TENTATIVE LESSON PLAN: R1622031 KINEMATICS OF MACHINERY

Section : Sec A	INEMATICS OF MACHINERY Date: 18-11-2019	Page No	: 01 of 05	
Revision No : 0		Approve	Approved By : HOD	
Tools: Black bo	pard, PPTs TOPIC	Date	Mode of Delivery	
CO1: The obje Kinematic join	CHANISMS ctive of this unit is to make student understand the tand mechanism and to study the relative motion into consideration the forces involved.	e purpose of k of parts in a n	inematics, nachine	
1	Elements or Links – Classification – Rigid Link, flexible and fluid link	18-11-2019		
2	Types of kinematic pairs – sliding, turning, rolling, screw and spherical pairs	19-11-2019		
3	lower and higher pairs – closed and open pairs – constrained motion	20-11-2019		
4	completely, partially or successfully constrained and incompletely constrained	21-11-2019		
5	Khubralrs criteria, Grashoff's law, Degrees of freedom	22-11-2019	Lecture intersperse with	
6	Kutzbach criterian for planar mechanisms, Mechanism and machines	23-11-2019	discussion	
7	classification of machines – kinematic chain – inversion of mechanism	25-11-2019		
8	Inversion of mechanism – inversions of quadric cycle, chain – single and double slider cranks chains.	26-11-2019		
straight line m	LOWER PAIR MECHANISM ective of this unit is to make student understand valotion and their applications including steering me	arious mechan echanism.	isms for	
TB:		26-11-2019		
9 9	Exact and approximate copiers and generated types – Peaucellier	20 11 20 3		

	Chebicheff	0	
11	Robert Mechanisms and straight line motion, Pantograph	28-11-2019	
12	Conditions for correct steering – Davis Steering gear	29-11-2019	Lecture interspersed
13	Ackermans steering gear	30-11-2019	with
14	velocity ratio; Hooke's Joint: Single and double	2-12-2019	discussions
15	Universal coupling-application-problems.	2-12-2019	

UNIT-III KINEMATICS

CO3: The objective of this unit is to make student understand the velocity and acceleration concepts and the methodology using graphical methods and principles and application of four bar chain. To understand the application of slider crank mechanism etc. and study of plane motion of the body.

B:			
16	Velocity and acceleration – Motion of a link in machine	2-12-2019	
17	Determination of Velocity and acceleration diagrams – Graphical method	3-12-2019	
18	Application of relative velocity method four bar chain.	4-12-2019	Lecture interspersed with
19	Velocity and acceleration analysis of for a given mechanism	5-12-2019	discussions
20	Kleins construction, Coriolis acceleration, determination of Coriolis component of acceleration.	6-12-2019	
21	Plane motion of body: Instantaneous center of rotation,centroids and axodes	7-12-2019	
22	relative motion between two bodies – Three centres in line theorem	10-12-2019	
23	Graphical determination of instantaneous centre	11-12-2019	
24	diagrams for simple mechanisms and determination of angular velocity of points and links	12-12-2019	

cams.	bjective of this unit is to make student understand	d the theories	s involved in
25	Definitions of cam and followers – their uses	25-1-2020	
26	Types of followers and cams	27-1-2020	
27	Terminology –Types of follower motion	28-1-2020	
28	Uniform velocity, Simple harmonic motion and uniform acceleration and retardation	30-1-2020	
29	Maximum velocity	31-1-2020	Lecture intersperse
30	maximum acceleration during outward and return strokes in the above 3 cases.	1-2-2020	with
31	Analysis of motion of followers	3-2-2020	
32	Roller follower	4-2-2020	
33	Circular cam with straight	5-2-2020	
34	concave and convex flanks	6-2-2020	
COS: The or	jective of this unit is to make student understand ge		nemission
through diff TB:	erent types of gears including gear profiles and its ef	fficiency. 7-2-2020	ansmission
	erent types of gears including gear profiles and its ef Higher pairs, friction wheels	7-2-2020	ansmission
ТВ:	erent types of gears including gear profiles and its ef	fficiency.	ansmission
TB: 35	erent types of gears including gear profiles and its ef Higher pairs, friction wheels	7-2-2020	ansmission
TB: 35 36	Higher pairs, friction wheels toothed gears—types	7-2-2020 8-2-2020	Lecture
35 36 37	Higher pairs, friction wheels toothed gears—types law of gearing condition for constant velocity ratio for	7-2-2020 8-2-2020 10-2-2020	
35 36 37 38	Higher pairs, friction wheels toothed gears—types law of gearing condition for constant velocity ratio for transmission of motion	7-2-2020 8-2-2020 10-2-2020 12-2-2020	Lecture intersperse
TB: 35 36 37 38	Higher pairs, friction wheels toothed gears—types law of gearing condition for constant velocity ratio for transmission of motion Form of teeth: cycloidal and involute profiles	7-2-2020 8-2-2020 10-2-2020 12-2-2020	Lecture intersperse with

43	expressions for arc of contact and path of contact	24-2-2020
44	Introduction to Helical	26-2-2020
45	Bevel	27-2-2020
46	Worm gearing	28-2-2020
7 X7X		

POWER TRANSMISSIONS

CO6: The objective of this unit is to make student understand various power transmission mechanisms and methodologies and working principles. Students are exposed to merits and demerits of each drive

TB:		9	
47	introduction	29-2-2020	
48	Belt and rope drives	2-3-2020	
49	Selection of belt drive	3-3-2020	
50	Types of belt drives	3-3-2020	
51	V-belts	4-3-2020	
52	Materials used for belt and rope drives	5-3-2020	
53	Velocity ratio of belt drives	6-3-2020	Lecture
54	Slip of belt, creep of belt	7-3-2020	interspersed with
55	Tensions for flat belt drive	11-3-2020	discussions
56	Angle of contact	12-3-2020	
57	Centrifugal tension	13-3-2020	
58	Maximum tension of belt	14-3-2020	
59	Chains- length, angular speed ratio	16-3-2020	
60	Classification of chains	17-3-2020	
61	Introduction to gear Trains, Train value	18-3-2020	

62	Types – Simple and reverted wheel train	19-3-2020
63	Epicyclic gear Train	19-3-2020
64	Methods of finding train value or velocity ratio	20-3-2020
65	Epicyclic gear trains	20-3-2020
66	Selection of gear box	21-3-2020
67	Differential gear for an automobile.	21-3-2020

Signature of Faculty

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TENTATIVE LESSON PLAN: R1622031 KINEMATICS OF MACHINERY

Section : Sec I	NEMATICS OF MACHINERY Date: 18-11-2019	Page No	: 01 of 05
Revision No : 0			ed By : HOD
	VANAM		
Tools: Black bo			
No. of Periods	TOPIC	Date	Mode of Delivery
CO1: The object Kinematic join	HANISMS tive of this unit is to make student und and mechanism and to study the relati nto consideration the forces involved.		
TB:	Elements or Links – Classification – Rig	gid Link, 18-11-2019	
1	flexible and fluid link	,	
2	Types of kinematic pairs – sliding, turni rolling, screw and spherical pairs	ing, 19-11-2019	
3	lower and higher pairs – closed and ope constrained motion	n pairs – 20-11-2019	
4	completely, partially or successfully con and incompletely constrained	nstrained 21-11-2019	
5	Khubralrs criteria, Grashoff's law, Deffreedom	grees of 22-11-2019	Lecture intersperse with
6	Kutzbach criterian for planar mechanism Mechanism and machines	ms, 23-11-2019	discussions
7	classification of machines – kinematic of inversion of mechanism	chain – 25-11-2019	
8	Inversion of mechanism – inversions of cycle, chain – single and double slider chains.	eranks 26-11-2019	
CO2: The obje	OWER PAIR MECHANISM tive of this unit is to make student und tion and their applications including s		nisms for
9	Exact and approximate copiers and gen types – Peaucellier	erated 26-11-2019	
10	Hart and Scott Russul – Grasshopper –	Watt T. 27-11-2019	

	Chebicheff		
11	Robert Mechanisms and straight line motion, Pantograph	28-11-2019	
12	Conditions for correct steering – Davis Steering gear	29-11-2019	Lecture interspersed
13	Ackermans steering gear	30-11-2019	with
14	velocity ratio; Hooke's Joint: Single and double	2-12-2019	discussions
15	Universal coupling-application-problems.	2-12-2019	

UNIT-III KINEMATICS

CO3: The objective of this unit is to make student understand the velocity and acceleration concepts and the methodology using graphical methods and principles and application of four bar chain. To understand the application of slider crank mechanism etc. and study of plane motion of the body.

TB:			
16	Velocity and acceleration – Motion of a link in machine	2-12-2019	
17	Determination of Velocity and acceleration diagrams – Graphical method	3-12-2019	
18	Application of relative velocity method four bar chain.	4-12-2019	Lecture interspersed with
19	Velocity and acceleration analysis of for a given mechanism	5-12-2019	discussions
20	Kleins construction, Coriolis acceleration, determination of Coriolis component of acceleration.	6-12-2019	
21	Plane motion of body: Instantaneous center of rotation, centroids and axodes	7-12-2019	
22	relative motion between two bodies – Three centres in line theorem	10-12-2019	
23	Graphical determination of instantaneous centre	11-12-2019	
24	diagrams for simple mechanisms and determination of angular velocity of points and links	12-12-2019	

UNIT-IV	CAMS
DIVIT-IV	CANID

CO4: The objective of this unit is to make student understand the theories involved in

п	г	n	
		n	c

25	Definitions of cam and followers – their uses	25-1-2020	
26	Types of followers and cams	27-1-2020	
27	Terminology –Types of follower motion	28-1-2020	
28	Uniform velocity, Simple harmonic motion and uniform acceleration and retardation	30-1-2020	
29	Maximum velocity	31-1-2020	Lecture interspersed
30	maximum acceleration during outward and return strokes in the above 3 cases.	1-2-2020	with discussions
31	Analysis of motion of followers	3-2-2020	
32	Roller follower	4-2-2020	
33	Circular cam with straight	5-2-2020	
34	concave and convex flanks	6-2-2020	

UNIT-V GEARS

CO5: The objective of this unit is to make student understand gears, power transmission through different types of gears including gear profiles and its efficiency.

IB:			
35	Higher pairs, friction wheels	7-2-2020	
	toothed gears-types	8-2-2020	
36			
37	law of gearing	10-2-2020	
38	condition for constant velocity ratio for	12-2-2020	
	transmission of motion		Lecture
39	Form of teeth: cycloidal and involute profiles	13-2-2020	interspersed with
40	Velocity of sliding –phenomena of interferences	14-2-2020	discussions
41	Methods of interference	17-2-2020	
42	Condition for minimum number of teeth to avoid interference,	20-2-2020	

43	expressions for arc of contact and path of contact	24-2-2020
44	Introduction to Helical	26-2-2020
45	Bevel	27-2-2020
46	Worm gearing	28-2-2020

POWER TRANSMISSIONS **UNIT-VI**

CO6: The objective of this unit is to make student understand various power transmission mechanisms and methodologies and working principles. Students are exposed to merits and demerits of each drive

47	introduction	29-2-2020	
48	Belt and rope drives	2-3-2020	
49	Selection of belt drive	3-3-2020	
50	Types of belt drives	3-3-2020	
51	V-belts	4-3-2020	
52	Materials used for belt and rope drives	5-3-2020	
53	Velocity ratio of belt drives	6-3-2020	Lecture
54	Slip of belt, creep of belt	7-3-2020	interspers
55	Tensions for flat belt drive	11-3-2020	discussion
56	Angle of contact	12-3-2020	
57	Centrifugal tension	13-3-2020	
58	Maximum tension of belt	14-3-2020	
59	Chains- length, angular speed ratio	16-3-2020	
60	Classification of chains	17-3-2020	
61	Introduction to gear Trains, Train value	18-3-2020	

Types – Simple and reverted wheel train	19-3-2020	
Epicyclic gear Train	19-3-2020	
Methods of finding train value or velocity ratio	20-3-2020	
Epicyclic gear trains	20-3-2020	
Selection of gear box	21-3-2020	
Differential gear for an automobile.	21-3-2020	
	Epicyclic gear Train Methods of finding train value or velocity ratio Epicyclic gear trains Selection of gear box	Epicyclic gear Train 19-3-2020 Methods of finding train value or velocity ratio 20-3-2020 Epicyclic gear trains 20-3-2020 Selection of gear box 21-3-2020

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TENTATIVELESSON PLAN: R1631032

