages and disadvantages	23/7/19	

31	case studies	24/7/19	
UNIT-IV RAPID TOOLING CO4: Able to understand various indirect & direct tooling techniques TB: Rapid prototyping: Principles and Applications /Chua C.K., Leong K.F. and LIM C.S/World Scientific publications R1- Wohlers Report 2000 /Terry T Wohlers/Wohlers Associates			
32	RAPID TOOLING: Introduction to rapid tooling (RT), conventional tooling Vs RT	26/7/19	Lecture interspersed with discussions
33	Need for RT, rapid tooling classification	27/7/19	
34	indirect rapid tooling methods: RTV epoxy tools ,spray metal deposition	29/7/19	
35	Ceramic tools, investment casting	30/7/19	
36	spin casting, die casting	31/7/19	
37	sand casting	2/8/19	
38	3D Keltool process	3/8/19	
39	Direct rapid tooling: direct AIM	14/8/19	
40	LOM Tools, DTM Rapid Tool Process	16/8/19	
41	EOS Direct Tool Process	17/8/19	
42	Direct Metal Tooling using 3DP	19/8/19	
UNIT-V RAPID PROTOTYPING DATA FORMATS, RAPID PROTOTYPING SOFTWARE'S CO5: Able to understand RP data formats, features of RP softwares and also able to identify the STL file problems and their repair. TB: Rapid prototyping: Principles and Applications /Chua C.K., Leong K.F. and LIM C.S/World Scientific publications R1- Wohlers Report 2000 /Terry T Wohlers/Wohlers Associates			
43	RAPID PROTOTYPING DATA FORMATS: STL Format	29/8/19	

44	STL File Problems	24/8/19	Lecture interspersed with discussions
45	consequence of building valid and invalid tessellated models	26/8/19	
46	STL file Repairs: Generic Solution	27/8/19	
47	other Translators	28/8/19	
48	Newly Proposed Formats	31/8/19	
49	RAPID PROTOTYPING SOFTWARE'S: Features of various RP software's : Magics	3/9/19	
50	Mimics, Solid View	4/9/19	
51	View Expert, 3 D View	6/9/19	
52	Velocity 2, Rhino	9/9/19	
53	STL View 3 Data Expert and 3 D doctor	11/9/19	

UNIT-VI RP APPLICATIONS

CO6: Able to understand applications of RP in various industries & fields.

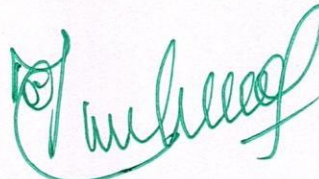
TB: Rapid prototyping: Principles and Applications /Chua C.K., Leong K.F. and LIM C.S/World Scientific publications

R1- Wohlers Report 2000 /Terry T Wohlers/Wohlers Associates

54	RP APPLICATIONS: Application in engineering, analysis and planning	16/9/19	Lecture interspersed with discussions
55	aerospace industry	17/9/19	
56	automotive industry	20/9/19	
57	jewelry industry	21/9/19	
58	coin industry	23/9/19	
59	GIS application, arts and architecture	24/9/19	
60	RP medical and bioengineering applications: planning and simulation of complex surgery	25/9/19	
61	customized implants & prosthesis	27/9/19	
62	design and production of medical devices	28/9/19	

63	forensic science and anthropology	30/9/19	
64	visualization of bimolecular	1/10/19	


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TENTATIVE LESSON PLAN: R164103C ADDITIVE MANUFACTURING

Course Title: Additive Manufacturing		Page No : 01 of 04
Section : Sec B	Date : 10/06/19	Approved By : HOD
Revision No : 00	Prepared By : P. Bhagya Lakshmi	