	HERMAL ENGINEERING-I	Cou	rse code: R Page No :	01 to 03
Section : Sec A	Date:17/11/2019			By: HOD
Revision No : 00			Approved	by . HOD
Tools: BLACK				Mode of
No. of Periods	TOPIC		Date	Delivery
UNIT-IACTUA	L CYCLES AND THEIR ANALYSYS			
CO1:sTo make	the student learn and understand the effects of variou	s loss	es that occur	in the actual
· · · · · · · · · · · · · · · · · · ·				
TB: "IC ENIN	NES, V. GANESAN by 3rd Edition, Tata McGra	w H	III Educat	ion Private
Limited publica	tions.	16	3/11/2019	
	· · · · · · · · · · · · · · · · · · ·	10	5/11/2019	
1	Introduction, comparison of air standard			
	and actual	11	2/11/2010	
2	Time loss factor	15	9/11/2019	
			21/11/19	Lecture
3	Heat loss factor			intersperse
	The state of the s	2	2/11/2019	with
4	Exhaust blow down loss due to gas			discussion
	exchange process	2	2/11/2019	
5	Volumetric efficiency		5/11/2019	
6	Loss due to rubbing friction		6/11/2019	
7	Actual cycles of CI Engines		9/11/2019	
8	Fuel - air cycles of CI engines	2	9/11/2019	
UNIT-II IC	ENGINES			
~~~ ~ C '1'	the student the various engine systems along With	their	function and	d necessity
TB:".IC ENI	NES, V. GANESAN by 3 rd Edition, Tata McGr	aw I	Hill Educa	ition Priva
Limited public	eations		30/11/2019	
1	Classifications of IC engines	-	00/11/2019	
	OF IC and in a	-	02/12/2019	Lecture
18	working principles OF IC engines	-	02/12/2017	intersperse
	***		4/12/2019	with
19	Valve timing diagram		5/07/2018	discussion
20	Port time diagram		6/12/2019	
21	Engine fuel supply systems			
22	Engine carburetor systems		7/12/2019	
23	Engine ignition systems		9/12/2019	

24	Engine fuel injection systems	10/12/2019	
25	Cooling and lubrication	11/12/2019	
26	Principle of wankel engine	12/12/2019	
27	Principles of supercharging and turbo charging	13/12/2019	

#### **UNIT-III COMBUSTION IN SIAND CI ENGINES**

CO3: To learn about normal combustion phenomenon and knocking in S.I and C.I engines and the several operating parameters and their effect the smooth engine operation

TB:. IC ENINES, V. GANESAN by 3rd Edition, Tata McGraw Hill Education Private

Limited publications

Limited publica	tions		
30	Combustion in SI engines Normal combustion, and abnormal	14//12/2019 16/12/2019	
31	Importance of flame speed and effect of engine variables	17/12/2019	
32	Types of abnormal combustion, pre- ignition and knocking	18/12/2019	
33	Fuel requirements and fuel rating	19/12/2029	Lecture
34	Anti knock additives	20/12/2019	interspersed
35	Combustion chambers-requirements, types	26/12/2019	with discussions
36	Combustion in CI engines; four stages of combustion	27/12/2019	
37	Delay period and its importance	28/12/2019	
38	Effect of engine variables- diesel knock	2/1/2020	
39	Need for air movement, suction, compression and combustion induced turbulence	4/1/2020 6/1/2020	
40	Nozzles and fuel rating	8/1/2020	

### UNIT-4 MEASUREMENT, TESTING AND PERFORMANCE OF IC ENGINES

Co4. To make the students learn to perform testing on S.I and C.I Engines for the calculations of performance and emission parameters

TB:. IC ENINES, V.GANESAN by 3rdEdition, Tata McGraw Hill Education Private Limited publications

41	Parameters of performance- measurement of cylinder pressure, fuel	22/1/2020	Lecture interspersed with
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The Control of Street of Con-	consumption, air intake, brake power	27/1/2020	discussions
42	Exhaust gas composition	28/1/2020	
43	Determination of friction losses and indicated power	29/1/2020	
44	problems	30/1/2020	
45	problems	31/1/2020	
46	Performance test- heat balance sheet	2/2/2020	
CO5:To make sof reciprocating			and efficiency
	ENGINEERING by R.K.RAJPUT LAXMI PUBLICA		
47	Classification- positive displacement and roto dynamic machinery	4/2/2020	
48	Power producing and power absorbing machines, fan ,blower and compressor	5/2/2020	Lecture
49	Positive displacement and dynamics types	7/2/2020	interspersed with discussions
50	Reciprocating and rotary types	11/2./2020 12/2/2020	
51	Reciprocating compressors; principles of operation, work required, isothermal efficiency	13/2/2020 14/2/2020	
52	Volumetric efficiency and effect of clearance	18/2/2020 19/2/200	
53	Stage compression, under cooling of reciprocating compressors	21/2/2020	
54	Saving of work, minimum work condition for stage compression	23/2/2020 24/2/2020	
CO6:.: To mompressors	TARY COMPRESSORS  nake students learn mechanical details and to calculate part of the control of		iency of rotary
	compressors and to calculate power and efficiency of reciprocating compressors <b>Diesel cycles</b>	12/2/2020	Lecture
56 57	Dual combustion cycle, Sterling cycle Ericcson cycle and Lenoir cycle	12/3/2020 13/3/2020	interspersed

Bell-coleman cycle

Comparison of cycles
Refrigeration cycles -brayton cycle and rankine cycle and performance evaluation

16/3/2020

17/3/2020

18/3/2020

discussions



58

59

60

61	Vapour compression cycle, performance	19/3/2020	
62	Problems	20/3/2020	

Signature of HODZ Date: 22(3)2°

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## TENTATIVELESSON PLAN: R1631033

Course Title: T	HERMAL ENGINEERING-I	Cou	rse code:	R1631037
Section : Sec B			Page No	
Revision No : 00			Approve	d By: HOD
Tools: BLACK	BOARD,PPT			36.1.6
No. of Periods	TOPIC		Date	Mode of Delivery
UNIT-IACTUA	L CYCLES AND THEIR ANALYSYS			Denvery
	the student learn and understand the effects of various	losse	s that occu	r in the actual
engines operations		10330	s that occu	i iii tiic actuai
TB: "IC ENII	NES, V. GANESAN by 3rd Edition, Tata McGrav	w Hi	ll Educat	tion Private
Limited publica	tions.			
		18/	11/2019	
1	Introduction, comparison of air standard			
	and actual			
2	Time loss factor	19/	11/2019	
3	Heat loss factor	2	1/11/19	Lastuma
	Tieat 1033 factor	-	.,	Lecture interspersed
4	Exhaust blow down loss due to gas	22/	11/2019	with
	exchange process			discussions
5	Volumetric efficiency	22/	/11/2019	
6	Loss due to rubbing friction	25/	/11/2019	
7	Actual cycles of CI Engines	26/	/11/2019	
8	Fuel - air cycles of CI engines	29/	/11/2019	
UNIT-II IC F	ENGINES			
	rize the student the various engine systems along with the			
	ES,V.GANESANby 3 rd Edition, Tata McGrav	v Hi	ll Educat	tion Private
Limited publica				
1	Classifications of IC engines	30/	/11/2019	
	1' ' ' ' OFIG '	-	11.0.10.10	Lecture
18	working principles OF IC engines	02/	/12/2019	interspersed
19	Valve timing diagram	4/	12/2019	with
20	Port time diagram	5/	07/2018	discussions
21	Engine fuel supply systems	6/	12/2019	
22	Engine carburetor systems	7/	12/2019	
23	Engine ignition systems		12/2019	

24	Engine fuel injection systems	10/12/2019
25	Cooling and lubrication	11/12/2019
26	Principle of wankel engine	12/12/2019
27	Principles of supercharging and turbo charging	13/12/2019

#### UNIT-III COMBUSTION IN SIAND CI ENGINES

CO3: To learn about normal combustion phenomenon and knocking in S.I and C.I engines and the several operating parameters and their effect the smooth engine operation

TB:. IC ENINES, V.GANESANby 3rdEdition, Tata McGraw Hill Education Private

Limited publications

	G 1	4 4 1 14 4 14 0 4 0	
	Combustion in SI engines Normal combustion, and abnormal combustion	14//12/2019 16/12/2019	
31	Importance of flame speed and effect of engine variables	17/12/2019	
32	Types of abnormal combustion, pre- ignition and knocking	18/12/2019	
33	Fuel requirements and fuel rating	19/12/2029	Lecture
34	Anti knock additives	21/12/2019	interspersed
35	Combustion chambers-requirements, types	26/12/2019	with discussions
36	Combustion in CI engines; four stages of combustion	27/12/2019	
37	Delay period and its importance	28/12/2019	
38	Effect of engine variables- diesel knock	2/1/2020	
39	Need for air movement, suction, compression and combustion induced turbulence	4/1/2020 6/1/2020	
40	Nozzles and fuel rating	8/1/2020	

## UNIT-4 MEASUREMENT, TESTING AND PERFORMANCE OF IC ENGINES

Co4. To make the students learn to perform testing on S.I and C.I Engines for the calculations of performance and emission parameters

TB:. IC ENINES, V.GANESANby 3rdEdition, Tata McGraw Hill Education Private Limited publications

41	Parameters of performance- measurement of cylinder pressure, fuel	24/1/2020	Lecture interspersed with
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DISTRIBUTED SEE SELECTION OF THE CONTROL OF THE CON	consumption, air intake, brake power	24/1/2020	discussions	A ST Formation
42	Exhaust gas composition	28/1/2020		
43	Determination of friction losses and indicated power	29/1/2020		
44	problems	30/1/2020		
45	problems	31/1/2020		
46	Performance test- heat balance sheet	2/2/2020		
	OMPRESSORS-RECIPROCATING			
of reciprocating co	idents learn about different types of compressors and to ompressors NGINEERING by R.K.RAJPUT LAXMI PUBLICA		and efficiency	
47	Classification- positive displacement and roto dynamic machinery	4/2/2020		
48	Power producing and power absorbing machines, fan ,blower and compressor	5/2/2020	Lecture	
49	Positive displacement and dynamics types	7/2/2020	interspersed with discussions	
50	Reciprocating and rotary types	11/2./2020 13/2/2020		
51	Reciprocating compressors; principles of operation, work required, isothermal efficiency	14/2/2020 15/2/2020		
52	Volumetric efficiency and effect of clearance	18/2/2020 19/2/200		
53	Stage compression, under cooling of reciprocating compressors	21/2/2020		
54	Saving of work, minimum work condition for stage compression	23/2/2020 24/2/2020		
	ARY COMPRESSORS			
compressors	students learn mechanical details and to calculate po ENGINEERING by R.K.RAJPUT LAXMI PUBLIC		ency of rotary	
55	Otto To make students learn about different types of compressors and to calculate power and efficiency of reciprocating compressors Diesel cycles	11/3/2020	/ =	
56	Dual combustion cycle, Sterling cycle	12/3/2020	Lecture	
57	Ericcson cycle and Lenoir cycle	13/3/2020	interspersed with	
58	Comparison of cycles	16/3/2020	discussions	
59	Refrigeration cycles -brayton cycle and rankine cycle and performance evaluation	17/3/2020	413043310113	
60	Bell-coleman cycle	18/3/2020		

61	Vapour compression cycle, performance evaluation	19/3/2020	
62	Problems	20/3/2020	

Signature of HOD
Date:

PRINCIPAL SRK Institute of Technology ENIKEPADU, VIJAYAWADA-521 108

# TENTATIVE LESSON PLAN: R1622033 PRODUCTION TECHNOLOGY

**Course Title: PRODUCTION TECHNOLOGY** 

Section: A Date: 16/11/2019

Revision No: 00 Prepared By: Mr. D ROGNATHA RAO Approved By: HOD

Tools: Black board, PPTs

No. of Periods TOPIC Date Mode of Delivery

#### UNIT-I CASTING

CO1:To impart basic knowledge and understanding about the primary manufacturing processes.

#### TB:

- 1. Manufacturing Processes for Engineering Materials Kalpakjain S and Steven R Schmid- Pearson Publ, 5th Edn.
- 2. Manufacturing Technology -Vol I- P.N. Rao- TMH

Steps involved in making a casting	19/11/2019	
Advantage of casting and its applications.	20/11/2019	
Patterns and Pattern making	21/11/2019	
Pattern making continued	22/11/2019	
Types of patterns	23/11/2019	
Types of patterns continued	26/11/2019	Lecture interspersed with
Materials used for patterns	27/11/2019	
Materials used for patterns continued	28/11/2019	discussions
pattern allowances and their construction	30/11/2019	
pattern construction continued	3/12/2019	
Principles of Gating	04/12/2019	
Gating ratio and design of Gating systems	05/12/2019	
	Advantage of casting and its applications.  Patterns and Pattern making  Pattern making continued  Types of patterns  Types of patterns continued  Materials used for patterns  Materials used for patterns continued  pattern allowances and their construction  pattern construction continued  Principles of Gating	Advantage of casting and its applications.  Patterns and Pattern making  Pattern making continued  Types of patterns  Types of patterns continued  22/11/2019  Types of patterns continued  23/11/2019  Materials used for patterns  27/11/2019  Materials used for patterns continued  pattern allowances and their construction  pattern construction continued  Principles of Gating  20/11/2019  23/11/2019  23/11/2019  24/11/2019

## UNIT-II Casting techniques and Melting

**CO2:** To impart basic knowledge and understanding about the primary manufacturing processes such as casting and Melting.

#### TB:

 Manufacturing Processes for Engineering Materials - Kalpakjain S and Steven R Schmid- Pearson Publ, 5th Edn.

	ufacturing Technology -Vol I- P.N. Rao- TMH		
11	Methods of melting	05/12/2019	
12	Types of furnaces	06/12/2019	
13	Furnaces Continuation	6/12/2019	
14	Solidification of metals	09/12/2019	/
15	Solidification of pure metals and alloys	10/12/2019	
16	short & long freezing range alloys	12/12/2019	
17	Risers – Types	13/12/2019	
18	function and design	13/12/2019	
19	Design of Risers	16/12/2019	Lecture
20	casting design considerations	17/12/2019	with
21	Basic Principles of Centrifugal casting	19/12/2019	discussions
22	Applications of Centrifugal Casting	20/12/2019	
23	Die casting and Investment casting	20/12/2019	

### **UNIT-III** Welding

CO3: To impart basic knowledge and understanding about the primary manufacturing processes joining.

#### TB:

- 1. Manufacturing Processes for Engineering Materials Kalpakjain S and Steven R Schmid- Pearson Publ, 5th Edn.
- 2. Manufacturing Technology -Vol I- P.N. Rao- TMH

24	Classification of welding processes		
		23/12/2019	
25	types of welded joints and their characteristics		
		24/12/2019	
26	types of welded joints and their characteristics		
		26/12/2019	
27	Gas welding		
		27/12/2020	
28	Different types of flames and uses, Oxy –		Lecture
	Acetylene Gas cutting.	25/12/222	interspersed
		27/12/2020	with
29	Basic principles of Arc welding		discussions
		30/12/2020	

30	Submerged arc welding	
		31/12/2020
31	Inert Gas welding- TIG.	06/01/2020
32	Inert Gas welding - MIG welding	
		07/01/2020

### **UNIT-IV** Joining and Defects

CO4: To impart basic knowledge and understanding about the joining.

#### TB:

1. Manufacturing Processes for Engineering Materials - Kalpakjain S and Steven R Schmid- Pearson Publ, 5th Edn.

2. Manufacturing Technology -Vol I- P.N. Rao- TMH

	and turning reciniology - voi i- i.i. Rao- IVIII		
33	Resistance welding	09/01/2020	
34	Solid state welding processes- Friction welding	03/01/2020	+
	sond state wording processes- i fiction wording	10/01/2020	
35	Friction stir welding, Forge welding	10/01/2020	
	5,gg	10/01/2020	
36	Explosive welding; Thermit welding,		
		20/01/2020	
37	Plasma welding, Laser welding,		Lecture
20		21/01/2020	interspersed
38	electron beam welding,	20/04/2000	with
39		23/01/2020	discussions
39	Soldering & Brazing	24/01/2010	discussions
40	Soldering & Brazing	24/01/2019	
40	Soldering & Brazing	24/01/2020	
41	Heat affected zones in welding	24/01/2020	
	Treat arrected zones in welding	27/01/2020	
42	pre & post heating zones	2770172020	
	3	28/01/2020	
43	Weldability of metals		
		30/01/2020	
44	Welding defects		
		31/01/2020	
45	causes and remedies		
16		31/01/2020	
46	destructive testing of welds	00/00/000	
47		03/02/2020	
47	non-destructive testing of welds	04/02/2020	
48	Design of welded joints	04/02/2020	
	2 co.g. or worded joints	06/02/2020	
		00/02/2020	

#### **UNIT-V**

CO5: To impart knowledge on sheet metal forming and powder metallurgy and their relevance in current manufacturing

#### TB:

- 1. Manufacturing Processes for Engineering Materials Kalpakjain S and Steven R Schmid- Pearson Publ, 5th Edn.
- 2. Manufacturing Technology -Vol I- P.N. Rao- TMH

Plastic deformation in metals and alloys,	08/12/2020	
Hot working and Cold working,	08/02/2020	
Strain hardening and Annealing	10/02/2020	
Bulk forming processes	11/02/2020	
Forging - Types Forging	13/02/2020	
Smith forging, Drop Forging	15/02/2020	Lecture interspersed with discussions
Roll forging, Forging hammers, Rotary forging, forging defects	15/02/2020	
Rolling – fundamentals, types of rolling mills and products,	17/02/2020	
Forces in rolling and power requirements.	18/02/2020	
Extrusion and its characteristics. Types of extrusion, Impact extrusion, Hydrostatic extrusion.	20/02/2020	
Wire drawing and Tube drawing. Introduction to powder metallurgy –	22/02/2020	
compaction and sintering, advantages and applications	22/02/2020	
	Hot working and Cold working,  Strain hardening and Annealing  Bulk forming processes  Forging - Types Forging  Smith forging, Drop Forging  Roll forging, Forging hammers, Rotary forging, forging defects  Rolling – fundamentals, types of rolling mills and products,  Forces in rolling and power requirements.  Extrusion and its characteristics. Types of extrusion, Impact extrusion, Hydrostatic extrusion.  Wire drawing and Tube drawing. Introduction to powder metallurgy –  compaction and sintering, advantages and	Hot working and Cold working,  Strain hardening and Annealing  Bulk forming processes  11/02/2020  Forging - Types Forging  Smith forging, Drop Forging  Roll forging, Forging hammers, Rotary forging, forging defects  Rolling – fundamentals, types of rolling mills and products,  Forces in rolling and power requirements.  Extrusion and its characteristics. Types of extrusion, Impact extrusion, Hydrostatic extrusion.  Wire drawing and Tube drawing. Introduction to powder metallurgy –  compaction and sintering, advantages and

#### UNIT-VI Sheet metal forming

CO6: To impart knowledge on sheet metal forming and their relevance in current manufacturing

#### TB:

- 1. Manufacturing Processes for Engineering Materials Kalpakjain S and Steven R Schmid- Pearson Publ, 5th Edn.
- 2. Manufacturing Technology -Vol I- P.N. Rao- TMH

61	Sheet metal forming - Blanking and piercing,	24/02/2020
62	Forces and power requirement in these operations	25/02/2020
63	Deep drawing, Stretch forming, Bending,	27/02/2020

64	Spring back and its remedies, Coining, Spinning,	29/02/2020	
65	Types of presses and press tools. High energy rate forming processes:	29/02/2020	Lecture interspersed
66	Principles of explosive forming, electromagnetic forming,	02/03/2020	with discussions
67	Electro hydraulic forming, rubber pad forming, advantages and limitations.	03/03/2020	
68	Processing of Plastics: Types of Plastics, Properties,	05/03/2020	
69	Applications and their processing methods,	06/03/2020	
70	Blow and Injection moulding	09/03/2020	
71	Revision	12/03/2020	
72	Revision	13/03/2020	
73	Revision	16/03/2020	
73	Revision	17/03/2020	

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SRK Institute of Technology ENIKEPADU. VIJAYAWADA-521 108

# TENTATIVE LESSON PLAN: R1622033 PRODUCTION TECHNOLOGY

Section:B	Date:16	/11/2019	
Revision No: 00	Prepared By: Mr. D ROGNA	Ir. D ROGNATHA RAO Approved By: H	
Tools: Black boar	d, PPTs		
No. of Periods	TOPIC	Dat	Mode of Delivery

#### UNIT-I CASTING

CO1:To impart basic knowledge and understanding about the primary manufacturing processes.

#### TB:

- 1. Manufacturing Processes for Engineering Materials Kalpakjain S and Steven R Schmid- Pearson Publ, 5th Edn.
- 2. Manufacturing Technology -Vol I- P.N. Rao- TMH

1	Steps involved in making a casting	18/11/2019	
2	Advantage of casting and its applications.	19/11/2019	
3	Patterns and Pattern making	21/11/2019	
4	Pattern making continued	22/11/2019	
5	Types of patterns	22/11/2019	
6	Types of patterns continued	25/11/2019	Lecture
7	Materials used for patterns	26/11/2019	interspersed with
8	Materials used for patterns continued	28/11/2019	discussions
9	pattern allowances and their construction	29/11/2019	
10	pattern construction continued	29/11/2019	
11	Principles of Gating	02/12/2019	
12	Gating ratio and design of Gating systems	03/12/2019	

#### UNIT-II Casting techniques and Melting

**CO2:** To impart basic knowledge and understanding about the primary manufacturing processes such as casting and Melting.

#### TB:

 Manufacturing Processes for Engineering Materials - Kalpakjain S and Steven R Schmid- Pearson Publ, 5th Edn.

11	Methods of melting	06/12/2019	
12	Types of furnaces	07/12/2019	
13	Furnaces Continuation	10/12/2019	
14	Solidification of metals	11/12/2019	/
15	Solidification of pure metals and alloys	13/12/2019	
16	short & long freezing range alloys	14/12/2019	
17	Risers – Types	17/12/2019	
18	function and design	18/12/2019	
19	Design of Risers	19/12/2019	Lecture