Tools: Black board, PPTs

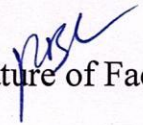
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I INTRODUCTION, LIQUID-BASED RAPID PROTOTYPING SYSTEMS			
CO1: Able to understand prototyping fundamentals, advantages and limitations of rapid prototyping, classifications of RP. And also able to identify the use of SLA, SGC for manufacturing of complex components.			
TB: Rapid prototyping: Principles and Applications /Chua C.K., Leong K.F. and LIM C.S/World Scientific publications			
1	INTRODUCTION: Prototyping fundamentals	10/6/19	Lecture interspersed with discussions
2	historical development	11/6/19	
3	fundamentals of rapid prototyping	12/6/19	
4	advantages and limitations of rapid prototyping	13/6/19	
5	commonly used terms, classification of RP process	14/6/19	
6	LIQUID-BASED RAPID PROTOTYPING SYSTEMS: Stereo lithography Apparatus (SLA): models and specifications	17/6/19	
7	process, working principle	19/6/19	
8	photopolymers, photo polymerization	20/6/19	
9	layering technology, laser and laser scanning	21/6/19	
10	applications, advantages and disadvantages	24/6/19	
11	case studies	25/6/19	
12	Solid Ground Curing (SGC): models and specifications	26/6/19	
13	process, working principle	28/6/19	
14	applications, advantages and disadvantages	1/7/19	

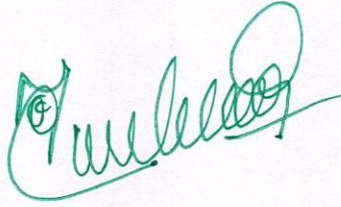
15	case studies.	2/7/19	
UNIT-II SOLID-BASED RAPID PROTOTYPING SYSTEMS			
CO2: Able to identify the use of LOM, FDM for manufacturing of complex components			
TB: Rapid prototyping: Principles and Applications /Chua C.K., Leong K.F. and LIM C.S/World Scientific publications			
16	Laminated object manufacturing (LOM) - models and specifications	3/7/19	Lecture interspersed with discussions
17	process, working principle	4/7/19	
18	applications, advantages and disadvantages	5/7/19	
19	case studies	8/7/19	
20	Fused deposition modelling (FDM) - models and specifications	9/7/19	
21	process, working principle	10/7/19	
22	applications, advantages and disadvantages	11/7/19	
23	case studies	12/7/19	
NIT-III POWDER BASED RAPID PROTOTYPING SYSTEMS			
CO3: Able to identify the use of SLS, 3DP for manufacturing of complex components			
TB: Rapid prototyping: Principles and Applications /Chua C.K., Leong K.F. and LIM C.S/World Scientific publications			
24	Selective laser sintering (SLS): models and specifications	15/7/19	Lecture interspersed with discussions
25	process, working principle	16/7/19	
26	applications, advantages and disadvantages	18/7/19	
27	case studies	19/7/19	
28	three dimensional printing (3DP): models and specifications	22/7/19	
29	process, working principle	23/7/19	
30	applications, advantages and disadvantages	24/7/19	

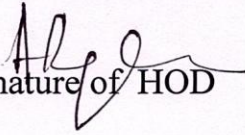
31	case studies	25/7/19	
UNIT-IV RAPID TOOLING CO4: Able to understand various indirect & direct tooling techniques TB: Rapid prototyping: Principles and Applications /Chua C.K., Leong K.F. and LIM C.S/World Scientific publications R1- Wohlers Report 2000 /Terry T Wohlers/Wohlers Associates			
32	RAPID TOOLING: Introduction to rapid tooling (RT), conventional tooling Vs RT	29/7/19	Lecture interspersed with discussions
33	Need for RT, rapid tooling classification	30/7/19	
34	indirect rapid tooling methods: RTV epoxy tools ,spray metal deposition	31/7/19	
35	Ceramic tools, investment casting	1/8/19	
36	spin casting, die casting	2/8/19	
37	sand casting	14/8/19	
38	3D Keltool process	16/8/19	
39	Direct rapid tooling: direct AIM	19/8/19	
40	LOM Tools, DTM Rapid Tool Process	20/8/19	
41	EOS Direct Tool Process	21/8/19	
42	Direct Metal Tooling using 3DP	22/8/19	
UNIT-V RAPID PROTOTYPING DATA FORMATS, RAPID PROTOTYPING SOFTWARE'S CO5: Able to understand RP data formats, features of RP softwares and also able to identify the STL file problems and their repair. TB: Rapid prototyping: Principles and Applications /Chua C.K., Leong K.F. and LIM C.S/World Scientific publications R1- Wohlers Report 2000 /Terry T Wohlers/Wohlers Associates			
43	RAPID PROTOTYPING DATA FORMATS: STL Format	26/8/19	
44	STL File Problems	27/8/19	