20	casting design considerations	20/12/2019	with
21	Basic Principles of Centrifugal casting	21/12/2019	discussion
22	Applications of Centrifugal Casting		
23	Die casting and Investment casting	24/12/2019	

### **UNIT-III** Welding

CO3: To impart basic knowledge and understanding about the primary manufacturing processes joining.

#### TB:

- 1. Manufacturing Processes for Engineering Materials Kalpakjain S and Steven R Schmid- Pearson Publ, 5th Edn.
- 2. Manufacturing Technology -Vol I- P.N. Rao- TMH

24	Classification of welding processes		
25		27/12/2019	
	types of welded joints and their characteristics	28/12/2019	
26	types of welded joints and their characteristics	20/12/2019	
27	Gas welding	31/12/2019	
28	Different types of flam	02/01/2020	
	Different types of flames and uses, Oxy – Acetylene Gas cutting.		Lecture interspersed
29		03/01/2020	with
	Basic principles of Arc welding	04/01/2020	discussions

30	Submerged arc welding	
21		07/01/2020
31	Inert Gas welding- TIG.	08/01/2020
32	Inert Gas welding - MIG welding	06/01/2020
LIV Io	ining and Defects	09/01/2020

CO4: To impart basic knowledge and understanding about the joining.

#### TB:

1. Manufacturing Processes for Engineering Materials - Kalpakjain S and Steven R Schmid-Pearson Publ, 5th Edn.

Manufacturing Technology -Vol I- P.N. Rao- TMH

2. Ma	nufacturing Technology -Vol I- P.N. Rao- TMH		
33	Resistance welding		
34	Solid state welding processes- Friction welding	10/01/2020	
35	Friction stir welding, Forge welding	21/01/2020	
36	Explosive welding; Thermit welding,	22/01/2020	
37	Plasma welding, Laser welding,	23/01/2020	
38	electron beam welding,	24/01/2020	Lecture
39	Soldering & Brazing	25/01/2020	intersperse with
40	Soldering & Brazing	28/01/2019	discussions
41	Heat affected zones in welding	29/01/2020	
42	pre & post heating zones	30/01/2020	
43	Weldability of metals	31/01/2020	
44	Welding defects	01/02/2020	
45	causes and remedies	04/02/2020	
46	destructive testing of welds	05/02/2020	
47			
	Design - C	7/02/2020 7/02/2020	
IT-V			
5: To impart ki	nowledge on sheet metal forming and	8/02/2020	

CO5: To impart knowledge on sheet metal forming and powder metallurgy and their relevance in current manufacturing

#### TB:

- 1. Manufacturing Processes for Engineering Materials Kalpakjain S and Steven R Schmid- Pearson Publ, 5th Edn.
- 2. Manufacturing Technology -Vol I- P.N. Rao- TMH

49	Plastic deformation in metals and alloys,	11/12/2020	
50	Hot working and Cold working,	12/02/2020	
51	Strain hardening and Annealing	13/02/2020	
52	Bulk forming processes	14/02/2020	
53	Forging - Types Forging	15/02/2020	
54	Smith forging, Drop Forging	18/02/2020	
55	Roll forging, Forging hammers, Rotary forging, forging defects	19/02/2020	Lecture
56	Rolling – fundamentals, types of rolling mills and products,	20/02/2020	interspersed with
57	Forces in rolling and power requirements.	22/02/2020	discussions
58	Extrusion and its characteristics. Types of extrusion, Impact extrusion, Hydrostatic extrusion.	25/02/2020	
59	Wire drawing and Tube drawing. Introduction to powder metallurgy –	26/02/2020	
60	compaction and sintering, advantages and applications	27/02/2020	

#### UNIT-VI Sheet metal forming

CO6: To impart knowledge on sheet metal forming and their relevance in current manufacturing

#### TB:

- 1. Manufacturing Processes for Engineering Materials Kalpakjain S and Steven R Schmid- Pearson Publ, 5th Edn.
- 2. Manufacturing Technology -Vol I- P.N. Rao- TMH

61	Sheet metal forming - Blanking and piercing,	28/02/2020	
62	Forces and power requirement in these operations	29/02/2020	
63	Deep drawing, Stretch forming, Bending,	03/03/2020	

64	Spring back and its remedies, Coining, Spinning,	04/03/2020	
65	Types of presses and press tools. High energy rate forming processes:	05/03/2020	Lecture interspersed
66	Principles of explosive forming, electromagnetic forming,	06/03/2020	with discussions
67	Electro hydraulic forming, rubber pad forming, advantages and limitations.	07/03/2020	
68	Processing of Plastics: Types of Plastics, Properties,	11/03/2020	
69	Applications and their processing methods,	12/03/2020	
70	Blow and Injection moulding	13/03/2020	
71	Revision	14/03/2020	
72	Revision	17/03/2020	
73	Revision	18/03/2020	

Signature of Faculty

PRINCIPAL

SRK Institute of Technology ENIKEPADU, VIJAYAWADA-521 108

## TENTATIVE LESSON PLAN: R1622034

	: DESIGN OF MACHINE MEMBERS-I c I Date :18/11/2019	Course co	ode: R1622034
<b>Revision No</b>	: 00 Prepared Pro D. VANS	Page	e No: 01 to 03
Tools: BLAC	: 00 Prepared By: R. KARUN KUMAR CK BOARD, PPTs	App	roved By: HC
No. of Period	TOPIC	Date	Mode o
UNIT-I INT	RODUCTION		Deliver
outtability of a	Apply the design procedure to engineering sees in the machine components subjected to var material for an engineering application.  OF MACHINE ELEMENTS", V.B.BHANDARI, ate Limited publications.	ious static los	de failures
1	General considerations in the design of Engineering Materials	18/11/201	
2	Mechanical properties ,Manufacturing consideration in design	19/11/2019	9
3	Tolerances and fits		
4	BIS codes of steels.	20/11/2019	
	Stresses In Machine M.	21/11/2019	
5			T
6	combined stresses	22/11/2019	- Lecture
6 7	Stresses In Machine Members, Simple stresses combined stresses —torsional and bending stresses Impact stresses — stress —torsional and bending stresses	22/11/2019	interspersed
6 7 8	Impact stresses — stress stress at the stresses	22/11/2019 25/11/2019	interspersed with
6 7	Impact stresses — stress strain relation  various theories of failure	22/11/2019 25/11/2019 26/11/2019	interspersed with discussions
6 7 8 9	Impact stresses — stress stress at the stresses	22/11/2019 25/11/2019 26/11/2019 27/11/2019	interspersed with discussions
6 7 8 9	Impact stresses — stress strain relation various theories of failure Factor of safety, design for strength and rigidity preferred numbers, the correct of the strength and rigidity	22/11/2019 25/11/2019 26/11/2019	interspersed with discussions
6 7 8 9	Impact stresses — stress strain relation various theories of failure Factor of safety, design for strength and rigidity preferred numbers, the correct of the strength and rigidity	22/11/2019 25/11/2019 26/11/2019 27/11/2019 29/11/2019	interspersed with discussions
6 7 8 9 10 11	Impact stresses — stress strain relation various theories of failure Factor of safety, design for strength and rigidity preferred numbers, the concept of stiffness in the	22/11/2019 25/11/2019 26/11/2019 27/11/2019 29/11/2019 30/11/2019	interspersed with discussions
6 7 8 9 10 11 12	Impact stresses — stress strain relation various theories of failure Factor of safety, design for strength and rigidity preferred numbers, the correct of the strength and rigidity	22/11/2019 25/11/2019 26/11/2019 27/11/2019 29/11/2019	interspersed with discussions

### **UNIT-II** STRENGTH OF MACHINE ELEMENTS

CO2: Able to select the suitable materials and significance of tolerances and fits in cr design applications and also to Calculate dynamic stresses in the machine compo

TB: "DESIGN OF MACHINE ELEMENTS", V.B.BHANDARI, 3rdEdition, Tata McGra **Education Private Limited publications.** 

14	Stress concentration	04/12/2019	
15	theoretical stress concentration factor	06/12/2019	
16	fatigue stress concentration factor notch sensitivity	07/12/2019	
17	design for fluctuating stresses	07/12/2019	
18	endurance limit	09/12/2019	Lecture
19	Problems on Stress concentration factor	10/12/2019	interspersed with
20	Problems on endurance limit	11/12/2019	discussions
21	S-N curve, problems on S-N curve	11/12/2019	discussions
22	Goodman's line, problems	13/12/2019	
23	Soderberg's line, problems	16/12/2019	
24	Problems on Goodman's line	17/12/2019	
25	Problems on Goodman's line	18/12/2019	

#### UNIT-III Riveted and welded joints

CO3: Able to Design riveted, welded, bolted joints subjected to static loads and their failure modes.

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

**Education Private Limited publications.** 

23/12/2019 24/12/2019 27/12/2019 27/12/2019	Lecture interspersed with
27/12/2019 27/12/2019	interspersed
27/12/2019	interspersed
	•
	3371th
30/12/2019	
31/12/2020	discussions
06/01/2020	
06/01/2020	
07/01/2020	
(	06/01/2020 06/01/2020

#### UNIT-IV KEYS, COTTERS AND KNUCKLE JOINTS

CO4:Able to Design keys, cotters and knuckle joints subjected to static loads and their failure modes.

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

**Education Private Limited publications.** 

36	Introduction, Design of keys	27/01/2020	Lecture
			interspersed
37	Introduction, stresses in keys	28/01/2020	with
38	cotter joints-spigot and socket	29/01/2020	discussions
39	sleeve and cotter, jib and cotter joints	29/01/2020	
40	knuckle joints, problems	31/01/2020	
41	Design of solid and hollow shafts for strength and rigidity	03/02/2020	
42	design of shafts for combined bending and axial	04/02/2020	

	loads	
13	shaft sizes— BIS code	05/02/2020
4	Use of internal and external circlips	07/02/2020
-5	gaskets and seals, problems	10/02/2020
6	problems	11/02/2020

#### UNIT-V SHAFT COUPLING

CO5:Able to Design the machine shafts and suggest suitable coupling for a given application.

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

**Education Private Limited publications.** 

47	Rigid couplings	12/02/2020	
48	muff, split muff couplings	14/02/2020	
49	flange couplings	15/02/2020	
50	flexible couplings	17/02/2020	Lecture
51	flange couplings (modified)	24/02/2020	interspersed
52	Problems on rigid couplings	25/02/2020	with
53	Problems on flange couplings	26/02/2020	discussions
54	Problems on flexible couplings	28/02/2020	

#### UNIT-VIMECHANICAL SPRINGS

CO6:Able to calculate stresses in different types of springs subjected to static loads and dynamic loads.

TB"DESIGN OF MACHINE ELEMENTS", V.B.BHANDARI, 3rd Edition, Tata McGraw Hill

**Education Private Limited publications.** 

	The Edition of the Ed				
55	Stresses and deflections of helical springs	29/02/2020			
56	Extension springs	29/02/2020			
57	compression springs	02/03/2020			
58	springs for fatigue loading	03/03/2020			
59	energy storage capacity	06/03/2020			
60	helical torsion springs	07/03/2020			
61	co-axial springs	10/03/2020	Lecture		
62	leaf springs	11/03/2020	interspersed		
63	Problems on springs	13/03/2020	with		
64	Problems on helical torsion springs	14/03/2020	discussions		
65	Problems on leaf springs	16/03/2020			
66	Problems on compression springs	16/03/2020			
67	Problems on springs	17/03/2020			
68	previous paper	18/03/2020			
69	Revision	18/03/2020			
70	Revision	19/03/2020			
Signature of	Signature of Faculty  Signature of HOD				

SRK Institute of Technology ENIKEPADU, VIJAYAWADA-521 108

## TENTATIVE LESSON PLAN: R1622034

Section : S	Sec II	N OF MACHINE MEMBERS-I	Co	urse co	de: R1622034
Revision No	Dage M		No: 01 to 03		
Tools: BLA	CK BOA	Prepared By: R. KARUN KUMAR		Appr	oved By: HO
		ND, 1118			
No. of Perio		TOPIC		Date	Mode of Delivery
CO1: Able 1	o Apply	ION 4h. I .			Denvery
different str	occos in A	the design procedure to engineering the machine components subjected to	g proble	ms. an	d to Calcula
suitability of	a mataria	he machine components subjected to v I for an engineering application	arious sta	atic load	ds. failures on
TB: "DESIG	N OF M	I for an engineering application.			as, randres an
Education Pr	ivate Limit	ACHINE ELEMENTS", V.B.BHANDAR ted publications.	I, 3rdEditi	ion, Tat	a McGraw Hi
	Trace Dilli	ted publications.			tedraw III
1	Gener	al in the design of Engineering Materials	10	11/201	
		Same in the control of the control o	18/	11/2019	)
2	Mech	anical properties ,Manufacturing			
	consid	leration in design	19/	11/2019	
		in design			
3	Tolera	nces and fits			
4	BIS co	des of steels		1/2019	
5	Stresse	es In Machine Members Simple	21/1	1/2019	Lecture
6	Comon	cu stresses —torsional and bending stress		1/2019	interspersed
7 8	- Impact	Sucsses — Stress strain relation		1/2019	with
9	various	theories of failure		1/2019	discussions
,	Factor	of safety, design for strength and rigidity	28/1	1/2019 1/2019	
10			20/1	1/2019	
11	The con	d numbers, the concept of stiffness	29/1	1/2019	
12	Static et	cept of stiffness in tension, bending		1/2019	
13	Problem	rength design based on fracture toughness		1/2019	
		s on theories of failures		2/2019	
IT-II	STRENG	GTH OF MACHINE ELEMENTS		1185	
2: Able to s	elect the	Suitable materials and in the suitable materials			702
gn applicat	tions and	STH OF MACHINE ELEMENTS suitable materials and significance of talso to Calculate dynamic stresses in	olerances	and fi	ts in critical
jected to var	riable load	suitable materials and significance of t also to Calculate dynamic stresses in ls.	the ma	chine	components
DESIGN O	F MACH	is.  INE ELEMENTS", V.B.BHANDARI, 3 ^o publications.	dD		1 - 3.01113
14	e Limited	THE ELEMENTS", V.B.BHANDARI, 30 publications.	"Edition,	Tata M	IcGraw Hill
14	Stress co	ncentration			
	than	1	1 (12/10/	2010	
14 15 16	theoretica	al stress concentration factor ress concentration factor notch	03/12/2	2019	Lecture

	sensitivity		with
17	design for fluctuating stresses	06/12/2019	discussions
18	endurance limit	07/12/2019	
19	Problems on Stress concentration factor	07/12/2019	
20	Problems on endurance limit	09/12/2019	
21	S-N curve, problems on S-N curve	10/12/2019	
22	Goodman's line, problems	13/12/2019	
23	Soderberg's line, problems	16/12/2019	
24	Problems on Goodman's line	17/12/2019	
25	Problems on Goodman's line	20/12/2019	

UNIT-III Riveted and welded joints

CO3:Able to Design riveted, welded, bolted joints subjected to static loads and their failure modes.

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

26	Riveted and welded joints- introduction	20/12/2012	
27	Design of joins	20/12/2019	
28	Design of Johns	23/12/2019	
	eccentric loaded riveted and welded joints	24/12/2019	
29	Bolted joints- design of bolts with pre-stresses	27/12/2019	
30	eccentric loaded welded joints	27/12/2019	
31	Design of joins under eccentric loads	30/12/2019	Lecture
32	Locking devices – both of uniform strength	31/12/2020	interspersed
33	Different seals	02/01/2020	with
34	Problems on riveted joints	03/01/2020	discussions
35	Problems on welded joints	03/01/2020	
36	Problems on bolted joints		
37	Problems on eccentric loading	04/01/2020	
38		06/01/2020	
	problems	07/01/2020	
TINITED YES			

## KEYS, COTTERS AND KNUCKLE JOINTS

CO4: Able to Design keys, cotters and knuckle joints subjected to static loads and their failure modes.

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

**Education Private Limited publications.** 

39	Introduction, Design of keys	27/01/2020	Lecture
40	Introduction, stresses in keys, cotter joints-spigot and socket	28/01/2020	interspersed with
41	sleeve and cotter, jib and cotter joints	20/01/2020	discussions
42	knuckle joints, problems	29/01/2020 31/01/2020	
43	Design of solid and hollow shafts for strength and rigidity	03/02/2020	
44	design of shafts for combined bending and axial	04/02/2020	

45 shaft sizes — BIS code	05/02/2020
	05/02/2020
Use of internal and external circlips	07/02/2020
gaskets and seals, problems	07/02/2020
48 problems	10/02/2020

### UNIT-V SHAFT COUPLING

CO5:Able to Design the machine shafts and suggest suitable coupling for a given application.

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

**Education Private Limited publications.** 

49	Rigid couplings	11/02/2020	
50	muff, split muff couplings	14/02/2020	
51	flange couplings	14/02/2020	
52	flexible couplings	15/02/2020	Lecture
53	flange couplings (modified)	17/02/2020	interspersed
54	Problems on rigid couplings	24/02/2020	with
55	Problems on muff, split muff couplings	25/02/2020	discussions
56	Problems on flange couplings	26/02/2020	
57	Problems on flexible couplings	27/02/2020	

#### UNIT-VIMECHANICAL SPRINGS

CO6:Able to Calculate stresses in different types of springs subjected to static loads and dynamic loads.

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

**Education Private Limited publications.** 

58	Stresses and deflections of helical springs	28/02/2020	Lecture
59	Extension springs	28/02/2020	interspersed
60	compression springs	02/03/2020	with
61	springs for fatigue loading	03/03/2020	discussions
62	energy storage capacity	06/03/2020	
63	helical torsion springs	06/03/2020	
64	co-axial springs	09/03/2020	
65	leaf springs	10/03/2020	
66	Problems on springs	11/03/2020	
67	Problems on helical torsion springs	13/03/2020	
68	Problems on leaf springs	14/03/2020	
69	Problems on compression springs	16/03/2020	
70	Problems on springs	16/03/2020	
71	previous papers, previous papers	17/03/2020	
72	Revision	17/03/2020	

73	Revision		18/03/2020
74	Revision		19/03/2020
Signature of	Faculty		Signature of HOD
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		PRINCIPAL	

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SRK Institute of Technology ENIKEPADU, VIJAYAWADA-521 108

Course Title: M	Course code: 1	Course code: R1622035		
Section: Sec I	Date: 18-11-2019	Page No:	01	
Revision No: 00	Prepared By: G.DURGA PRASAD	Approve	d By: HOD	
Tools: BLACK	BOARD AND PPTS.			
No. of Periods	TOPIC	Date	Mode of Delivery	
	ing of Machine Elements and simple parts. le basic understanding and drawing practice of	fractions joint sir	nnla	
mechanical par		various joint, sii	пріс	
	rs. Drawing" –K.L.Narayana, P.Kannaiah & K. V	enkata Reddy		
1b. Macmine	UNIT-I- DRAWING OF MACHINE	chkata Reddy.		
	COMPONENTS			
1	Popular forms of Screw threads	18-112019		
2	Bolts, nuts	20-11-2019	-	
3	Stud bolts	25-11-2019		
4	Tap bolts	27-11-2019	Lecture interspersed with	
5	Set screws	02-12-2019		
6	Keys	04-12-2019		
7	Cotter joints	09-12-2019		
8	Knuckle joint.	11-12-2019	discussions	
9	Shaft coupling	16-12-2019		
10	Riveted joints for plates	16-12-2019		
11	Spigot and socket pipe joint.	18-12-2019		
12	Journal	23-12-2019		
13	Pivot and collar	30-12-2019		
14	Footstep bearings	06-01-2019		
UNIT-II	ASSEMBLY DRAWINGS			
	ent will be able to draw the assembly from the	individual part d	rawing.	
TB: "Machine	Drawing" –K.L.Narayana, P.Kannaiah & K. V	enkata Reddy.		
	UNIT-II -ASSEMBLY DRAWINGS			
15	Engine parts –Gear pump	27-01-2020		
16	Fuel pump	29-01-2020		
17	Petrol Engine connecting rod	03-02-2020		
18	Piston assembly	05-02-2020	Lecture	
19	Other machine parts - Screws jacks	12-02-2020	interspersed	
20	Machine Vices	17-02-2020	with	
21	Plummer block	24-02-2020	discussions	
22	Tailstock	26-02-2020		
23	Valves: spring loaded safety valve	02-03-2020		
24	Feed check valve	03-03-2020		
25	Air cock	09-03-2020		
		10 00 0000		

Signature of Faculty

Control valves

SRK Institute of Technology ENIKEPADU, VIJAYAWADA-521 108 10-03-2020

	<b>TENTATIVE PLAN: R1622035</b>		
	ACHINE DRAWING	Course code: R	A STATE OF THE STA
Section: Sec II	Date: 18-11-2019	Page No:	
Revision No: 00	Prepared By:G.DURGA PRASAD	Approved	By: HOD
Tools: BLACK B	SOARD AND PPTS.		77.1.0
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I Drawin	ng of Machine Elements and simpleparts.		
	asic understanding and drawing practice of various jo		parts.
TB: "Machine D	rawing" –K.L.Narayana, P.Kannaiah& K. Venka	ta Reddy.	
	UNIT-I- DRAWING OF MACHINE		
	COMPONENTS	20 11 2010	
1	Popular forms of Screw threads	20-11-2019	
2	Bolts, nuts	25-11-2019	
3	Stud bolts	28-11-2019	
4	Tap bolts	03-12-2019	
5	Setscrews	05-12-2019	Lecture
6	Keys	10-12-2019	interspersed
7	Cotter joints	12-12-2019	with
8	Knucklejoint.	17-12-2019	discussions
9	Shaft coupling	19-12-2019	
10	Riveted joints forplates	24-12-2019	
11	Spigot and socket pipe joint.	26-12-2019	
12	Journal	31-12-2019	
13	Pivot and collar	02-01-2020	
14	Footstepbearings	07-01-2020	
	IBLY DRAWINGS		
	nt will be able to draw the assembly from the indiv		
TB: "Machine D	rawing" -K.L.Narayana, P.Kannaiah& K. Venka	ta Reddy.	
	UNIT-II -ASSEMBLY DRAWINGS	00.01.2020	
15	Engine parts –Gear pump	09-01-2020	
16	Fuel pump	28-01-2020	
17	Petrol Engine connecting rod	30-02-2020	
18	Pistonassembly	04-02-2020	
19	Other machine parts - Screws jacks	06-02-2020	Lecture
20	Machine Vices	11-02-2020	interspersed
21	Plummer block	13-02-2020	with
22	Tailstock	18-02-2020	discussions
23	Valves: spring loaded safety valve	25-02-2020	
24	Feed check valve	27-02-2020	
25	Air cock	03-03-2020	
26	Controlvalves	05-03-2020	
27	Machine Vices	10-03-2020	
28	Tailstock	12-03-2020	
29	Revision	17-03-2020	
30	Revision	19-03-2020	

## **TENTATIVE LESSON PLAN: R1622036** INDUSTRIAL ENGINEERING AND MANAGEMENT

Course Title: INDUS	TRIAL ENGINEERING & MANAGEMENT	
Section : Sec A	Date: 09/11/2019	Page No: 01 of 05
Revision No: 00	Prepared By: P. TARUN NAGA VENKATESH	Approved By: HOD
Tools: Black board		

No. of Periods	TOPIC	Date	Mode of
			Delivery

## UNIT-I Introduction

CO1: To convey core information and skill sets required in the industrial management and engineering professions, such as the ability to apply basic mathematics, probability, and statistics understanding, as well as domain knowledge of industrial engineering and management. TR: Industrial Engineering and Management by

12. Industr	16. Huddstriat Engineering and Wanagement by O. P. Khanna, Khanna Publishers.			
1	Definition of Industrial Engineering, Development	18-11-2019		
	1 1			

1	Definition of industrial Engineering, Development	18-11-2019	
• 2	Applications, Role of an Industrial Engineer	19-11-2019	
3	Differences Between Production Management And Industrial Engineering	24-11-2019	
4	Quantitative Tools of IE and Productivity Measurement	25-11-2019	Lecture
5	Concepts Of Management	30-11-2019	interspersed with
6	Importance Of Management	30-11-2019	discussions
7	Functions Of Management	02-12-2019	
8	Scientific Management	02-12-2019	
9	Taylor's Principles	03-12-2019	
10	Theory X And Theory Y	04-12-2019	
11	Fayol's Principles Of Management	05-12-2019	

#### UNIT-II **Plant Layout**

CO2: To develop graduates who can design, develop, execute, and innovate integrated systems that incorporate people, materials, information, equipment, and energy using a system approach.

	8 9 S S S S S S S S S S S S S S S S S S	a, mana i u	onshers.
12	Factors Governing Plant Location	07-12-2019	
13	Types Of Production Layouts	07-12-2019	
14	Advantages And Disadvantages of Process Layout And Product Layout	09-12-2019	Lecture interspersed
15	Applications of Process And Product Layout	11-12-2019	with
16	Quantitative Techniques For Optimal Design Of Layouts	12-12-2019	_ discussions
17	Plant Maintenance, Preventive And Breakdown Maintenance.	16-12-2019	

## UNIT-III Opeartions Management

CO3: Students are allowed to understand the interactions in modern society between engineering, business, technology, and the environment.

TB: Industrial Engineering and Management by O. P. Khanna, Khanna Publishers.

	ma, knema i u	onsiters.
Importance	18-12-2019	
Types Of Production, Applications		
	20-12-2019	
Workstudy, Method Study And Time Study		
	23-12-2019	
Work Sampling		
	24-12-2019	Lecture
PMTS, Micro-Motion Study		interspersed
	26-12-2019	with
D. C. T. L.		discussions
Rating Techniques		
	30-12-2019	
MTM, Work Factor System		
	02-01-2020	
Principles Of Ergonomics		
	04-01-2020	
Flow Process Charts		
	06-01-2020	
String Diagrams And Therbligs		
	07-01-2020	
	Importance Types Of Production, Applications Workstudy, Method Study And Time Study Work Sampling PMTS, Micro-Motion Study  Rating Techniques MTM, Work Factor System  Principles Of Ergonomics Flow Process Charts	Types Of Production, Applications  20-12-2019  Workstudy, Method Study And Time Study  Work Sampling  24-12-2019  PMTS, Micro-Motion Study  Rating Techniques  MTM, Work Factor System  Principles Of Ergonomics  Flow Process Charts  18-12-2019  20-12-2019  23-12-2019  24-12-2019  26-12-2019  MTM, Work Factor System  02-01-2020  6-01-2020

## UNIT-IV Statistical Quality Control

CO4: Use the techniques, skills, and current engineering technologies required for engineering practise while taking into account public health and safety, cultural, socioeconomic, and environmental restrictions.

TB: Industrial Engineering and Management by O. P. Khanna, Khanna Publishers.

28	Quality Control, Its Importance, SQC		
		09-01-2020	
29	Attribute Sampling Inspection With Single And		
	Double Sampling	10-01-2020	
30	Control Charts $-X$ And R $-$ Chart		
		27-01-2020	
31	X AND S Charts And Their Applications		
		29-01-2020	
32	Numerical Examples		
		30-01-2020	Lecture
33	TOTAL QUALITY MANAGEMENT: Zero Defect		interspersed
	Concept	31-01-2020	with
34	Quality Circles, Implementation, Applications		discussions
		01-02-2020	aiseassions
35	ISO Quality Systems. Six Sigma – Definition,	The same of the same	
	Basic Concepts	03-02-2020	
UNIT-V	Resource Management		

#### UNIT-V Resource Management

CO5: Students were able to grasp the interactions between engineering, business, technology, and the environment in modern society.

36	Concept Of Human Resource Management		
		06-02-2020	
37	Personnel Management And Industrial Relations	10-02-2020	
38	Functions Of Personnel Management	12-02-2020	Lecture
39	Job-Evaluation, Its Importance And Types	13-02-2020	interspersed with
40	Merit Rating	15-02-2020	discussions
41	Quantitative Methods	17-02-2020	
42	Wage Incentive Plans, Types	24-02-2020	

## UNIT-VI Value Analysis

CO6: Function effectively within multi – disciplinary teams and understand the fundamental precepts of effective project management.

43	Value engineering		
		26-02-2020	
44	implementation procedure	27-02-2020	
45	enterprise resource planning	29-02-2020	
46	supply chain management	02-03-2020	
47	PERT PROJECT MANAGEMENT	04-03-2020	
48	PERT, CPM – differences	05-03-2020	Lecture
49	Applications of PERT and CPM	07-03-2020	interspersed with
50	critical path	09-03-2020	discussions
51	determination of floats	11-03-2020	
52	importance	12-03-2020	
53	project crashing	16-03-2020	
54	smoothing	17-03-2020	
55	numerical examples	18-03-2020	
56	Revision	20-03-2020	7

57	Revision	
-3		23-03-2020
58	Revision	
		24-03-2020
59	Revision	
		26-03-2020
60	Revision	
		28-03-2020

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## TENTATIVE LESSON PLAN: R1622036 INDUSTRIAL ENGINEERING AND MANAGEMENT

Course Title: INDUS	TRIAL ENGINEERING & MANAGEMENT	
Section: Sec B	Date: 09/11/2019	Page No: 01 of 05
Revision No: 00	Prepared By: P. TARUN NAGA VENKATESH	Approved By: HOD
Tools: Black board		

No. of Periods	TOPIC	Date	Mode of Delivery
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#### UNIT-I Introduction

CO1: To convey core information and skill sets required in the industrial management and engineering professions, such as the ability to apply basic mathematics, probability, and statistics understanding, as well as domain knowledge of industrial engineering and management.

1B: Industrial Engineering and Management by O. P. Khanna, Khanna Publishe					
	1	Definition of Industrial Engineering, Development	18-11-2019		

1	Definition of Industrial Engineering, Development	18-11-2019	
2	Applications, Role of an Industrial Engineer	19-11-2019	
3	Differences Between Production Management And Industrial Engineering	23-11-2019	
4	Quantitative Tools of IE and Productivity Measurement	25-11-2019	Lecture
5	Concepts Of Management	26-11-2019	interspersed with
6	Importance Of Management	27-11-2019	discussions
7	Functions Of Management	29-11-2019	
8	Scientific Management	02-12-2019	
9	Taylor's Principles	03-12-2019	
10	Theory X And Theory Y	04-12-2019	
11	Fayol's Principles Of Management	07-12-2019	

## UNIT-II Plant Layout

CO2: To develop graduates who can design, develop, execute, and innovate integrated systems that incorporate people, materials, information, equipment, and energy using a system approach.

	g g gement by 0.1. Ikhami	,	
12	Factors Governing Plant Location	10-12-2019	
13	Types Of Production Layouts	11-12-2019	
14	Advantages And Disadvantages of Process Layout And Product Layout	11-12-2019	Lecture interspersed
15	Applications of Process And Product Layout	13-12-2019	with discussions
16	Quantitative Techniques For Optimal Design Of Layouts	17-12-2019	
17	Plant Maintenance, Preventive And Breakdown Maintenance.	18-12-2019	

UNIT-III Opeartions Management

CO3: Students are allowed to understand the interactions in modern society between engineering, business, technology, and the environment.

TB: Industrial Engineering and Management by O. P. Khanna, Khanna Publishers.

18	Importance	, ranuma i u	MISHELS.
		20-12-2019	
19	Types Of Production, Applications		
20	****	20-12-2019	
20	Workstudy, Method Study And Time Study		
21	Work Sampling	23-12-2019	
		27-12-2019	Lecture
22	PMTS, Micro-Motion Study	27-12-2019	interspersed with
23	Rating Techniques		discussions
24	MTM Waster Control	30-12-2019	
	MTM, Work Factor System	30-12-2020	
25	Principles Of Ergonomics		
26	Flow Process Charts	03-01-2020	
		03-01-2020	
27	String Diagrams And Therbligs		
		04-01-2020	

## UNIT-IV Statistical Quality Control

CO4: Use the techniques, skills, and current engineering technologies required for engineering practise while taking into account public health and safety, cultural, socioeconomic, and environmental restrictions.

TB: Industrial Engineering and Management by O. P. Khanna, Khanna Publishers.

28	Quality Control It I Good	a, ixhanna i t	ionshers.
20	Quality Control, Its Importance, SQC		
		06-01-2020	
29	Attribute Sampling Inspection With Single And		
	Double Sampling	10-01-2020	
30	Control Charts $-X$ And R $-$ Chart		
		27-01-2020	
31	X AND S Charts And Their Applications		
		29-01-2020	
32	Numerical Examples		
		30-01-2020	Lecture
33	TOTAL QUALITY MANAGEMENT: Zero Defect		interspersed
	Concept	31-01-2020	with
34	Quality Circles, Implementation, Applications		discussions
		01-02-2020	discussions
35	ISO Quality Systems. Six Sigma – Definition,		1
	Basic Concepts	03-02-2020	
UNIT-V	Resource Management		

UNIT-V Resource Management

CO5: Students were able to grasp the interactions between engineering, business, technology, and the environment in modern society.

36	Concept Of Human Resource Management		
		07-02-2020	
37	Personnel Management And		
	Industrial Relations	07-02-2020	
38	Functions Of Personnel Management		+
		10-02-2020	
			Lecture
39	Job-Evaluation, Its Importance And Types		interspersed
		12-02-2020	with
40	Merit Rating		discussions
		12-02-2020	
41	Quantitative Methods		
		14-02-2020	
42	Wage Incentive Plans		
		14-02-2020	
43	Types of Wage Incentive Plans		
		15-02-2020	

## UNIT-VI Value Analysis

**CO6:** Function effectively within multi – disciplinary teams and understand the fundamental precepts of effective project management.

TB: Industrial Engineering and Management by O. P. Khanna, Khanna Publishers. 44 Value engineering 17-02-2020 45 implementation procedure 24-02-2020 46 enterprise resource planning 24-02-2020 47 supply chain management 28-02-2020 48 PERT PROJECT MANAGEMENT 28-02-2020 49 PERT, CPM - differences Lecture 02-03-2020 interspersed 50 Applications of PERT and CPM with 04-03-2020 discussions 51 PERT, CPM Numericals 06-03-2020 52 critical path 06-03-2020 53 determination of floats 07-03-2020 54 importance 09-03-2020 55 project crashing 11-03-2020 56 smoothing

11-03-2020

57	numerical examples	
		13-03-2020
58	Revision	
		17-03-2020
59	Revision	
		19-03-2020
60	Revision	
		21-03-2020
61	Revision	
		24-03-2020
62	Revision	
		26-03-2020

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## TENTATIVE LESSON PLAN: R1632031 METROLOGY

Course Title: M	letrology				
Section : Sec I	Date: 18/11/19	Page No	:01 of 04		
Revision No: 00	Prepared By :V.Pavan Kumar	Approve	ed By : HOD		
Tools: Black bo	Tools: Black board, PPTs				
No. of Periods	TOPIC	Date	Mode of Delivery		
UNIT-I System	ms Of Limits And Fits				
CO1: Design of	part, tolerances and fits.				
TR. Engineering	Metrology by R.K.Jain / Khanna Publishers				
1	Introduction, nominal size, tolerance	19-11-19			
	introduction, nonlinar size, tolerance	19-11-19			
2	limits, deviations.	19-11-19			
		.,,			
3	Unilateral and bilateral tolerance system, fits	20-11-19			
4	hole and shaft basis systems	22-11-19			
5	interchangeability, determistic & statistical	25-11-19	Lecture		
	tolerancing, selective assembly		interspersed		
	3, 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		with		
			discussions		
6	International standard system of tolerances,	26-11-19	discussions		
_		00 11 10			
7	selection of limits and tolerances for correct	28-11-19			
	functioning.				
8	Problems on limits and tolerances	29-11-19			
9	Length standards, end standards	2-12-19			
10	slip gauges- calibration of the slip gauges	4-12-19			
11	dial indicators	6-12-19			
12	micrometers.	10-12-19			
		10 10 10			
13	Measurement of angles by bevel protractor, angle	12-12-19			
	slip gauges				
		16.15.15			
14	Angle dekkor, Sine bar, Sine table	16-12-19			

15	Rollers and spheres used to measure angles and	18-12-19	
	Tapers.		
16	Taylor's principle	20-12-19	Lecture interspersed
17	design of go and no go gauges; plug, ring gagues	23-12-19	with discussions
18	snap, gap, taper gagues	25-12-19	
19	profile and position gauges.	26-12-19	
UNIT-III	Optical Measuring Instruments; Interferometry		
CO3: Princi	iples of measuring instruments		
	ring Metrology by R.K.Jain / Khanna Publishers		
20	Tools maker's microscope and uses	27/12/19	
21	autocollimators, optical projector	30/12/19	
22	optical flats and their uses.	3/1/20	Lecture interspersed
23	Interference of light, Michaleson's interferometer	5/1/20	with discussions
24	NPL flatness interferometer and NPL gauge interferometer.	7/1/20	uiscussions
UNIT-IV	Surface Roughness Measurement; Comparators		
CO4: Evalu	nation and inspection of surface roughness.		
TB: Enginee	ring Metrology by R.K.Jain / Khanna Publishers		
25	Differences between surface roughness and surface waviness	23/1/20	
26	Nomenclature of surface roughness	29/1/20	Lecture interspersed
27	Numerical assessment of surface	30/1/20	with
	finish-CLA, Rt., R.M.S. Rz, R10 values		discussions
28	Method of measurement of surface finish –	31/1/20	
	Profilograph, Talysurf		

29	ISI symbols for indication of surface finish.	3/2/20	
30	Numerical problems on surface finish	4/2/20	
31	Mechanical comparators	5/2/20	Lecture interspersed
32	optical comparators	6/2/20	with discussions
33	electrical and electronic, comparators	7/2/20	
34	Pneumatic comparators and their uses.	10/2/20	
UNIT-V	Gear Measurement; Screw Thread Measurement		
	tion of spur gear and thread elements ring Metrology by R.K.Jain / Khanna Publishers		
35	Nomenclature of gear tooth	11/2/20	
0.6		10/0/00	
36	tooth thickness measurement with gear tooth vernier & flange micro meter	12/2/20	
	vermer & nange inicro meter		
37	pitch measurement	14/2/20	
38	total composite error and tooth to tooth composite errors	18/2/20	
39	rolling gear tester, involute profile checking	19/2/20	Lecture
40	Screw thread elements of measurement	21/2/20	interspersed with
41	concept of virtual effective diameter	25/2/20	discussions
42	measurement of effective diameter	26/2/20	
43	angle of thread and thread pitch	27/2/20	
44	Profile thread gauges.	28/2/20	
UNIT-VI	Flatness Measurement; Machine Tool Alignment T	ests	
	ne tool testing to evaluate machine tool quality.		
8	ing Metrology by R.K.Jain / Khanna Publishers  Measurement of flatness of surfaces- instruments	2/3/20	
45	used- straight edges	2/3/20	
	assa suargin sages		

46	surface plate	4/3/20	
47	auto collimator.	9/3/20	Lecture
48	machine tool alignment testing on lathe machine.	13/3/20	interspersed with
49	machine tool alignment testing on drilling machine.	16/3/20	discussions
50	Machine tool alignment testing on milling machine.	18/3/20	

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# TENTATIVE LESSON PLAN: R1632031 METROLOGY

Course Title: M			01 . 004
Section : Sec I	Date: 18/11/19	Page No:	
Revision No: 00		Approved	By: HOD
Tools: Black bo No. of Periods	ard, PPTs TOPIC	Date	Mode of Delivery
UNIT-I Syste	ms Of Limits And Fits		
	f part, tolerances and fits.		
	Metrology by R.K.Jain / Khanna Publishers		
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Introduction, nominal size, tolerance	18-11-19	
•	,		
2	limits, deviations.	19-11-19	
	The state of the s	21-11-19	
3	Unilateral and bilateral tolerance system, fits	21-11-17	
4	hole and shaft basis systems	23-11-19	
4	Hole and Share ousis systems		
5	interchangeability, determistic & statistical	26-11-19	Lecture
	tolerancing, selective assembly		interspersed
			with
	International standard system of tolerances,	29-11-19	discussions
6	International standard system of tolerances,		
7	selection of limits and tolerances for correct	4-12-19	
	functioning.		
		7 10 10	
8	Problems on limits and tolerances	5-12-19	
		6 10 10	
9	Length standards, end standards	6-12-19	
	1: and in a street of the alin aguages	9-12-19	1
10	slip gauges- calibration of the slip gauges	, 12 1	
11	dial indicators	11-12-19	
11	dia maiotici		
12	micrometers.	13-12-19	
	a la la la disente mode	16-12-19	
13	Measurement of angles by bevel protractor, angle	10-12-19	
	slip gauges		
1.4	Angle dekkor, Sine bar, Sine table	18-12-19	
14	Aligie dekkol, olile oat, olile dole		

			Lecture interspersed
15	Rollers and spheres used to measure angles and Tapers.	20-12-19	with discussions
16	Taylor's principle	23-12-19	
17	design of go and no go gauges; plug, ring gagues	24-12-19	
18	snap, gap, taper gagues	25-12-19	
19	profile and position gauges.	26-12-19	
UNIT-III	Optical Measuring Instruments; Interferometry		
CO3: Princi	ples of measuring instruments		
TR. Enginee	ring Metrology by R.K.Jain / Khanna Publishers		
20	Tools maker's microscope and uses	27/12/19	
21	autocollimators, optical projector	30/12/19	
22	optical flats and their uses.	2/1/20	Lecture
23	Interference of light, Michaleson's interferometer	5/1/20	interspersed with
24	NPL flatness interferometer and NPL gauge interferometer.	7/1/20	discussions
UNIT-IV	Surface Roughness Measurement; Comparators		
CO4: Evalu	nation and inspection of surface roughness.		
	ring Metrology by R.K.Jain / Khanna Publishers		
25	Differences between surface roughness and surface waviness	27/1/20	
26	Nomenclature of surface roughness	28/1/20	Lecture interspersed
27	Numerical assessment of surface	29/1/20	with
	finish-CLA, Rt., R.M.S. Rz, R10 values		discussions
28	Method of measurement of surface finish –	30/1/20	
	Profilograph, Talysurf		

29	ISI symbols for indication of surface finish.	31/1/20	
30	Numerical problems on surface finish	3/2/20	Lecture interspersed
31	Mechanical comparators	4/2/20	
32	optical comparators	5/2/20	with discussions
33	electrical and electronic, comparators	6/2/20	
34	Pneumatic comparators and their uses.	19/2/20	
UNIT-V (	Gear Measurement; Screw Thread Measurement		
	on of spur gear and thread elements ing Metrology by R.K.Jain / Khanna Publishers		
35	Nomenclature of gear tooth	11/2/20	
36	tooth thickness measurement with gear tooth vernier & flange micro meter	13/2/20	
37	pitch measurement	14/2/20	
38	total composite error and tooth to tooth composite errors	17/2/20	
39	rolling gear tester, involute profile checking	18/2/20	Lecture
40	Screw thread elements of measurement	20/2/20	interspersed with
41	concept of virtual effective diameter	22/2/20	discussions
42	measurement of effective diameter	25/2/20	
43	angle of thread and thread pitch	26/2/20	
44	Profile thread gauges.	28/2/20	
UNIT-VI	Flatness Measurement; Machine Tool Alignment T	Cests	
CO6: Machin	e tool testing to evaluate machine tool quality.		
	ng Metrology by R.K.Jain / Khanna Publishers		
45	Measurement of flatness of surfaces- instruments used- straight edges	2/3/20	

46	surface plate	5/3/20	
		w	
47	auto collimator.	9/3/20	Lecture
48	machine tool alignment testing on lathe machine.	12/3/20	interspersed with
49	machine tool alignment testing on drilling machine.	16/3/20	discussions
50	machine tool alignment testing on milling machine.	18/3/20	

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## TENTATIVE LESSON PLAN: R1632032 INSTRUMENTATION & CONTROL SYSTEMS

Course Title: INSTRUMENTATION AND CONTROL SYSTEMS

Section: A Date:30/11/2019

Revision No: 00 Prepared By: Mr. M Hari Krishna Approved By: HOD

Tools: Black board, PPTs

No. of Periods TOPIC	Date °	Mode of Delivery
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### UNIT-I Basics of instrumentation and Displacement Measurement

**CO1:** At the end of the course student will understand the principles of Measurement which includes the working Mechanisms of various Devices and sensors.

### TB:

- 1. Measurement systems: applications & design by D S Kumar