45	consequence of building valid and invalid tessellated models	28/8/19	Lecture interspersed with discussions
46	STL file Repairs: Generic Solution	29/8/19	
47	other Translators	30/8/19	
48	Newly Proposed Formats	3/9/19	
49	RAPID PROTOTYPING SOFTWARE'S: Features of various RP software's : Magics	4/9/19	
50	Mimics, Solid View	5/9/19	
51	View Expert, 3 D View	6/9/19	
52	Velocity 2, Rhino	9/9/19	
53	STL View 3 Data Expert and 3 D doctor	11/9/19	
UNIT-VI RP APPLICATIONS			
CO6: Able to understand applications of RP in various industries & fields.			
TB: Rapid prototyping: Principles and Applications /Chua C.K., Leong K.F. and LIM C.S/World Scientific publications			
R1- Wohlers Report 2000 /Terry T Wohlers/Wohlers Associates			
54	RP APPLICATIONS: Application in engineering, analysis and planning	12/9/19	Lecture interspersed with discussions
55	aerospace industry	13/9/19	
56	automotive industry	16/9/19	
57	jewelry industry	17/9/19	
58	coin industry	18/9/19	
59	GIS application, arts and architecture	19/9/19	
60	RP medical and bioengineering applications: planning and simulation of complex surgery	20/9/19	
61	customized implants & prosthesis	23/9/19	
62	design and production of medical devices	24/9/19	
63	forensic science and anthropology	25/9/19	

64	visualization of bimolecular	1/10/19	
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**TENTATIVE PLAN:
R164103D**

Course Title: ADVANCED MATERIALS		Course code: R164103D	
Section : Sec I	Date : 18-11-2019	Page No : 01 to 03	
Revision No : 00	Prepared By : Dr.T.S.S.Balaji	Approved By : HOD	
Tools: BLACK BOARD			
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I INTRODUCTION			
CO1: Become familiar with a basic concept of composite materials			
TB: "ADVANCED MATERIALS", M DANIEL ISSAC.			
	UNIT – 1 INTRODUCTION TO COMPOSITE MATERIALS		Lecture interspersed with discussions
1	Introduction	18/11/2019	
2	Introduction, definition, classification of polymers	19/11/2019	
3	classification of polymers, Polymer matrix composites	20/11/2019	
4	Metal matrix composites, Ceramic matrix composites	21/11/2019	
5	Metal matrix composites, Ceramic matrix composites	21/11/2019	
6	Fiber-reinforced composites, nature made composites and application	23/11/2019	
7	Fiber-reinforced composites, nature made composites and application	25/11/2019	
8	Fiber-reinforced composites, nature made composites and application	27/11/2019	
UNIT-II POLYMER COMPOSITES			
CO2: Gain knowledge about polymer composites			
TB: "ADVANCED MATERIALS", M DANIEL ISSAC.			
	UNIT – 2 POLYMER COMPOSITES		Lecture interspersed with discussions
9	Fiber reinforcements, fiber, glass, silica	30/11/2019	
10	Fiber reinforcements, fiber, glass, silica	02/12/2019	
11	Fiber reinforcements of silica, Kevlar, carbon	03/12/2019	
12	Fiber reinforcements of silica, Kevlar, carbon	04/12/2019	
13	Fiber reinforcements of carbon, boron, silicon carbide	05/12/2019	
14	Fiber reinforcement of silicon carbide, boron carbide	05/12/2019	
15	Fiber reinforcement of silicon carbide, boron carbide	05/12/2019	
16	Polymer composites, thermoplastic and thermosetting plastics	07/12/2019	
17	Polymer composites, thermoplastic and thermosetting plastics	09/12/2019	
18	Thermosetting plastic, and manufacturing of PMC	10/12/2019	
19	Manufacturing of MMC, CCC and their application	11/12/2019	

UNIT-III MANUFACTURING METHODS**CO3: Become familiar with the concepts of MANUFACTURING METHODS****TB: "ADVANCED MATERIALS", M DANIEL ISSAC.**