- 2. Mechanical Measurements/ BeckWith, Maragoni, Linehard, Pearson

1	Introduction to the course	18/11/2019	
2	Basic Definitions and Principles	18/11/2019	
3	Measurement Systems and functional Elements	19/11/2019	
4	Examples of Generalized Measurement System	20/11/2019	
5	Static Performance Characteristics	21/11/2019	
6	Dynamic Performance Characteristics	25/11/2019	Lecture
7	Introduction to pressure measurement	25/11/2019	interspersed with
8	Classification to transducers	26/11/2019	discussions
9	Transducers Continuation	27/11/2019	
10	Transducers Continuation	28/11/2019	
11	Calibration process	02/12/2019	
12	Errors, classification of errors	02/12/2019	

## **UNIT-II** Measurement of Temperature and Pressure

**CO2:** At the end of this course student will understand the working principles and can select appropriate device for temperature and pressure measurement.

### TB:

1. Measurement systems: applications & design by D S Kumar

	Measurements/ BeckWith, Maragoni, Linehard, Pea	0	
11	Introduction to measurement of temperature	03/12/2019	
12	Various Principles of Temperature measurement	04/12/2019	
13	Glass Thermometers, Pressure gauge thermometer, Bimetallic strip thermometer	05/12/2019	
14	Classification based on electrical resistance thermometer	09/12/2019	
15	Electrical resistance thermometer continuation	09/12/2019	
16	Classification Based on radiation thermometer	10/12/2019	
17	Radiation Thermometer continuation	11/12/2019	
18	Sources of errors, precautions in temperature measurement	12/12/2019	
19	Introduction to pressure measurement and units	16/12/2019	
20	Classification of pressure measurement	16/12/2019	
21	Simple Manometers, Piezo meters	17/12/2019	Lecture interspers
22	U-Tube Manometers	18/12/2019	with discussio
23	Differential Manometers	18/12/2019	
24	Bordon Gauge, Diaphragm gauge,	19/12/2019	
25	Bellow Gauges, Vacuum Gauge	23/12/2019	
26	Ionization Gauge, Dead Weight Pressure Gauge	23/12/2019	
27	Errors in pressure gauges, precautions in reading	24/12/2019	
28	Brief Explanation of all the pressure gauges	26/12/2019	

## UNIT-III Miscellaneous Measurement

CO3: At the end of this course student will understand the working principles, and can select appropriate device for of various flow, level, speed, Acceleration and vibration measurement.

### TB:

- 1. Measurement systems: applications & design by D S Kumar
- 2. Mechanical Measurements/ BeckWith, Maragoni, Linehard, Pearson

29	Introduction to the level Measurement	30/12/2019	
30	Direct Method for Level Measurement	30/12/2019	
31	Indirect Method for Level Measurement	31/12/2019	
32	Flow Measurement	02/01/2020	
33	Flow Measurement and Introduction to Speed Measurement.	06/01/2020	
34	Speed Measurement	06/01/2020	
35	Speed Measurement Continuation	07/01/2020	Lecture
36	Measurement of Acceleration	27/01/2020	interspersed with
37	Measurement of Acceleration	29/01/2020	discussions
38	Measurement of Vibration	29/01/2020	
39	Measurement of Vibration	28/01/2020	
40	Measurement of Force	03/02/2020	
41	Measurement of Force	03/02/2020	

## UNIT-IV Strain Measurement

**CO4:** At the end of this course student will understand the working principles and can select appropriate device of various types of stress and strain measurements.

### TB:

1. Measurement systems: applications & design by D S Kumar

2. Mechanical Measurements/ BeckWith, Maragoni, Linehard, Pearson

42	Introduction to Stress and Strain, Load Cells	04/02/2020	
43	Strain Gauge Load Cells	05/02/2020	
44	Pneumatic Load Cells	06/02/2020	
45	Measurement of Force	10/02/2020	Lecture interspersed with discussions
46	Load Cells Continuation	10/02/2020	
47	Load Cells Continuation	11/02/2020	
48	Load Cells Continuation	12/02/2020	uiscussions

# UNIT-V Measurement of Power and Torque

CO5: At the end of this course student will understand the operation principles, and can select appropriate device of various humidity, force, torque and power measurement.

#### TB:

1. Measurement systems: applications & design by D S Kumar

2. Mechanical Measurements/ BeckWith, Maragoni, Linehard, Pearson

49	Torque Measurement	13/02/2020	
50	Torque Measurement Continuation	14/02/2020	
51	Torque Measurement Continuation	17/02/2020	
52	Torsion Measurement	17/02/2020	
53	Torsion Measurement Continuation	24/02/2020	
54	Torsion Measurement Continuation	25/02/2020	Lecture
55	Torsion Measurement Continuation	26/02/2020	interspersed
56	Power Measurement	28/02/2020	discussions
57	Power Measurement Continuation	02/03/2020	
58	Dynamometers	03/03/2020	
59	Dynamometers Continuation	04/03/2020	
60	Dynamometers Continuation	04/03/2020	

## UNIT-VI Control Systems

CO6: At the end of this course student will understand the concept and can select appropriate control Systems.

#### TB:

1. Measurement systems: applications & design by D S Kumar

Mechanical Measurements/ BeckWith, Maragoni, Linehard, Pearson

61	Introduction to Control Systems & Definition	05/03/2020	
62	Elements of Control Systems	09/03/2020	
63	Open loop control Systems	09/03/2020	

64	Open loop Control System examples	10/03/2020	
65	Closed loop Control System & examples	11/03/2020	Lecture interspersed
66	Servo mechanism	12/03/2020	with
67	Block Diagrams	13/03/2020	_ uiscussions
68	Block Diagram	16/03/2020	
69	Revision	17/03/2020	
70	Revision	18/03/2020	
71	Revision	19/03/2020	

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# TENTATIVE LESSON PLAN: R1632032 INSTRUMENTATION & CONTROL SYSTEMS

Course Title: INS	TRUMENTATION AN	D CONTROL SYS	STEMS .	
Section: B		Date:30/11/2019		
Revision No: 00 Prepared By:		M Hari Krishna	Approved By: HOD	
Tools: Black board	l, PPTs			
No. of Periods	TOPIC	C	Date	Mode of

## UNIT-I Basics of instrumentation and Displacement Measurement

CO1: At the end of the course student will understand the principles of Measurement which includes the working Mechanisms of various Devices and sensors.

### TB:

- 1. Measurement systems: applications & design by D S Kumar
- 2. Mechanical Measurements/ BeckWith, Maragoni, Linehard, Pearson

1	Introduction to the course	19/11/2019	
2	Basic Definitions and Principles	20/11/2019	
3	Measurement Systems and functional Elements	21/11/2019	
4	Examples of Generalized Measurement System	22/11/2019	
5	Static Performance Characteristics	23/11/2019	
6	Dynamic Performance Characteristics	26/11/2019	Lecture
7	Introduction to pressure measurement	27/11/2019	interspersed with
8	Classification to transducers	28/11/2019	discussions
9	Transducers Continuation	29/11/2019	
10	Transducers Continuation	30/11/2019	
11	Calibration process	03/12/2019	
12	Errors, classification of errors	04/12/2019	

## **UNIT-II** Measurement of Temperature and Pressure

**CO2:** At the end of this course student will understand the working principles and can select appropriate device for temperature and pressure measurement.

### TB:

1. Measurement systems: applications & design by D S Kumar

	cal Measurements/ BeckWith, Maragoni, Linehard, Pe	arson	
11	Introduction to measurement of temperature	05/12/2019	
12	Various Principles of Temperature measurement	06/12/2019	
13	Glass Thermometers, Pressure gauge thermometer, Bimetallic strip thermometer	07/12/2019	
14	Classification based on electrical resistance thermometer	10/12/2019	
15	Electrical resistance thermometer continuation	11/12/2019	
16	Classification Based on radiation thermometer	12/12/2019	
17	Radiation Thermometer continuation	13/12/2019	
18	Sources of errors, precautions in temperature measurement	14/12/2019	
19	Introduction to pressure measurement and units	17/12/2019	
20	Classification of pressure measurement	18/12/2019	
21	Simple Manometers, Piezo meters	19/12/2019	Lecture
22	U-Tube Manometers	20/12/2019	interspersed with
23	Differential Manometers	21/12/2019	discussions
24	Bordon Gauge, Diaphragm gauge,	24/12/2019	
25	Bellow Gauges, Vacuum Gauge	26/12/2019	
26	Ionization Gauge, Dead Weight Pressure Gauge	27/12/2019	
27	Errors in pressure gauges, precautions in reading	28/12/2019	
28	Brief Explanation of all the pressure gauges	31/12/2019	

## UNIT-III Miscellaneous Measurement

CO3: At the end of this course student will understand the working principles, and can select appropriate device for of various flow, level, speed, Acceleration and vibration measurement.

#### TR

- 1. Measurement systems: applications & design by D S Kumar
- 2. Mechanical Measurements/ BeckWith, Maragoni, Linehard, Pearson

29	Introduction to the level Measurement	1	
		02/01/2020	
30	Direct Method for Level Measurement	03/01/2020	
31	Indirect Method for Level Measurement	04/01/2020	
32	Flow Measurement	07/01/2020	
33	Flow Measurement and Introduction to Speed Measurement.	08/01/2020	
34	Speed Measurement	09/01/2020	
35	Speed Measurement Continuation	10/01/2020	
36	Measurement of Acceleration	11/01/2020	Lecture interspersed
37	Measurement of Acceleration	28/01/2020	with discussions
38	Measurement of Vibration	29/01/2020	
39	Measurement of Vibration	28/01/2020	
40	Measurement of Force	30/01/2020	
41	Measurement of Force	31/01/2020	

## UNIT-IV Strain Measurement

**CO4:** At the end of this course student will understand the working principles and can select appropriate device of various types of stress and strain measurements.

### TB:

1. Measurement systems: applications & design by D S Kumar

2. Mechanical Measurements/ BeckWith, Maragoni, Linehard, Pearson

42	Introduction to Stress and Strain, Load Cells		
		01/02/2020	
43	Strain Gauge Load Cells		
		04/02/2020	
44	Pneumatic Load Cells		
		05/02/2020	
45	Measurement of Force	O	
		06/02/2020	
46	Load Cells Continuation		Lastuma
		07/02/2020	Lecture
47	Load Cells Continuation		interspersed
		08/02/2020	with
48	Load Cells Continuation		discussions
		11/02/2020	

## **UNIT-V** Measurement of Power and Torque

**CO5:** At the end of this course student will understand the operation principles, and can select appropriate device of various humidity, force, torque and power measurement.

### TB:

1. Measurement systems: applications & design by D S Kumar

2. Mechanical Measurements/ BeckWith, Maragoni, Linehard, Pearson

100122			
49	Torque Measurement	12/02/2020	
50	Torque Measurement Continuation	13/02/2020	
51	Torque Measurement Continuation	14/02/2020	
52	Torsion Measurement	15/02/2020	
53	Torsion Measurement Continuation	19/02/2020	
54	Torsion Measurement Continuation	20/02/2020	Lecture interspersed with discussions
55	Torsion Measurement Continuation	21/02/2020	
56	Power Measurement	22/02/2020	
57	Power Measurement Continuation	25/03/2020	
58	Dynamometers	26/03/2020	
59	Dynamometers Continuation	27/03/2020	
60	Dynamometers Continuation	28/03/2020	

## **UNIT-VI** Control Systems

**CO6:** At the end of this course student will understand the concept and can select appropriate control Systems.

#### TR:

1. Measurement systems: applications & design by D S Kumar

Mechanical Measurements/ BeckWith, Maragoni, Linehard, Pearson

61	Introduction to Control Systems & Definition	29/02//2020
62	Elements of Control Systems	03/03/2020
63	Open loop control Systems	04/03/2020

64	Open loop Control System examples		
		05/03/2020	
65	Closed loop Control System & examples	06/03/2020	Lecture interspersed
66	Servo mechanism	07/03/2020	with
67	Block Diagrams	11/03/2020	discussions
68	Block Diagram	12/03/2020	
69	Revision	13/03/2020	
70	Revision	17/03/2020	
71	Revision	18/03/2020	

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	<b>TENTATIVE PLAN: R1632</b>	033	
Course Title: R AIRCONDITIO		Course code:	R1632033
Section : Sec I	Date: 18-11-2019	Page No	: 01 to 03
Revision No : 00	Prepared By: A PRAVEEN KUMAR Approved REDDY		d By : HOD
Tools: BLACK No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I	INTRODUCTION TO REFRIGERATION SYS	TEM	Delivery
	amiliar with a basic concept refrigeration		
TB: "REFRIGI	ERATION AND AIRCONDITIONING", R.S.KH	URMI.	
	UNIT – 1 INTRODUCTION TO		
	REFRIGERATION SYSTEM		
1	Necessity and applications	18/11/2019	
2	Necessity and applications	19/11/2019	
3	Necessity and applications	20/11/2019	
4	Fourier rate equation	21/11/2019	
5	Unit of refrigeration and C.O.P.	21/11/2019	
6	Unit of refrigeration and C.O.P.	23/11/2019	
7	Cop-Mechanical refrigeration	25/11/2019	Lecture
8	Cop-Mechanical refrigeration	27/11/2019	interspersed
9	Types of ideal cycles of refrigeration	28/11/2019	with
10	Types of ideal cycles of refrigeration	28/11/2019	discussions
11	Air refrigetor with reverse Carnot cycle	30/11/2019	
12	Air refrigeration: bell Coleman cycle	02/12/2019	
13	Air refrigeration: bell Coleman cycle	03/12/2019	
14	open and dense air systems	04/12/2019	
	Refrigeration systems used in air crafts and		
15	problems.	05/12/2019	
16	Refrigeration systems used in air crafts and	05/12/2019	
16	problems.	05/12/2019	
UNIT-II V	APOUR COMPRESSION REFRIGERATION S	SYSTEM	
	wledge about VCR System		
TB:" REFRIGI	ERATION AND AIRCONDITIONING", R.S.KH	URMI.	
	UNIT - 2 VAPOUR COMPRESSION		
	REFRIGERATION SYSTEM		
17	Working principle of VCR System	05/12/2019	
18	Essential components of the plant	07/12/2019	
19	Essential components of the plant	09/12/2019	
20	Simple vapour compression refrigeration cycle	10/12/2019	
21	COP –representation of cycle on T-S and p-h charts	11/12/2019	Lecture interspersed with discussions
22	COP –representation of cycle on T-S and p-h charts	12/12/2019	
23	COP –representation of cycle on T-S and p-h charts	12/12/2019	
24	COP –representation of cycle on T-S and p-h charts of all VCR systems	12/12/2019	
25	Cycle analysis – actual cycle influence of various parameters on system performance – use of p-h charts	16/12/2019	

26	Problems	17/12/2019	
27	Problems	18/12/2019	
28	Problems	18/12/2019	
UNIT-III	REFRIGERANTS AND COMPONENTS OF VC familiar with the concepts of refrigerants and com		'R system
	GERATION AND AIRCONDITIONING", R.S.KH		at by been
Ib. REFRIC	UNIT – 3 REFRIGERANTS AND	CIU.	
	COMPONENTS OF VCR SYSTEM		
29	Refrigerants introduction Desirable properties	19/12/2019	
30	Refrigerants introduction Desirable properties	23/12/2019	Lecture
31	Classification - refrigerants used	24/12/2019	interspersed
32	Nomenclature – ozone depletion – global	26/12/2019	with discussions
33	warming Nomenclature,problems	26/12/2019	
		30/12/2019	
34	Compressors – general classification	31/12/2019	
35	Comparison – advantages and disadvantages  Condensers – classification – working principles	31/12/2019	
36	evaporators	02/01/2020	
37	Evaporators, problems	04/01/2020	
38	Evaporators, problems	06/01/2020	
	VAPOUR ABSORPTION REFRIGERATION SY		
CO4: Gain kn	owledge about concept of vapour absorption refrig	geration system	1
TB:" REFRIG	GERATION AND AIRCONDITIONING", R.S.KH	URMI.	
	UNIT – 4 VAPOUR ABSORPTION		
	REFRIGERATION SYSTEM	07/01/2020	
39	Calculation of maximum COP	07/01/2020	
40	Calculation of maximum COP	09/01/2020	
41	Description and working of NH3 – water system	10/01/2020	
42	Description and working of NH3 – water system	27/01/2020	
43	Li Br –water (Two shell & Four shell) System	29/01/2020	
44	Li Br –water (Two shell & Four shell) System	30/01/2020	Lecture
45	Principle of operation three fluid absorption system, salient features	30/01/2020	interspersed with
46	Principle of operation three fluid absorption system, salient features	31/01/2020	discussions
47	STEAM JET REFRIGERATION SYSTEM	03/02/2020	
48	STEAM JET REFRIGERATION SYSTEM	04/02/2020	
49	Working Principle and basic components.	05/02/2020	
50	Operation of (i) thermo electric refrigerator (ii) vortex tube	06/02/2020	
51	Operation of (i) thermo electric refrigerator (ii) vortex tube	07/02/2020	
UNIT-V	INTRODUCTION TO AIR CONDITIONING SY	STEM	
	familiar with Air conditioning system		
	GERATION AND AIRCONDITIONING", R.S.KH	IIIRMI.	
ID: KEFKIC	UNIT - 5 INTRODUCTION TO AIR	CIGITA.	
	CONDITIONING SYSTEM		
52	Psychometric properties & processes	07/02/2020	Lecture
53	Characterization of sensible and latent heat loads	10/02/2020	interspersed
54	Need for ventilation, consideration of infiltration	11/02/2020	with
55	Load concepts of RSHF, GSHF- problems	12/02/2020	discussions
56	Concept of ESHF and ADP temperature	13/02/2020	1
57	Requirements of human comfort and concept of	14/02/2020	
	effective temperature	14/02/2020	-
58	comfort chart –comfort air conditioning	14/02/2020	1

59	requirements of industrial air conditioning, air conditioning load calculations.	17/02/2020
60	Problems	24/02/2020
61	Problems	25/02/2020

## UNIT-VI AIR CONDITIONING SYSTEM

CO6: Become familiar with concepts of Air conditioning system

TB: "REFRIGERATION AND AIRCONDITIONING", R.S.KHURMI.

	UNIT - 6 AIR CONDITIONING SYSTEM		
62	Classification of equipment	26/02/2020	
63	Classification of equipment	27/02/2020	
64	Cooling, heating humidification	28/02/2020	Lecture
65	Dehumidification, filters, grills	28/02/2020	interspersed
66	Dehumidification, filters, grills	02/03/2020	with discussions
67	Dehumidification, filters, grills	03/03/2020	
68	Registers, fans and blowers	04/03/2020	
69	Registers, fans and blowers	05/03/2020	
70	Heat pump – heat sources	06/03/2020	
71	Different heat pump circuits.	06/03/2020	
72	Revision	09/03/2020	

A. Parmadd Signature of Faculty

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	<b>TENTATIVE PLAN: R163203</b>	3	
Course Title: R	EFRIGERATION AND ONING	Course code: 1	R1632033
Section : Sec I	Date: 18-11-2019	Page No	: 01 to 03
Revision No : 00	REDDY	Approved By : HOD	
Tools: BLACK No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I	INTRODUCTION TO REFRIGERATION SYS	TEM	201,01
CO1: Become fa	amiliar with a basic concept refrigeration		
TB: "REFRIGI	ERATION AND AIRCONDITIONING", R.S.KH	IURMI.	
	UNIT – 1 INTRODUCTION TO		
	REFRIGERATION SYSTEM		
1	Necessity and applications	19/11/2019	
2	Necessity and applications	20/11/2019	
3	Necessity and applications	20/11/2019	
4	Fourier rate equation	21/11/2019	
5	Unit of refrigeration and C.O.P.	22/11/2019	
6	Unit of refrigeration and C.O.P.	23/11/2019	Lecture interspersed with discussions
7	Cop-Mechanical refrigeration	26/11/2019	
8	Cop-Mechanical refrigeration	27/11/2019	
9	Types of ideal cycles of refrigeration	27/11/2019	
10	Types of ideal cycles of refrigeration	28/11/2019	
11	Air refrigetor with reverse Carnot cycle	29/11/2019	
12	Air refrigeration: bell Coleman cycle	30/11/2019	
13	Air refrigeration: bell Coleman cycle	03/12/2019	
14	open and dense air systems	04/12/2019	
15	Refrigeration systems used in air crafts and problems.	04/12/2019	
16	Refrigeration systems used in air crafts and problems.	04/12/2019	
CO2: Gain kno	VAPOUR COMPRESSION REFRIGERATION (which we should be wished be with the control of the control o		
	UNIT - 2 VAPOUR COMPRESSION		
	REFRIGERATION SYSTEM	05/10/2010	
17	Working principle of VCR System	05/12/2019	
18	Essential components of the plant	06/12/2019	
19	Essential components of the plant	07/12/2019	
20	Simple vapour compression refrigeration cycle	10/12/2019	Lecture
21	COP –representation of cycle on T-S and p-h charts	11/12/2019	interspersed with discussions
22	COP –representation of cycle on T-S and p-h charts	12/12/2019	
23	COP –representation of cycle on T-S and p-h charts	13/12/2019	
24	COP –representation of cycle on T-S and p-h charts of all VCR systems	16/12/2019	
25	Cycle analysis – actual cycle influence of various parameters on system performance – use of p-h charts	17/12/2019	

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57	Requirements of human comfort and concept of effective temperature	14/02/2020
58	comfort chart -comfort air conditioning	14/02/2020
59	requirements of industrial air conditioning, air conditioning load calculations.	17/02/2020
60	Problems	24/02/2020
61	Problems	25/02/2020

## UNIT-VI AIR CONDITIONING SYSTEM

CO6: Become familiar with concepts of Air conditioning system

TB: "REFRIGERATION AND AIRCONDITIONING", R.S.KHURMI.

	UNIT - 6 AIR CONDITIONING SYSTEM		
62	Classification of equipment	26/02/2020	
63	Classification of equipment	27/02/2020	
64	Cooling, heating humidification	28/02/2020	Lecture
65	Dehumidification, filters, grills	28/02/2020	interspersed
66	Dehumidification, filters, grills	02/03/2020	with
68	Dehumidification, filters, grills	03/03/2020	discussions
69	Registers, fans and blowers	04/03/2020	
70	Registers, fans and blowers	05/03/2020	
71	Heat pump – heat sources	06/03/2020	
72	Different heat pump circuits.	06/03/2020	
73	Revision	09/03/2020	

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# **TENTATIVE PLAN: R1632034**

Course Title: H	EAT TRANSFER	Course and	D1622024
Section : Sec I	Page No: 01 to 03		
Revision No : 00			
Tools: BLACK	J · I · D C I C I I D I I I I I I I	Approv	ed By: HOD
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I	INTRODUCTION TO HEAT TRANSFER		Denvery
CO1: Become fa	amiliar with a basic concepts of modes of heat tra	ansfer	
TB: "HEAT AN	ND MASS TRANSFER", Er R.K.RAJPUT.		
	UNIT – 1 Introduction		
1	Modes and mechanisms of heat transfer	18/11/2019	
2	basic laws of heat transfer	19/11/2019	
3	General discussion about applications of heat transfer	20/11/2019	
4	Fourier rate equation	21/11/2019	
5	general heat conduction equation in Cartesian	22/11/2019	
	coordinates		
6	general heat conduction equation in cylindrical coordinates	25/11/2019	
7	general heat conduction equation in Spherical coordinates	26/11/2019	Lecture interspersed
8	initial and boundary conditions	27/11/2019	with
9	Homogeneous slabs and its problems	28/11/2019	discussions
10	hollow cylinders and its problems	29/11/2019	
11	Hollow spheres and its problems	29/11/2019	
12	overall heat transfer coefficient – electrical analogy	02/12/2019	
13	critical radius of insulation Variable thermal conductivity	3/12/2019	
14 .	systems with heat sources or heat generation	04/12/2019	
15	systems without heat sources	05/12/2019	
Section 1997 and 1997	problems	06/12/2019	
CO2: Gain know TB: HEAT AN	Extended surface vledge about extended surface D MASS TRANSFER", Er R.K.RAJPUT.		
	UNIT – 2 Extended surface (fins) heat Transfer		
17	Extended surface (fins) heat Transfer, types of fins	06/12/2019	
5.00	applications of fins	09/12/2019	
	Heat flow through rectangular fin	10/12/2019	
	long fin	11/12/2019	
21	long fin	12/12/2019	Lecture
22	Problems on long fin	13/12/2019	interspersed
23	short fin with insulated tip	13/12/2019	with
24	Problems on short fin with insulated tip	16/12/2019	discussions
25	short fin without insulated tip	17/12/2019	
26	Problems on short fin without insulated tip	18/12/2019	
27 1	transient conduction heat transfer	19/12/2019	
28	significance of biot and fourier numbers	20/12/2019	
29	chart solutions of transient conduction systems	20/12/2019	

30	Problems	23/12/2019	
31	Problems	24/12/2019	
UNIT-III	CONVECTIVE HEAT TRANSFER		
CO3: Become	familiar with the concepts of convective heat trans	fer	
TB:" HEAT	AND MASS TRANSFER", Er R.K.RAJPUT.		
	UNIT – 3 CONVECTIVE HEAT TRANSFER		
32	Classification of convective heat transfer	26/12/2019	
33	dimensional analysis	27/12/2019	Lecture interspersed
34	Rayleighs method and problems	27/12/2019	
35	Buckingham Pi Theorem for forced and free convection	30/12/2019	with discussions
36	problems	31/12/2019	
37	Significance of non-dimensional numbers	02/01/2020	
38	concepts of continuity	03/01/2020	
39	momentum and Energy Equations	03/01/2020	
40	problems	06/01/2020	
UNIT-IV	FORCED CONVECTION		
CO4: Gain kr	nowledge about concept of hydrodynamic boundary	layers on a ve	ertical plates
and pipes			
ГВ:" НЕАТ А	AND MASS TRANSFER", Er R.K.RAJPUT.		
	UNIT – 4 FORCED CONVECTION		
41	Concepts about hydrodynamic and thermal	07/01/2020	
	boundary layer	07/01/2020	
42	Concepts about hydrodynamic and thermal	09/01/2020	
	boundary layer	07/01/2020	
43	boundary layer and use of empirical correlations for convective heat transfer	10/01/2020	Lecture interspersed with
44	flat plates and cylinders	27/01/2020	
45	internal flows	29/01/2020	
46	Concepts about hydrodynamic and thermal entry lengths	30/01/2020	
47	division of internal flow based on this	30/01/2020	discussions
48	use of empirical relations for horizontal pipe flow	31/01/2020	
49	annulus flow	03/02/2020	
50	FREE CONVECTION	04/02/2020	
51	Development of hydrodynamic and thermal boundary layer along a vertical plate	05/02/2020	
52	use of empirical relations for vertical plates and pipes	06/02/2020	
53	problems	07/02/2020	
UNIT-V	HEAT TRANSFER WITH PHASE CHANGE BO	THE RESIDENCE AND ADMINISTRATION OF THE PROPERTY OF THE PROPER	
	familiar with heat transfer with phase change boili		
	AND MASS TRANSFER", Er R.K.RAJPUT.	ing	
ID. HEAT	UNIT – 5 HEAT TRANSFER WITH PHASE		
	CHANGE BOILING		
54	Pool boiling	07/02/2020	
55	film and drop wise condensation	10/02/2020	
56	nusselt's theory of condensation on a vertical	10/02/2020	Lastura
30	plate	11/02/2020	Lecture interspersed with
57	film condensation on vertical and horizontal	12/02/2020	
58	cylinders using empirical correlations	12/02/2020	discussions
59	heat exchangers Classification of heat exchangers	13/02/2020	
	Classification of heat exchangers	14/02/2020	
60	overall heat transfer coefficient and fouling factor	14/02/2020	
61	concepts of LMTD and NTU methods Problems	17/02/2020 24/02/2020	v.
62			

63	Problems	25/02/2020		
UNIT-VI	WORK - RADIATION HEAT TRANSFER			
CO6: Become	familiar with concepts of emission characteristic	es, heat excha	nge between	
grey bodies.			ŭ	
TB: "HEAT AND MASS TRANSFER", Er R.K.RAJPUT.				
	UNIT – 6 RADIATION HEAT TRANSFER			
64	Emission characteristics and laws of black-body radiation	26/02/2020	Lecture interspersed with discussions	
65	Irradiation	27/02/2020		
66	total and monochromatic quantities	28/02/2020		
67	laws of Planck, Wien, Kirchoff	28/02/2020		
68	Lamber, Stefan and Boltzmann	02/03/2020		
69	heat exchange between two black bodies	03/03/2020		
70	concepts of shape factor	04/03/2020		
71	Emissivity – heat exchange between grey bodies	05/03/2020		
72	radiation shields	06/03/2020		
73	electrical analogy for radiation networks	06/03/2020		
74	Problems	09/03/2020		

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# **TENTATIVE PLAN: R1632034**

Course Title: H	IEAT TRANSFER	Course code:	R1632034
Section : Sec I			: 01 to 03
Revision No: 0	J. T.D. CHOIL DIMIT		ed By : HOD
Tools: BLACK	BOARD		
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I	INTRODUCTION TO HEAT TRANSFER		,
CO1: Become f	amiliar with a basic concepts of modes of heat tra	nsfer	
TB: "HEAT A	ND MASS TRANSFER", Er R.K.RAJPUT.		
	UNIT – 1 Introduction		
1	Modes and mechanisms of heat transfer	18/11/2019	
2 3	basic laws of heat transfer	19/11/2019	
3	General discussion about applications of heat	20/11/2019	
	transfer	20/11/2019	
4	Fourier rate equation	21/11/2019	
5	general heat conduction equation in Cartesian	22/11/2019	
	coordinates	22/11/2019	
6	general heat conduction equation in cylindrical	25/11/2019	
	coordinates	25/11/2019	
7	general heat conduction equation in Spherical	26/11/2019	Lecture
	coordinates	20/11/2019	interspersed
8	initial and boundary conditions	27/11/2019	with
9	Homogeneous slabs and its problems	28/11/2019	discussions
10	hollow cylinders and its problems	29/11/2019	
11	Hollow spheres and its problems	29/11/2019	
12	overall heat transfer coefficient – electrical	03/12/2019	
	analogy		
13	critical radius of insulation Variable thermal	04/12/2019	
	conductivity		
14	systems with heat sources or heat generation	04/12/2019	
15	systems without heat sources	05/12/2019	
16	problems	06/12/2019	
UNIT-II	Extended surface		
CO2: Gain kno	wledge about extended surface		
TB:" HEAT AN	D MASS TRANSFER", Er R.K.RAJPUT.		
	UNIT - 2 Extended surface (fins) heat		
	Transfer		
17	Extended surface (fins) heat Transfer, types of	07/12/2019	
	fins	07/12/2019	
18	applications of fins	10/12/2019	Lecture
19	Heat flow through rectangular fin	11/12/2019	interspersed
20	long fin	11/12/2019	with
21	long fin	13/12/2019	discussions
22	Problems on long fin	17/12/2019	
23	short fin with insulated tip	18/12/2019	
24	Problems on short fin with insulated tip	18/12/2019	
25	short fin without insulated tip	19/12/2019	
26	Problems on short fin without insulated tip	20/12/2019	
27	transient conduction heat transfer	20/12/2019	
28	significance of biot and fourier numbers	24/12/2019	
29	chart solutions of transient conduction systems	26/12/2019	

31	Problems	02/01/2020	
UNIT-III	CONVECTIVE HEAT TRANSFER		
TR." HEAT	e familiar with the concepts of convective heat trans AND MASS TRANSFER", Er R.K.RAJPUT.	ter	
ID. HEAT	UNIT – 3 CONVECTIVE HEAT TRANSFER		
32	Classification of convective heat transfer	03/01/2020	
33	dimensional analysis	04/01/2020	Lecture
34	Rayleighs method and problems	07/01/2020	
	Buckingham Pi Theorem for forced and free	07/01/2020	interspersed with
35	convection	09/01/2020	discussions
36	problems	09/01/2020	discussions
37	Significance of non-dimensional numbers	10/01/2020	
38	concepts of continuity	28/01/2020	
39	momentum and Energy Equations	29/01/2020	
40	problems	29/01/2020	
UNIT-IV	FORCED CONVECTION	23/01/2020	
and pipes	nowledge about concept of hydrodynamic boundary	layers on a ve	ertical plates
TB:" HEAT	AND MASS TRANSFER", Er R.K.RAJPUT.		
	UNIT – 4 FORCED CONVECTION		
41	Concepts about hydrodynamic and thermal	30/01/2020	
	boundary layer		
42	Concepts about hydrodynamic and thermal	31/01/2020	
	boundary layer	31/01/2020	
43	boundary layer and use of empirical correlations	03/02/2020	
11	for convective heat transfer		
44	flat plates and cylinders	04/02/2020	_
45	internal flows	05/02/2020	Lecture
46	Concepts about hydrodynamic and thermal entry lengths	05/02/2020	interspersed with
47	division of internal flow based on this	06/02/2020	discussions
48	use of empirical relations for horizontal pipe flow	06/02/2020	
49	annulus flow	07/02/2020	
50	FREE CONVECTION	11/02/2020	
51	Development of hydrodynamic and thermal boundary layer along a vertical plate	11/02/2020	
52	use of empirical relations for vertical plates and	10/00/2000	
	pipes	12/02/2020	
53	problems	13/02/2020	
54	problems	14/02/2020	
UNIT-V	HEAT TRANSFER WITH PHASE CHANGE BO	OILING	
CO5: Become	e familiar with heat transfer with phase change boili AND MASS TRANSFER", Er R.K.RAJPUT.	ing	
	UNIT - 5 HEAT TRANSFER WITH PHASE		
	CHANGE BOILING		
55	Pool boiling	15/02/2020	
56	film and drop wise condensation	17/02/2020	
57	nusselt's theory of condensation on a vertical plate	18/02/2020	Lecture interspersed
58	film condensation on vertical and horizontal cylinders using empirical correlations	24/02/2020	with discussions
59	heat exchangers	25/02/2020	
60	Classification of heat exchangers	26/02/2020	
61	overall heat transfer coefficient and fouling factor	26/02/2020	
	The state of the s	The South Control of the Control of	
62	concepts of LMTD and NTU methods	27/02/2020	

**UNIT-VI** WORK - RADIATION HEAT TRANSFER

CO6: Become familiar with concepts of emission characteristics, heat exchange between

TB: "HEAT AND MASS TRANSFER", Er R.K.RAJPUT.

	UNIT – 6 RADIATION HEAT TRANSFER		
64	Emission characteristics and laws of black-body	02/03/2020	
	radiation		
65	Irradiation	03/03/2020	
66	total and monochromatic quantities	04/03/2020	1
67	laws of Planck, Wien, Kirchoff	04/03/2020	Lecture
68	Lamber, Stefan and Boltzmann	05/03/2020	interspersed
69	heat exchange between two black bodies	06/03/2020	with
70	concepts of shape factor	07/03/2020	discussions
71	Emissivity – heat exchange between grey bodies	16/03/2020	
72	radiation shields	17/03/2020	
73	electrical analogy for radiation networks	18/03/2020	
74	Problems	19/03/2020	

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# TENTATIVE LESSON PLAN

Course Title: IN	DUSTRIAL ROBOTICS	Course co	ode: R163	203C
Section : Sec A	Date: 21/11/2019		Page No :	01 to 03
Revision No : 00			Approved	By: HOD
Tools: BLACK				
No. of Periods	TOPIC	]	Date	Mode of Delivery
UNIT-I INTRO	DUCTION			
	will get an idea about Robot and its operations	s.		
TB : Robotics	and Control / Mittal R K & Nagrath I J			
1	Automation and robotics	33 37 36	11/2019	
2	CAD/CAM		11/2019	
3	An over view of Robotics	25/	11/2019	Lecture
4	Robotics-present and future applications	26/	11/2019	interspersed
5	Present and future applications of Robotics.		11/2019	with
6	Classification of Robots	2/1	12/2019	discussions
7	Classification by coordinate system	3/1	12/2019	discussions
8	Classification by control system	6/1	12/2019	
9	Tutorials	7/3	12/2019	
10	Function line diagram			
TB: Robotics	ble to know the different parts of Robot. s and Control / Mittal R K & Nagrath I J	9/	12/2019	
11	Function line diagram representation of robot	10/	/12/2019	
	arms	Section design		
12	Common types of arms		/12/2019	T 4
13	Components, Architecture		/12/2019	Lecture
14	Number of degrees of freedom – Requirement and challenges of end effectors	s 16	/12/2019	intersperse with
15	Determination of the end effectors		/12/2019	discussion
16	Electric locomotion devices	20	/12/2019	
17	Hydraulic and Pneumatic types of locomotion devices	21	/12/2019	
10	Tutorials	24	/12/2019	
UNIT-III MO	Tutorials FION ANALYSIS, MANIPULATOR KINEM learn about different motions in robot and ma	IATICS.		nematics.
TB: Robotic	es and Control / Mittal R K & Nagrath I J			T
19	Homogeneous transformation related to translation	27	7/12/2019	
20	Homogeneous transformation related to rotati		3/12/2019	
21	Homogeneous transformations problems	30	)/12/2019	
	Specifications of matrices	31	1/12/2019	
22	Specifications of matrices	-		Lecture

24	Joint coordinates and world coordinates	4/1/2020	interspersed
25	Forward kinematics –problems. Inverse	6/1/2020	with discussions
	kinematics –problems.	7/1/2020	
26	Tutorials		
27	Homogeneous transformation related to translation	10/1/2020	
20	Homogeneous transformation related to rotation	11/1/2020	
28	Homogeneous transformations problems	13/1/2020	
29	Specifications of matrices	14/1/2020	
30	Denavit-Hartenberg notation	14/1/2020	
31	Joint coordinates and world coordinates	24/1/2020	
32	Forward kinematics –problems. Inverse		
33	Forward kinematics – problems. Inverse		
	kinematics –problems.	25/1/2020	
34	Tutorials COBIANS, LAGRANGE'S FORMULATIONS.		
DA. Cainad	knowledge about the motion control methods.		Lecture
30	Differential transformation, and manipulators— problems	27/1/2020	interspersed
2.1	Jacobians, singularities	28/1/2020	with
31	Jacobians-problems	31/1/2020	discussions
32	Dynamics: Lagrange – Euler formulations –	3/2/2020	
33	Problems		
	Nowton Fuler formulations -	4/2/2020	
34	Dynamics: Newton – Euler formulations – Problems		
	Problems	7/2/2020	HECTORY.
35 INIT-V GE	Problems Tutorials NERAL CONSIDERATION OF THE ROBOT PATEURS are able to understand the Path and Trajectory of the Path and Trajec	7/2/2020 FH AND TRA	AJECTORY. when working.
35 INIT-V GE	Problems Tutorials  NERAL CONSIDERATION OF THE ROBOT PATANTS are able to understand the Path and Trajectory of tics and Control / Mittal R K & Nagrath I J  General considerations in path description &	7/2/2020 FH AND TRA	AJECTORY. when working.
35 UNIT-V GE CO5: Studen B: Robo 36	Problems Tutorials  NERAL CONSIDERATION OF THE ROBOT PATAL AND ADDRESS ARE ABLE to understand the Path and Trajectory of tics and Control / Mittal R K & Nagrath I J  General considerations in path description & generation.	7/2/2020 TH AND TRA of the Robot v	viien werzeeg
35 INIT-V GE CO5: Studer B: Robo 36	Problems Tutorials  NERAL CONSIDERATION OF THE ROBOT PATA  Its are able to understand the Path and Trajectory of tics and Control / Mittal R K & Nagrath I J  General considerations in path description & generation.  Trajectory planning and avoidance of obstacles,	7/2/2020 FH AND TRA of the Robot v	, were were
35 UNIT-V GE CO5: Studen TB : Robo 36	Problems Tutorials  NERAL CONSIDERATION OF THE ROBOT PATE  Its are able to understand the Path and Trajectory of tics and Control / Mittal R K & Nagrath I J  General considerations in path description & generation.  Trajectory planning and avoidance of obstacles,	7/2/2020 TH AND TRA of the Robot v 8/2/2020 10/2/2020 11/2/2020	Lecture
35 INIT-V GE CO5: Studer B: Robo 36	Problems Tutorials  NERAL CONSIDERATION OF THE ROBOT PARAMETERS are able to understand the Path and Trajectory of tics and Control / Mittal R K & Nagrath I J  General considerations in path description & generation.  Trajectory planning and avoidance of obstacles, path planning,  Skew motion, joint integrated motion –straight	7/2/2020 TH AND TRA of the Robot v 8/2/2020 10/2/2020	Lecture
35 INIT-V GE CO5: Student B: Robo 36 37 38 39	Problems Tutorials  NERAL CONSIDERATION OF THE ROBOT PATA  Its are able to understand the Path and Trajectory of tics and Control / Mittal R K & Nagrath I J  General considerations in path description & generation.  Trajectory planning and avoidance of obstacles, path planning,  Skew motion, joint integrated motion –straight line motion	7/2/2020 TH AND TRA of the Robot v 8/2/2020 10/2/2020 11/2/2020 14/2/2020	Lecture interspersed with
35 UNIT-V GE CO5: Studen B: Robo 36 37 38 39 40	Problems Tutorials  NERAL CONSIDERATION OF THE ROBOT PATA  Its are able to understand the Path and Trajectory of tics and Control / Mittal R K & Nagrath I J  General considerations in path description & generation.  Trajectory planning and avoidance of obstacles, path planning,  Skew motion, joint integrated motion —straight line motion  Robot programming,	7/2/2020 TH AND TRA of the Robot v 8/2/2020 10/2/2020 11/2/2020 14/2/2020	Lecture interspersed with
35 UNIT-V GE CO5: Studen TB : Robo 36 37 38 39 40 41	Problems Tutorials  NERAL CONSIDERATION OF THE ROBOT PATANTS are able to understand the Path and Trajectory of tics and Control / Mittal R K & Nagrath I J  General considerations in path description & generation.  Trajectory planning and avoidance of obstacles, path planning,  Skew motion, joint integrated motion —straight line motion  Robot programming,	7/2/2020 TH AND TRA of the Robot v 8/2/2020 10/2/2020 11/2/2020 14/2/2020 21/2/2020	Lecture interspersed with discussions
35 UNIT-V GE CO5: Studen B: Robo 36 37 38 39 40	Problems Tutorials  NERAL CONSIDERATION OF THE ROBOT PATA  Its are able to understand the Path and Trajectory of tics and Control / Mittal R K & Nagrath I J  General considerations in path description & generation.  Trajectory planning and avoidance of obstacles, path planning,  Skew motion, joint integrated motion —straight line motion  Robot programming,  Robot languages  Software packages-description of paths with a	7/2/2020 TH AND TRA of the Robot v  8/2/2020 10/2/2020 11/2/2020 14/2/2020 21/2/2020 22/2/2020	Lecture interspersed with discussions
35 UNIT-V GE CO5: Students Robo 36 37 38 39 40 41 42	Problems Tutorials  NERAL CONSIDERATION OF THE ROBOT PARAMETERS are able to understand the Path and Trajectory of tics and Control / Mittal R K & Nagrath I J  General considerations in path description & generation.  Trajectory planning and avoidance of obstacles, path planning, Skew motion, joint integrated motion —straight line motion  Robot programming, Robot languages  Software packages-description of paths with a robot programming language	7/2/2020 TH AND TRA of the Robot v  8/2/2020 10/2/2020 11/2/2020 14/2/2020 21/2/2020 22/2/2020 25/2/2020	Lecture interspersed with discussions
35 UNIT-V GE CO5: Student B: Robo 36 37 38 39 40 41 42 43	Problems Tutorials  NERAL CONSIDERATION OF THE ROBOT PATE Its are able to understand the Path and Trajectory of tics and Control / Mittal R K & Nagrath I J  General considerations in path description & generation.  Trajectory planning and avoidance of obstacles, path planning,  Skew motion, joint integrated motion —straight line motion  Robot programming,  Robot languages  Software packages-description of paths with a robot programming language  Tutorial	7/2/2020 TH AND TRA of the Robot v  8/2/2020 10/2/2020 11/2/2020 14/2/2020 21/2/2020 22/2/2020 25/2/2020  ONENTS.	Lecture interspersed with discussions
35 UNIT-V GE CO5: Studen B: Robo 36  37 38 39  40 41 42  43 UNIT-VI R	Problems Tutorials  NERAL CONSIDERATION OF THE ROBOT PATE  Its are able to understand the Path and Trajectory of tics and Control / Mittal R K & Nagrath I J  General considerations in path description & generation.  Trajectory planning and avoidance of obstacles, path planning,  Skew motion, joint integrated motion – straight line motion  Robot programming,  Robot languages  Software packages-description of paths with a robot programming language  Tutorial  COBOT ACTUATORS AND FEED BACK COMPORTAL Now the actuators and feedback of the Robot contents.	7/2/2020 TH AND TRA of the Robot v  8/2/2020 10/2/2020 11/2/2020 14/2/2020 21/2/2020 22/2/2020 25/2/2020  ONENTS.	Lecture interspersed with discussions