UNIT – 3 MANUFACTURING METHODS			Lecture interspersed with discussions
31	Autoclave manufacturing methods	18/12/2019	
32	Molding methods, filament winding	19/12/2019	
33	Molding methods, filament winding	19/12/2019	
34	Filament winding, hand layup, pultrusion and RTM	23/12/2019	
35	Filament winding, hand layup, pultrusion and RTM	24/12/2019	
36	Filament winding, hand layup, pultrusion and RTM	26/12/2019	

UNIT-IV MACROMECHANICAL ANALYSIS OF A LAMINA**CO4: Gain knowledge about concept of Macromechanical analysis of lamina****TB: "ADVANCED MATERIALS", M DANIEL ISSAC.**

UNIT – 4 MACROMECHANICAL ANALYSIS OF A LAMINA			Lecture interspersed with discussions
39	Introduction, generalized hooks law	30/12/2019	
40	Introduction, generalized hooks law	31/12/2019	
41	Reduction of hooks law from 3D to 2D	02/01/2020	
42	Reduction of hooks law from 3D to 2D	06/01/2020	
43	Relation ship of compliance	06/01/2020	
44	Stiffness matrix to engineering elastic constant	07/01/2020	
45	Stiffness matrix to engineering elastic constant	09/01/2020	
46	Orthotropic lamina, laminate-laminate codes	10/01/2020	
47	Orthotropic lamina, laminate-laminate codes	27/01/2020	

UNIT-V FUNCTIONALLY GRADED MATERIALS**CO5: Become familiar with functional graded materials****TB: "ADVANCED MATERIALS", M DANIEL ISSAC.**

UNIT – 5 FUNCTIONALLY GRADED MATERIALS			Lecture interspersed with discussions
48	Types of functionally graded materials	28/01/2020	
49	Types of functionally graded materials	29/01/2020	
50	System preparations p properties of graded materials and applications of functionally graded, materials	31/01/2020	
51	properties of graded materials and applications of functionally graded, materials	03/02/2020	
52	Introduction to shape memory alloy, shape memory effect	04/02/2020	
53	Introduction to shape memory alloy, shape memory effect	05/02/2020	
54	Classification of shape memory alloy composition	06/02/2020	
55	Application of shape memory alloys	07/02/2020	

CO6: Become familiar with concepts of NANO MATERIALS

TB: "ADVANCED MATERIALS", M DANIEL ISSAC.

UNIT – 6 NANO MATERIALS			Lecture interspersed with discussions
56	Introduction and properties of nano materials	08/02/2020	
57	Introduction and properties of nano materials	10/02/2020	
58	Nano scales advantages and dis advantages	11/02/2020	
59	Application in comparison with bulk materials	12/02/2020	
60	Application in comparison with bulk materials	13/02/2020	
61	State of art nano advanced and topic delivered by student	14/02/2020	
62	State of art nano advanced and topic delivered by student	15/02/2020	

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TENTATIVE PLAN: R164103D

Course Title: ADVANCED MATERIALS		Course code: R164103D	
Section : Sec II	Date : 18-11-2019	Page No : 01 to 03	
Revision No : 00	Prepared By : Dr.S.S.BALAJI	Approved By : HOD	
Tools: BLACK BOARD			
No. of Periods	TOPIC	Date	Mode of delivery
UNIT-I INTRODUCTION			
CO1: Become familiar with a basic concept of composite materials			
TB: "ADVANCED MATERIALS", M DANIEL ISSAC ISSAC.			
	UNIT – 1 INTRODUCTION TO COMPOSITE MATERIALS		Lecture interspersed with discussions
1	Introduction	18/11/2019	
2	Introduction, definition, classification of polymers	19/11/2019	
3	classification of polymers, Polymer matrix composites	20/11/2019	
4	Metal matrix composites, Ceramic matrix composites	21/11/2019	
5	Metal matrix composites, Ceramic matrix composites	22/11/2019	
6	Fiber-reinforced composites, nature made composites and application	23/11/2019	
7	Fiber-reinforced composites, nature made composites and application	25/11/2019	
8	Fiber-reinforced composites, nature made composites and application	27/11/2019	
UNIT-II POLYMER COMPOSITES			
CO2: Gain knowledge about polymer composites			
TB: "ADVANCED MATERIALS", M DANIEL ISSAC.			
	UNIT – 2 POLYMER COMPOSITES		Lecture interspersed with discussions
17	Fiber reinforcements, fiber, glass, silica	30/11/2019	
18	Fiber reinforcements, fiber, glass, silica	02/12/2019	
19	Fiber reinforcements of silica, Kevlar, carbon	03/12/2019	
20	Fiber reinforcements of silica, Kevlar, carbon	04/12/2019	
21	Fiber reinforcements of carbon, boron, silicon carbide	04/12/2019	
22	Fiber reinforcement of silicon carbide, boron carbide	05/12/2019	
23	Fiber reinforcement of silicon carbide, boron carbide	06/12/2019	
24	Polymer composites, thermoplastic and thermosetting plastics	07/12/2019	
25	Polymer composites, thermoplastic and thermosetting plastics	09/12/2019	
26	Thermosetting plastic, and manufacturing of PMC	10/12/2019	
27	Manufacturing of MMC, CCC and their application	11/12/2019	