35 UNIT-V GE CO5: Studer B: Robo 36  37 38 39  40 41 42  43 UNIT-VI R CO6: Able TB: Rob	Problems Tutorials  NERAL CONSIDERATION OF THE ROBOT PATA  Its are able to understand the Path and Trajectory of tics and Control / Mittal R K & Nagrath I J  General considerations in path description & generation.  Trajectory planning and avoidance of obstacles, path planning,  Skew motion, joint integrated motion —straight line motion  Robot programming,  Robot languages  Software packages-description of paths with a robot programming language  Tutorial  COBOT ACTUATORS AND FEED BACK COMPO to know the actuators and feedback of the Robot contics and Control / Mittal R K & Nagrath I J	7/2/2020 TH AND TRA of the Robot v  8/2/2020 10/2/2020 11/2/2020 14/2/2020 21/2/2020 22/2/2020 25/2/2020 ONENTS. components.	Lecture interspersed with discussions
35 UNIT-V GE CO5: Studen B: Robo 36  37 38 39  40 41 42  43 UNIT-VI R	Problems Tutorials  NERAL CONSIDERATION OF THE ROBOT PATE  Its are able to understand the Path and Trajectory of tics and Control / Mittal R K & Nagrath I J  General considerations in path description & generation.  Trajectory planning and avoidance of obstacles, path planning,  Skew motion, joint integrated motion – straight line motion  Robot programming,  Robot languages  Software packages-description of paths with a robot programming language  Tutorial  COBOT ACTUATORS AND FEED BACK COMPORTAL Now the actuators and feedback of the Robot contents.	7/2/2020 TH AND TRA of the Robot v  8/2/2020 10/2/2020 11/2/2020 14/2/2020 21/2/2020 22/2/2020 25/2/2020  ONENTS.	Lecture interspersed with discussions  Lecture interspersed with discussions  Lecture

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46	Actuators: electric a.c, d.c	7/3/2020	with
47	Stepper motors	8/3/2020	discussions
48	Feedback components: position sensors.	10/3/2020	
49	Potentiometers and Resolvers	17/3/2020	
50	Encoders	18/3/2020	
51	Velocity sensors- tachometers	18/3/2020	

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# TENTATIVE LESSON PLAN

Course Title: IN	NDUSTRIAL ROBOTICS	Course code: R16	3203C
Section : Sec B	Date: 21/11/2019	Page No	: 01 to 03
Revision No: 00			d By: HOD
Tools: BLACK	BOARD		
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I INTRO	DUCTION		
CO1: Students	will get an idea about Robot and its operations	s.	
	and Control / Mittal R K & Nagrath I J		
1	Automation and robotics	22/11/2019	
2	CAD/CAM	23/11/2019	
3	An over view of Robotics	25/11/2019	Lastuma
4	Robotics-present and future applications	26/11/2019	Lecture
5	Present and future applications of Robotics.	30/11/2019	interspersed with
6	Classification of Robots	2/12/2019	discussions
7	Classification by coordinate system	3/12/2019	discussions
8	Classification by control system	6/12/2019	
9	Tutorials	7/12/2019	
TB : Robotics	and Control / Mittal R K & Nagrath I J  Function line diagram	9/12/2019	
10	Function line diagram  Function line diagram representation of robot	10/12/2019	
	arms		
12	Common types of arms	13/12/2019	
13	Components, Architecture	14/12/2019	Lecture
14	Number of degrees of freedom – Requirements and challenges of end effectors	10/12/2019	interspersed with
15	Determination of the end effectors	17/12/2019	discussions
16	Electric locomotion devices	20/12/2019	
17	Hydraulic and Pneumatic types of locomotion devices	21/12/2019	
18	Tutorials	24/12/2019	
CO3: Able to le	TION ANALYSIS, MANIPULATOR KINEM. earn about different motions in robot and man s and Control / Mittal R K & Nagrath I J	ATICS. hipulators and Kin	nematics.
19	Homogeneous transformation related to translation	27/12/2019	
20	Homogeneous transformation related to rotation	n 28/12/2019	
21	Homogeneous transformations problems	30/12/2019	
22	Specifications of matrices	31/12/2019	
23	Denavit-Hartenberg notation	3/1/2020	Lecture

24	Joint coordinates and world coordinates	4/1/2020	interspersed
25	Forward kinematics –problems. Inverse kinematics –problems.	6/1/2020	with discussions
26	Tutorials	7/1/2020	
27	Homogeneous transformation related to translation	10/1/2020	
28	Homogeneous transformation related to rotation	11/1/2020	
29	Homogeneous transformations problems	13/1/2020	
30	Specifications of matrices	14/1/2020	
31	Denavit-Hartenberg notation	14/1/2020	
32	Joint coordinates and world coordinates	24/1/2020	
33	Forward kinematics –problems. Inverse kinematics –problems.		
34	Tutorials	25/1/2020	
30	Differential transformation, and manipulators— problems	27/1/2020	Lecture interspersed
31	Jacobians, singularities	28/1/2020	with
32	Jacobians-problems	31/1/2020	discussions
33	Dynamics: Lagrange – Euler formulations – Problems	3/2/2020	
34	Dynamics: Newton – Euler formulations –	4/0/0000	
J4	Problems	4/2/2020	
35 NIT-V GI	Problems Tutorials NERAL CONSIDERATION OF THE ROBOT PAT	7/2/2020 TH AND TRA	
35 NIT-V GI O5: Stude	Problems Tutorials  CNERAL CONSIDERATION OF THE ROBOT PATE onts are able to understand the Path and Trajectory of tics and Control / Mittal R K & Nagrath I J  General considerations in path description &	7/2/2020 TH AND TRA	
35 NIT-V GI O5: Stude 3 : Robo 36	Problems Tutorials  CNERAL CONSIDERATION OF THE ROBOT PATE Ints are able to understand the Path and Trajectory of tics and Control / Mittal R K & Nagrath I J  General considerations in path description & generation.	7/2/2020 TH AND TRAG of the Robot will 8/2/2020	
35 NIT-V GE D5: Stude 36 36	Problems Tutorials  CNERAL CONSIDERATION OF THE ROBOT PATE Ints are able to understand the Path and Trajectory of tics and Control / Mittal R K & Nagrath I J  General considerations in path description & generation.  Trajectory planning and avoidance of obstacles,	7/2/2020 TH AND TRAG of the Robot w 8/2/2020 10/2/2020	nen working.
35 NIT-V GI O5: Stude 3 : Robo 36	Problems Tutorials  CNERAL CONSIDERATION OF THE ROBOT PATE Ints are able to understand the Path and Trajectory of tics and Control / Mittal R K & Nagrath I J  General considerations in path description & generation.  Trajectory planning and avoidance of obstacles, path planning,  Skew motion, joint integrated motion –straight	7/2/2020 TH AND TRAG of the Robot will 8/2/2020	Lecture interspersed
35 NIT-V GF D5: Stude 36 36 37 38 39	Problems Tutorials  CNERAL CONSIDERATION OF THE ROBOT PATE Ints are able to understand the Path and Trajectory of tics and Control / Mittal R K & Nagrath I J  General considerations in path description & generation.  Trajectory planning and avoidance of obstacles, path planning,  Skew motion, joint integrated motion –straight line motion	7/2/2020 TH AND TRAG of the Robot w 8/2/2020 10/2/2020 11/2/2020	Lecture interspersed with
35 NIT-V GH O5: Stude 36 37 38 39 40	Problems Tutorials  CNERAL CONSIDERATION OF THE ROBOT PATE Ints are able to understand the Path and Trajectory of the sand Control / Mittal R K & Nagrath I J  General considerations in path description & generation.  Trajectory planning and avoidance of obstacles, path planning, Skew motion, joint integrated motion —straight line motion  Robot programming,	7/2/2020 TH AND TRAG of the Robot will 8/2/2020 10/2/2020 11/2/2020 14/2/2020	Lecture interspersed
35 NIT-V GF D5: Stude 36 36 37 38 39	Problems Tutorials  CNERAL CONSIDERATION OF THE ROBOT PATE Ints are able to understand the Path and Trajectory of tics and Control / Mittal R K & Nagrath I J  General considerations in path description & generation.  Trajectory planning and avoidance of obstacles, path planning,  Skew motion, joint integrated motion –straight line motion  Robot programming,  Robot languages  Software packages-description of paths with a	7/2/2020 TH AND TRACE of the Robot with the Robot w	Lecture interspersed with
35 NIT-V GH O5: Stude 36 37 38 39 40 41 42	Problems Tutorials  CNERAL CONSIDERATION OF THE ROBOT PATE Ints are able to understand the Path and Trajectory of tics and Control / Mittal R K & Nagrath I J  General considerations in path description & generation.  Trajectory planning and avoidance of obstacles, path planning, Skew motion, joint integrated motion —straight line motion  Robot programming, Robot languages  Software packages-description of paths with a robot programming language	7/2/2020 TH AND TRACE of the Robot with the Robot w	Lecture interspersed with
35 NIT-V GF D5: Stude 36 37 38 39 40 41 42	Problems Tutorials  CNERAL CONSIDERATION OF THE ROBOT PATE Ints are able to understand the Path and Trajectory of tics and Control / Mittal R K & Nagrath I J  General considerations in path description & generation.  Trajectory planning and avoidance of obstacles, path planning, Skew motion, joint integrated motion —straight line motion  Robot programming, Robot languages  Software packages-description of paths with a robot programming language  Tutorial	7/2/2020 TH AND TRACE of the Robot will 8/2/2020 10/2/2020 11/2/2020 14/2/2020 21/2/2020 22/2/2020 25/2/2020	Lecture interspersed with
35 NIT-V GF D5: Stude 36 37 38 39 40 41 42 43 NIT-VI R	Problems Tutorials  INERAL CONSIDERATION OF THE ROBOT PATINGS are able to understand the Path and Trajectory of the same able to understand the Path and Trajectory of the same considerations in path description & generation.  Trajectory planning and avoidance of obstacles, path planning, Skew motion, joint integrated motion—straight line motion Robot programming, Robot languages Software packages-description of paths with a robot programming language Tutorial  OBOT ACTUATORS AND FEED BACK COMPONTO know the actuators and feedback of the Robot comparison.	7/2/2020 TH AND TRACE of the Robot will  8/2/2020  10/2/2020  11/2/2020  14/2/2020  21/2/2020  22/2/2020  25/2/2020  NENTS.	Lecture interspersed with
35 NIT-V GF D5: Stude 36 37 38 39 40 41 42 43 NIT-VI R	Problems Tutorials  INERAL CONSIDERATION OF THE ROBOT PATINGS are able to understand the Path and Trajectory of tics and Control / Mittal R K & Nagrath I J  General considerations in path description & generation.  Trajectory planning and avoidance of obstacles, path planning, Skew motion, joint integrated motion –straight line motion  Robot programming, Robot languages Software packages-description of paths with a robot programming language Tutorial  OBOT ACTUATORS AND FEED BACK COMPON	7/2/2020 TH AND TRACE of the Robot will  8/2/2020  10/2/2020  11/2/2020  14/2/2020  21/2/2020  22/2/2020  25/2/2020  NENTS.	Lecture interspersed with

46	Actuators: electric a.c, d.c	7/3/2020	with
47	Stepper motors	8/3/2020	discussions
48	Feedback components: position sensors.	10/3/2020	
49	Potentiometers and Resolvers	17/3/2020	
50	Encoders	18/3/2020	
51	Velocity sensors- tachometers	18/3/2020	

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### TENTATIVE LESSON PLAN

Course 7	Title: PPC	C	Course (	Code: R10	642031
Section	: Sec A	Date: 07/11/2019		Page No	: 01 of 03
Revision	<b>No</b> : 00	Prepared By : B NAGENDRA		Approved By : HO	
Tools: B	lack boar	rd, PPTs			
No. of		TOPIC		Date	Mode of
Periods					Delivery
UNIT-I	INTR	ODUCTION	0		
	UNDER	RSTANDING OF THE CONCEPTS ( EMS	OF PRO	DUCTIO	ON AND
1	Introduc	ction: Definition	07/	/11/2019	
2	objectiv	es and functions of production planni trol	ng 08/	/11/2019	
3	Element	s of production control	09/	/11/2019	
4	types of	production	10	/11/2019	Lecture
5	organiza departm	ation of production planning and contro	1 11	/11/2019	interspersed with
6	internal	organization of department	14	/11/2019	discussions
7	Importation control	nce and applications of production	15/	/11/2019	
8	Practice	on above topics	16	/11/2019	
No. of		TOPIC	Da	te	Mode o
Periods					Delivery
UNIT-II	FOR	ECASTING			
planning achieving	and contr g their obj	rstand The ability to apply principles and rol of these systems to optimise/make be jectives ng, Planning and Control/Partik Jonsson	est use o	of resource	
Mattsson	/TataMc0	GrawHill			
1	Introduc	ction about forecasting	17.	/11/2019	
2	Forecast	ting – importance of forecasting	18.	/11/2019	Lecture
3	Types o	f forecasting	19	/11/2019	intersperse
4	Types o	f forecasting	20	/11/2019	with

5	their uses – general principles of forecasting	22/11/2019	discussions
6	forecasting techniques	23/11/2019	
7	qualitative methods and quantative methods	24/11/2019	
8	principles and techniques in the design	25/11/2019	
9	best use of resources in achieving their objectives	27/11/2019	
10	planning and control of these systems to optimize	28/11/2019	
No. of	TOPIC	Date	Mode of
Periods			Delivery
	Inventory management  e to UNNDERSTAND Inventory management  ements of Production Planning and Control / Samuel	Eiton/Univers	al Book
1	Inventory management	30/11/2019	
2	functions of inventories - relevant inventory costs	2/12/2020	
3	ABC analysis – VED analysis	3/12/2020	
4	EOQ model – Inventory control systems	4/12/2020	
5	P-Systems and Q-Systems	5/12/2020	Lecture
6	Introduction to MRP I, MRP II, ERP, LOB(Line of Balance)	6/12/2020	interspersed with
7	JIT and KANBAN system	8/12/2020	discussions
8	MRP II, ERP, LOB(Line of Balance),	9/12/2020	uiscussions
9	EOQ model – Inventory control systems	12/12/2020	
10	P–Systems and Q-Systems	13/12/2020	
11	Revision on above topics	14/12/2020	
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-IV CO4: Ab T TB: Ma	ROUTING  le to UNNDERSTAND Routing and importance anufacturing, Planning and Control/Partik Jonsson Stig-A /TataMcGrawHill	Arne	
Mattsson/	Routing – definition	15/10/2020	
2	routing procedure –route sheets	16/12/2020	Lecture
3	bill of material – factors affecting routing procedure,	17/12/2020	intersperse
4	schedule –definition – difference with loading	18/12/2020	with

			discussions
5	factors affecting routing procedure	20/12/2020	discussions
6	Revision on above topics	21/12/2020	
7	Revision on above topics	22/12/2020	
No. of	TOPIC	Date	Mode of
Periods			Delivery
UNIT-V	Scheduling policies – techniques		•
CO5: Able	to UNNDERSTAND Scheduling policies - techniques		
T TB: Eler	nents of Production Planning and Control / Samuel I	Eilon/Universal	<b>Book Corp</b>
1	Scheduling policies – techniques	23/12/2020	
2	standard scheduling methods	24/12/2020	
3	Line Balancing	28/12/2020	Lecture
4	aggregate planning	29/12/2020	interspersed
5	chase planning	30/12/2020	with
6	expediting, and controlling aspects	01/01/2021	discussions
7	Revision on above topics	02/01/2021	
No. of	TOPIC	Date	Mode of
	20220		
Periods			Delivery
Periods UNIT-VI CO6: Able T TB: Ma	Dispatching e to UNNDERSTAND Dispatching nufacturing, Planning and Control/Partik Jonsson S	tig-Arne	
Periods UNIT-VI CO6: Able T TB: Ma	Dispatching e to UNNDERSTAND Dispatching	tig-Arne 03/01/2021	
Periods UNIT-VI CO6: Able T TB: Ma Mattsson/	Dispatching to UNNDERSTAND Dispatching nufacturing, Planning and Control/Partik Jonsson S TataMcGrawHill		
Periods UNIT-VI CO6: Able T TB: Ma Mattsson/	Dispatching e to UNNDERSTAND Dispatching nufacturing, Planning and Control/Partik Jonsson S TataMcGrawHill Dispatching – activities of dispatcher dispatching procedure – follow up definition – reason for existence of	03/01/2021	Delivery
Periods UNIT-VI CO6: Able T TB: Ma Mattsson/ 1 2	Dispatching e to UNNDERSTAND Dispatching nufacturing, Planning and Control/Partik Jonsson S TataMcGrawHill Dispatching – activities of dispatcher dispatching procedure – follow up	03/01/2021	Delivery
Periods UNIT-VI CO6: Able T TB: Ma Mattsson/ 1 2 3	Dispatching to UNNDERSTAND Dispatching nufacturing, Planning and Control/Partik Jonsson S TataMcGrawHill Dispatching – activities of dispatcher dispatching procedure – follow up definition – reason for existence of functions	03/01/2021 04/01/2021 05/01/2021	Delivery
Periods UNIT-VI CO6: Able T TB: Ma Mattsson/ 1 2 3	Dispatching to UNNDERSTAND Dispatching nufacturing, Planning and Control/Partik Jonsson S TataMcGrawHill Dispatching – activities of dispatcher dispatching procedure – follow up definition – reason for existence of functions types of follow up applications of computer in production planning and control importance of computer in production planning and control	03/01/2021 04/01/2021 05/01/2021 20/01/2021 22/01/2021 13/02/2021	Delivery  Lecture interspersed
Periods UNIT-VI CO6: Able T TB: Ma Mattsson/ 1 2 3 4 5	Dispatching to UNNDERSTAND Dispatching nufacturing, Planning and Control/Partik Jonsson S TataMcGrawHill Dispatching – activities of dispatcher dispatching procedure – follow up definition – reason for existence of functions types of follow up applications of computer in production planning and control importance of computer in production planning	03/01/2021 04/01/2021 05/01/2021 20/01/2021 22/01/2021	Delivery  Lecture interspersed with
Periods UNIT-VI CO6: Able T TB: Ma Mattsson/ 1 2 3 4 5	Dispatching to UNNDERSTAND Dispatching nufacturing, Planning and Control/Partik Jonsson S TataMcGrawHill Dispatching – activities of dispatcher dispatching procedure – follow up definition – reason for existence of functions types of follow up applications of computer in production planning and control importance of computer in production planning and control	03/01/2021 04/01/2021 05/01/2021 20/01/2021 22/01/2021 13/02/2021	Delivery  Lecture interspersed with

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Date: 7/11/9

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Date:

7/11/19

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### TANTATIVE LESSON PLANE

Course Title: PPC		Course Code: R1642031
Section : Sec B	Date: 07/11/2019	Page No: 01 of 03
Revision No: 00	Prepared By : Dr. T S S BALAJI	Approved By : HOD

Tools: Black board, PPTs

No. of	TOPIC	Date	Mode of
Periods			Delivery
UNIT-I	INTRODUCTION		
CO1: AN	UNDERSTANDING OF THE CONCEPTS OF	PRODUCTIO	N AND
SERVIC	CE SYSTEMS		
1	Introduction: Definition	07/11/2019	
2	objectives and functions of production planning and control	08/11/2019	
3	Elements of production control	09/11/2019	
4	types of production	10/11/2019	Lecture
5	organization of production planning and control department	11/11/2019	interspersed with
6	internal organization of department	14/11/2019	discussions
7	Importance and applications of production control	15/11/2019	
8	Practice on above topics	16/11/2019	
No. of	TOPIC	Date	Mode of
Periods			Delivery

#### UNIT-II FORECASTING

CO1: Able to Understand The ability to apply principles and techniques in the design, planning and control of these systems to optimise/make best use of resources in achieving their objectives

TB2: Manufacturing, Planning and Control/Partik Jonsson Stig-Arne

### Mattsson/TataMcGrawHill

1	Introduction about forecasting	17/11/2019	
2	Forecasting – importance of forecasting	18/11/2019	Lecture
3	Types of forecasting	19/11/2019	interspersed
4	Types of forecasting	20/11/2019	with
5	their uses – general principles of forecasting	22/11/2019	discussions
6	forecasting techniques	23/11/2019	

		141	
7	qualitative methods and quantative methods	24/11/2019	
8	principles and techniques in the design	25/11/2019	
9	best use of resources in achieving their objectives	27/11/2019	
10	planning and control of these systems to optimize	28/11/2019	
No. of Periods	TOPIC	Date	Mode of Delivery
	Inventory management le to UNNDERSTAND Inventory management ements of Production Planning and Control / Samuel	Eilon/Univers	al Book
1	Inventory management	30/11/2019	
2	functions of inventories - relevant inventory costs	2/12/2020	ı
3	ABC analysis – VED analysis	3/12/2020	
4	EOQ model – Inventory control systems	4/12/2020	
5	P-Systems and Q-Systems	5/12/2020	Lecture
6	Introduction to MRP I, MRP II, ERP, LOB(Line of Balance)	6/12/2020	interspersed with
7	JIT and KANBAN system	8/12/2020	
8	MRP II, ERP, LOB(Line of Balance),	9/12/2020	discussions
9	EOQ model – Inventory control systems	12/12/2020	
10	P–Systems and Q-Systems	13/12/2020	
11	Revision on above topics	14/12/2020	
No. of	TOPIC	Date	Mode of
Periods			Delivery
T TB: N	ROUTING ble to UNNDERSTAND Routing and importance flanufacturing, Planning and Control/Partik Jonsson S h/TataMcGrawHill	Stig-Arne	
1	Routing – definition	15/10/2020	
2	routing procedure –route sheets	16/12/2020	Lecture
3	bill of material – factors affecting routing procedure,	17/12/2020	intersperse