UNIT-III MANUFACTURING METHODS**CO3: Become familiar with the concepts of MANUFACTURING METHODS****TB: "ADVANCED MATERIALS", M DANIEL ISSAC.**

UNIT – 3 MANUFACTURING METHODS			
31	Autoclave manufacturing methods	18/12/2019	Lecture interspersed with discussions
32	Molding methods, filament winding	19/12/2019	
33	Molding methods, filament winding	19/12/2019	
34	Filament winding, hand layup, pultrusion and RTM	23/12/2019	
35	Filament winding, hand layup, pultrusion and RTM	24/12/2019	
36	Filament winding, hand layup, pultrusion and RTM	26/12/2019	

UNIT-IV MACROMECHANICAL ANALYSIS OF A LAMINA**CO4: Gain knowledge about concept of Macromechanical analysis of lamina****TB: "ADVANCED MATERIALS", M DANIEL ISSAC.**

UNIT – 4 MACROMECHANICAL ANALYSIS OF A LAMINA			
39	Introduction, generalized hooks law	30/12/2019	Lecture interspersed with discussions
40	Introduction, generalized hooks law	31/12/2019	
41	Reduction of hooks law from 3D to 2D	02/01/2020	
42	Reduction of hooks law from 3D to 2D	06/01/2020	
43	Relation ship of compliance	06/01/2020	
44	Stiffness matrix to engineering elastic constant	07/01/2020	
45	Stiffness matrix to engineering elastic constant	09/01/2020	
46	Orthotropic lamina, laminate-laminate codes	10/01/2020	
47	Orthotropic lamina, laminate-laminate codes	27/01/2020	

UNIT-V FUNCTIONALLY GRADED MATERIALS**CO5: Become familiar with functional graded materials****TB: "ADVANCED MATERIALS", M DANIEL ISSAC.**

UNIT – 5 FUNCTIONALLY GRADED MATERIALS			
52	Types of functionally graded materials	28/01/2020	Lecture interspersed with discussions
53	Types of functionally graded materials	29/01/2020	
54	System preparations p properties of graded materials and applications of functionally graded, materials	31/01/2020	
55	properties of graded materials and applications of functionally graded, materials	03/02/2020	
56	Introduction to shape memory alloy, shape memory effect	04/02/2020	
57	Introduction to shape memory alloy, shape memory effect	05/02/2020	
58	Classification of shape memory alloy composition	06/02/2020	
59	Application of shape memory alloys	07/02/2020	

UNIT-VI NANO MATERIALS

**CO6: Become familiar with concepts of
NANO MATERIALS**

TB: "ADVANCED MATERIALS", MDANIEL ISSAC.

UNIT –6 NANO MATERIALS			
60	Introduction and properties of nano materials	08/02/2020	Lecture interspersed with discussions
61	Introduction and properties of nano materials	11/02/2020	
62	Nano scales advantages and dis advantages	11/02/2020	
63	Application in comparison with bulk materials	12/02/2020	
64	Application in comparison with bulk materials	12/02/2020	
65	State of art nano advanced and topic delivered by student	14/02/2020	
66	State of art nano advanced and topic delivered by student	16/02/2020	

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