4	schedule –definition – difference with loading	18/12/2020	with
5	factors affecting routing procedure	20/12/2020	discussion

PARTY.			
6	Revision on above topics	21/12/2020	
7	Revision on above topics	22/12/2020	
No. of	TOPIC	Date	Mode of
Periods			Delivery
UNIT-V	Scheduling policies – techniques		
	to UNNDERSTAND Scheduling policies – technique		Pook Corn
1 1B: Elei	nents of Production Planning and Control / Samuel I Scheduling policies – techniques	23/12/2020	Dook Corp
		24/12/2020	
2	standard scheduling methods		
3	Line Balancing	28/12/2020	Lecture
4	aggregate planning	29/12/2020	interspersed
5	chase planning	30/12/2020	with
6	expediting, and controlling aspects	01/01/2021	discussions
7	Revision on above topics	02/01/2021	
No. of	TOPIC	Date	Mode of
Periods			Delivery
TTB: Ma	Dispatching to UNNDERSTAND Dispatching nufacturing, Planning and Control/Partik Jonsson S	tia Arna	
	TataMcGrawHill	ilg-Affic	
1		03/01/2021	
2	TataMcGrawHill		
	TataMcGrawHill Dispatching – activities of dispatcher	03/01/2021	
2	TataMcGrawHill  Dispatching – activities of dispatcher  dispatching procedure – follow up  definition – reason for existence of	03/01/2021	Lecture
2	TataMcGrawHill  Dispatching – activities of dispatcher  dispatching procedure – follow up  definition – reason for existence of functions  types of follow up  applications of computer in production planning and control	03/01/2021 04/01/2021 05/01/2021	Lecture interspersed with
3	TataMcGrawHill  Dispatching – activities of dispatcher  dispatching procedure – follow up  definition – reason for existence of functions  types of follow up  applications of computer in production planning and control  importance of computer in production planning and control	03/01/2021 04/01/2021 05/01/2021 20/01/2021 22/01/2021 13/02/2021	interspersed
2 3 4 5	TataMcGrawHill  Dispatching – activities of dispatcher  dispatching procedure – follow up  definition – reason for existence of functions  types of follow up  applications of computer in production planning and control  importance of computer in production planning	03/01/2021 04/01/2021 05/01/2021 20/01/2021 22/01/2021	interspersed with
2 3 4 5	TataMcGrawHill  Dispatching – activities of dispatcher  dispatching procedure – follow up  definition – reason for existence of functions  types of follow up  applications of computer in production planning and control  importance of computer in production planning and control	03/01/2021 04/01/2021 05/01/2021 20/01/2021 22/01/2021 13/02/2021	interspersed with
2 3 4 5 6 7	TataMcGrawHill  Dispatching – activities of dispatcher  dispatching procedure – follow up  definition – reason for existence of functions  types of follow up  applications of computer in production planning and control  importance of computer in production planning and control  Dispatching – activities of dispatcher	03/01/2021 04/01/2021 05/01/2021 20/01/2021 22/01/2021 13/02/2021	interspersed with

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# TENTATIVE LESSON PLAN: R1642032

PROCESSES	UNCONVENTIONAL MACHINING	Course code	: R1642032
Section : Sec 1	Dute.	Page No: 01 to 0	
<b>Revision No: 0</b>	- Parea By. 11. STANLI KUNAK		ed By : HOL
Tools: BLACK	BOARD	1	tu by . Hor
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I INTRO	DDUCTION		Delivery
CO1: Able to i	dentify the classification of unconventional macl	nining process	os and sains
		ming process	es and game
knowledge abo			
TB: "ADVANC	CED MACHINING PROCESSES"/VK JAIN/AL	LIED PUBLIS	SHERS.
1	INTRODUCTION: Need for non-traditional	25/11/19	TILLIU.
	machining methods.	25/11/19	
2	Classification of modern machining processes	27/11/19	
3	Considerations in process selection	28/11/19	
4	Applications. Ultrasonic machining	29/11/19	Lecture
5	Elements of the process	02/12/19	interspersed
6	Mechanics of material removal	03/12/19	with
7	MRR process parameters, economic	04/12/19	discussions
	considerations	0 1/12/19	a isoussions
8	Applications and limitations	05/12/19	
9	Limitations	06/12/19	
10	Revision.	09/12/19	
UNIT-II ELEC	CTRO - CHEMICAL MACHINING		
CO2: Gained kn	owledge about electro chemical machining processe	es.	
TB: " ADVANC	CED MACHINING PROCESSES"/VK JAIN/AL	LIED PUBLIS	SHERS.
	ELECTRO – CHEMICAL MACHINING:	10/12/19	
11	Introduction.		
12	Fundamentals of clostre sharping land 1:	11/10/10	
13	Fundamentals of electro chemical machining electrochemical	11/12/19	
14	grinding	12/12/19	Lecture
15	electro chemical honing	13/12/19	interspersed
16	deburring process	13/12/19	with
17	metal removal rate in ECM	16/12/19	discussions
17	mount telliuval fale III FA IVI	17/12/19	
18		1011-11-	
18	Tool design	18/12/19	
19	Tool design Surface finish and accuracy	19/12/19	
19 20	Tool design Surface finish and accuracy economic aspects of ECM	19/12/19 20/12/19	
19	Tool design Surface finish and accuracy	19/12/19	

00			
23	advantages and applications.	24/12/19	

# UNIT-III THERMAL METAL REMOVAL PROCESSES

CO3: Gained knowledge about thermal metal removal processes like EDM, EDG and wire EDM.

# TB: "ADVANCED MACHINING PROCESSES"/VK JAIN/ALLIED PUBLISHERS.

24	General principle	26/12/19	
25	Applications of Electric Discharge Machining	27/12/19	
26	Electric Discharge Grinding	30/12/19	
27	Wire EDM – Power circuits for EDM	31/12/19	Lecture
28	Mechanics of metal removal in EDM	02/01/20	interspersed
29	Process parameters	03/01/20	with
30	Selection of tool electrode and dielectric fluids,	06/01/20	discussions
31	Surface finish and machining accuracy	07/01/20	
32	Characteristics of spark eroded surface	08/01/20	
33	Revision	09/01/20	
34	Revision	10/01/20	

#### UNIT-IV ELECTRON BEAM MACHINING

CO4: Gained knowledge about thermal metal removal processes like EBM and LBM.

### TB: "ADVANCED MACHINING PROCESSES"/VK JAIN/ALLIED PUBLISHERS.

35	Electron beam machining	28/01/20	
36	Laser Beam Machining	29/01/20	
37	Basic principle and theory	30/01/20	
38	Mechanics of material removal, process parameters	31/01/20	Lecture interspersed
39	Efficiency	03/02/20	with
40	Accuracy,	04/02/20	discussions
41	Process parameters applications.	04/02/20	
42	Applications	05/02/20	
43	Revision	6/2/20	

#### **UNIT-V PLASMA MACHINING**

CO5: Gained knowledge about plasma machining and other application of plasma in industries.

### TB: "ADVANCED MACHINING PROCESSES"/VK JAIN/ALLIED PUBLISHERS

10. 110 111	13. ADVITACED MACHIMING I ROCESSES /VR JAHVALLIED PUBLISHERS.		
	Unit - 5	7/2/20	Lecture
44	Plasma Machining:	10/2/20	interspersed
45	Introduction	11/2/20	with
46	Application of plasma	12/2/20	discussions
47	Machining,	13/2/20	

48	Metal removal mechanism	14/2/20
49	Metal removal mechanism	17/2/20
50	Accuracy	19/2/20
51	Process parameters,	19/2/20
52	Surface finish	20/2/20
53	Applications	24/2/20
54	In manufacturing industries	25/2/20
55	Revision	26/2/20
56	Revision	27/2/20
57	Revision	28/2/20

### UNIT-IV ABRASIVE JET MACHINING

CO 6: To enhance the principle, working and mechanism of metal removal of AJM, WJM and AWJM etc.

# TB: "ADVANCED MACHINING PROCESSES"/VK JAIN/ALLIED PUBLISHERS.

58	Abrasive jet machining,	2/3/20	
59	Water jet machining	3/3/20	
60	Abrasive water jet machining	4/3/20	
61	Variables,	5/3/20	
62	Mechanics of material removal	6/3/20	Lecture
63	Application and limitations	9/3/20	interspersed
64	Magnetic abrasive finishing, abrasive flow finishing	10/3/20	with
65	Electro stream drilling	11/3/20	
66	Shaped tube	12/3/20	
67	Electrolytic machining	13/3/20	
68	Revision	16/3/20	

Date:

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# **TENTATIVE LESSON PLAN: R1642032**

Course Title: Ul PROCESSES	NCONVENTIONAL MACHINING	Course code: 1	R1642032
Section : Sec II	Date:	Page No	: 01 to 03
Revision No : 00			d By: HOD
Tools: BLACK			
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I INTRO	DUCTION		
CO1: Able to id	lentify the classification of unconventional mach	ining processes	s and gained
knowledge abou			
TB: "ADVANC	ED MACHINING PROCESSES"/VK JAIN/AL		HERS.
1	INTRODUCTION: Need for non-traditional	25/11/19	
1	machining methods.		
2	Classification of modern machining processes	27/11/19	
3	Considerations in process selection	28/11/19	
4	Applications. Ultrasonic machining	29/11/19	Lecture
5	Elements of the process	02/12/19	interspersed
6	Mechanics of material removal	03/12/19	with
7	MRR process parameters, economic	04/12/19	discussions
7	considerations		
8	Applications and limitations	05/12/19	
9	Limitations	06/12/19	
10	Revision.	09/12/19	
CO2: Gained ki	CTRO – CHEMICAL MACHINING nowledge about electro chemical machining process CED MACHINING PROCESSES"/VK JAIN/AI	LIED PUBLIS	SHERS.
	ELECTRO – CHEMICAL MACHINING:	10/12/19	
11	Introduction.		
10	The state of the s	11/12/19	
12	Fundamentals of electro chemical machining	12/12/19	Lecture
13	electrochemical		Lecture
14	grinding	13/12/19	intersperse with
15	electro chemical honing	13/12/19	discussion
16	deburring process	16/12/19	- uiscussion
17	metal removal rate in ECM	17/12/19	
18	Tool design	18/12/19	
19	Surface finish and accuracy	19/12/19	
20	economic aspects of ECM	20/12/19	
01	Simple problems for estimation of metal removal	23/12/19	
21	Simple problems for estimation of metal removal rate  fundamentals of chemical	24/12/19	

23	advantages and applications.	24/12/19	
	11	27/12/19	

# UNIT-III THERMAL METAL REMOVAL PROCESSES

CO3: Gained knowledge about thermal metal removal processes like EDM, EDG and wire EDM.

# TB: "ADVANCED MACHINING PROCESSES"/VK JAIN/ALLIED PUBLISHERS.

24	General principle	26/12/19	
25	Applications of Electric Discharge Machining	27/12/19	
26	Electric Discharge Grinding	30/12/19	
27	Wire EDM – Power circuits for EDM	31/12/19	Lecture
28	Mechanics of metal removal in EDM	02/01/20	interspersed
29	Process parameters	03/01/20	with
30	Selection of tool electrode and dielectric fluids,	06/01/20	discussions
31	Surface finish and machining accuracy	07/01/20	
32	Characteristics of spark eroded surface	08/01/20	
33	Revision	09/01/20	
34	Revision	10/01/20	

### UNIT-IV ELECTRON BEAM MACHINING

CO4: Gained knowledge about thermal metal removal processes like EBM and LBM.

# TB: "ADVANCED MACHINING PROCESSES"/VK JAIN/ALLIED PUBLISHERS.

35	Electron beam machining	28/01/20	
36	Laser Beam Machining	29/01/20	
37	Basic principle and theory	30/01/20	
38	Mechanics of material removal, process parameters	31/01/20	Lecture interspersed
39	Efficiency	03/02/20	with
40	Accuracy,	04/02/20	discussions
41	Process parameters applications.	04/02/20	
42	Applications	05/02/20	
43	Revision	6/2/20	

### **UNIT-V PLASMA MACHINING**

CO5: Gained knowledge about plasma machining and other application of plasma in industries.

### TB: "ADVANCED MACHINING PROCESSES"/VK JAIN/ALLIED PUBLISHERS.

	Unit - 5	7/2/20	
44	Plasma Machining:	10/2/20	Lecture interspersed with discussions
45	Introduction	11/2/20	
46	Application of plasma	12/2/20	
47	Machining,	13/2/20	

48	Metal removal mechanism	14/2/20	
49	Metal removal mechanism	17/2/20	
50	Accuracy	19/2/20	
51	Process parameters,	19/2/20	
52	Surface finish	20/2/20	
53	Applications	24/2/20	
54	In manufacturing industries	25/2/20	
55	Revision	26/2/20	
56	Revision	27/2/20	
57	Revision	28/2/20	

### UNIT-IV ABRASIVE JET MACHINING

CO 6: To enhance the principle, working and mechanism of metal removal of AJM, WJM and AWJM etc.

TB: "ADVANCED MACHINING PROCESSES"/VK JAIN/ALLIED PUBLISHERS.

58	Abrasive jet machining,	2/3/20	
59	Water jet machining	3/3/20	
60	Abrasive water jet machining	4/3/20	
61	Variables,	5/3/20	
62	Mechanics of material removal	6/3/20	Lecture
63	Application and limitations	9/3/20	interspersed with discussions
64	Magnetic abrasive finishing, abrasive flow finishing	10/3/20	
65	Electro stream drilling	11/3/20	
66	Shaped tube	12/3/20	
67	Electrolytic machining	13/3/20	
68	Revision	16/3/20	

Signature of Faculty Date:

Mulle

SRK Institute of Technology ENIKEPADU. VIJAYAWADA-521 108

Signature of HOD

July

Date:

**TENTATIVE PLAN: R1642033** 

Course Title: A	AUTOMOBILE ENGINEERING	Course and	D1(42022
Section: Sec I	Date: 10-06-2019	Course code	
<b>Revision No: 0</b>	0 Prepared By: U. TANOJ		o: 01 to 03
Tools: BLACK	BOARD	Approv	red By: HOD
No. of Periods	TOTIC	Date	Mode of
UNIT-I	INTRODUCTION		Delivery
CO1: Able to u TB: "AUTOM	inderstand basics of automobile engineering & the OBILE ENGINEERING", Er KIRPAL SINGH.	ir application	18
	UNIT-1: Introduction		
1	Introduction: Components of four-wheeler	25/11/19	
	automobile- Chassis & body	23/11/19	
3	Power unit- Power transmission	27/11/19	
3	Rear wheel drive, Front wheel drive & Four-wheel	28/11/19	
	drive	20/11/19	
4	Types of Automobile Engines & Construction	29/11/19	Lecture
5	Turbo charging & Super charging	02/12/19	interspersed
6	Engine Lubrication system, Splash & Pressure	03/12/19	with
	lubrication system	33.12,13	discussions
7	Oil filters & oil pumps	04/12/19	
8	Crankcase ventilation	05/12/19	
9	Engine service & reboring	05/12/19	
1/1	Decombonization		
10	Decarbonization	06/12/19	
11 JNIT-II CO2: Gain kno utomobile & it	Nitriding of crankshaft TRANSMISSION SYSTEM wledge & become familiar with the functions of 's uses	06/12/19 09/12/19 transmission	system of a
11 JNIT-II CO2: Gain kno utomobile & it	Nitriding of crankshaft TRANSMISSION SYSTEM wledge & become familiar with the functions of 's uses BILE ENGINEERING", Er R.K. GOVINDAN. UNIT – 2: Transmission system	09/12/19	system of a
11 JNIT-II CO2: Gain kno utomobile & it	Nitriding of crankshaft TRANSMISSION SYSTEM wledge & become familiar with the functions of 's uses	09/12/19	system of a
11 UNIT-II CO2: Gain kno outomobile & it TB: "AUTOMO	Nitriding of crankshaft TRANSMISSION SYSTEM wledge & become familiar with the functions of 's uses BILE ENGINEERING", Er R.K. GOVINDAN. UNIT – 2: Transmission system	09/12/19 transmission	system of a
JNIT-II CO2: Gain kno utomobile & it B: "AUTOMO	Nitriding of crankshaft  TRANSMISSION SYSTEM  wledge & become familiar with the functions of 's uses  BILE ENGINEERING", Er R.K. GOVINDAN.  UNIT - 2: Transmission system  Transmission system & Types of clutches  Cone clutch, single plate clutch & multi-plate clutch	09/12/19 transmission 10/12/19 11/12/19	system of an
11 UNIT-II CO2: Gain kno utomobile & it TB: "AUTOMO  12  13  14  15	Nitriding of crankshaft  TRANSMISSION SYSTEM wledge & become familiar with the functions of suses BILE ENGINEERING", Er R.K. GOVINDAN. UNIT - 2: Transmission system  Transmission system & Types of clutches  Cone clutch, single plate clutch & multi-plate clutch  Magnetic & centrifugal clutches	09/12/19 transmission 10/12/19 11/12/19 12/12/19	
11 UNIT-II CO2: Gain kno utomobile & it 'B: "AUTOMO  12  13  14  15  16	Nitriding of crankshaft  TRANSMISSION SYSTEM  wledge & become familiar with the functions of 's uses  BILE ENGINEERING", Er R.K. GOVINDAN.  UNIT - 2: Transmission system  Transmission system & Types of clutches  Cone clutch, single plate clutch & multi-plate clutch  Magnetic & centrifugal clutches  Fluid fly-wheel & types of gear boxes  Sliding mesh & construct mesh gear box	09/12/19 transmission 10/12/19 11/12/19 12/12/19 13/12/19	Lecture
11 UNIT-II CO2: Gain kno utomobile & it 'B: "AUTOMO  12  13  14  15  16  17	Nitriding of crankshaft  TRANSMISSION SYSTEM wledge & become familiar with the functions of 's uses  BILE ENGINEERING", Er R.K. GOVINDAN.  UNIT - 2: Transmission system  Transmission system & Types of clutches  Cone clutch, single plate clutch & multi-plate clutch  Magnetic & centrifugal clutches  Fluid fly-wheel & types of gear boxes  Sliding mesh & construct mesh gear box  Synchro mesh & Epicyclic gear box	10/12/19 11/12/19 12/12/19 13/12/19 13/12/19	Lecture interspersed
11 UNIT-II CO2: Gain kno utomobile & it TB: "AUTOMO  12  13  14  15  16  17  18	Nitriding of crankshaft  TRANSMISSION SYSTEM wledge & become familiar with the functions of 's uses  BILE ENGINEERING", Er R.K. GOVINDAN.  UNIT - 2: Transmission system  Transmission system & Types of clutches  Cone clutch, single plate clutch & multi-plate clutch  Magnetic & centrifugal clutches  Fluid fly-wheel & types of gear boxes  Sliding mesh & construct mesh gear box  Synchro mesh & Epicyclic gear box	10/12/19 11/12/19 12/12/19 13/12/19 13/12/19 16/12/19	Lecture interspersed with
11 UNIT-II CO2: Gain kno utomobile & it CB: "AUTOMO  12  13  14  15  16  17  18  19	Nitriding of crankshaft  TRANSMISSION SYSTEM  wledge & become familiar with the functions of 's uses  BILE ENGINEERING", Er R.K. GOVINDAN.  UNIT - 2: Transmission system  Transmission system & Types of clutches  Cone clutch, single plate clutch & multi-plate clutch  Magnetic & centrifugal clutches  Fluid fly-wheel & types of gear boxes  Sliding mesh & construct mesh gear box  Synchro mesh & Epicyclic gear box  Overdrive torque convertor	10/12/19 11/12/19 12/12/19 13/12/19 13/12/19 16/12/19 17/12/19	Lecture interspersed
11 UNIT-II CO2: Gain kno sutomobile & it TB: "AUTOMO  12  13  14  15  16  17  18  19  20	Nitriding of crankshaft  TRANSMISSION SYSTEM wledge & become familiar with the functions of suses BILE ENGINEERING", Er R.K. GOVINDAN. UNIT – 2: Transmission system  Transmission system & Types of clutches  Cone clutch, single plate clutch & multi-plate clutch  Magnetic & centrifugal clutches Fluid fly-wheel & types of gear boxes Sliding mesh & construct mesh gear box Synchro mesh & Epicyclic gear box Overdrive torque convertor Propeller shaft & Hotch kiss drive Torque tube drive	10/12/19 11/12/19 11/12/19 12/12/19 13/12/19 13/12/19 16/12/19 17/12/19 19/12/19	Lecture interspersed with
11 JNIT-II CO2: Gain kno utomobile & it CB: "AUTOMO  12  13  14  15  16  17  18  19  20  21	Nitriding of crankshaft  TRANSMISSION SYSTEM wledge & become familiar with the functions of 's uses BILE ENGINEERING", Er R.K. GOVINDAN. UNIT – 2: Transmission system  Transmission system & Types of clutches  Cone clutch, single plate clutch & multi-plate clutch  Magnetic & centrifugal clutches Fluid fly-wheel & types of gear boxes Sliding mesh & construct mesh gear box Synchro mesh & Epicyclic gear box Overdrive torque convertor  Propeller shaft & Hotch kiss drive Torque tube drive Universal joint	10/12/19 11/12/19 11/12/19 12/12/19 13/12/19 13/12/19 16/12/19 17/12/19 19/12/19 20/12/19	Lecture interspersed with
11 UNIT-II CO2: Gain kno utomobile & it 'B: "AUTOMO  12  13  14  15  16  17  18  19  20  21  22	Nitriding of crankshaft  TRANSMISSION SYSTEM wledge & become familiar with the functions of suses BILE ENGINEERING", Er R.K. GOVINDAN. UNIT – 2: Transmission system  Transmission system & Types of clutches  Cone clutch, single plate clutch & multi-plate clutch  Magnetic & centrifugal clutches Fluid fly-wheel & types of gear boxes Sliding mesh & construct mesh gear box Synchro mesh & Epicyclic gear box Overdrive torque convertor Propeller shaft & Hotch kiss drive Torque tube drive Universal joint Differential rear axles types	10/12/19 11/12/19 11/12/19 12/12/19 13/12/19 13/12/19 16/12/19 17/12/19 19/12/19 20/12/19 23/12/19	Lecture interspersed with
11 JNIT-II CO2: Gain kno utomobile & it TB: "AUTOMO  12  13  14  15  16  17  18  19  20  21  22  23	Nitriding of crankshaft  TRANSMISSION SYSTEM wledge & become familiar with the functions of 's uses  BILE ENGINEERING", Er R.K. GOVINDAN.  UNIT - 2: Transmission system  Transmission system & Types of clutches  Cone clutch, single plate clutch & multi-plate clutch  Magnetic & centrifugal clutches  Fluid fly-wheel & types of gear boxes  Sliding mesh & construct mesh gear box  Synchro mesh & Epicyclic gear box  Overdrive torque convertor  Propeller shaft & Hotch kiss drive  Torque tube drive  Universal joint  Differential rear axles types  Types of wheels & tires	10/12/19 11/12/19 11/12/19 12/12/19 13/12/19 13/12/19 16/12/19 17/12/19 19/12/19 20/12/19 23/12/19 24/12/19	Lecture interspersed with
11 UNIT-II CO2: Gain kno utomobile & it 'B: "AUTOMO  12  13  14  15  16  17  18  19  20  21  22  23  NIT-III	Nitriding of crankshaft  TRANSMISSION SYSTEM wledge & become familiar with the functions of suses BILE ENGINEERING", Er R.K. GOVINDAN. UNIT - 2: Transmission system  Transmission system & Types of clutches  Cone clutch, single plate clutch & multi-plate clutch  Magnetic & centrifugal clutches Fluid fly-wheel & types of gear boxes Sliding mesh & construct mesh gear box Synchro mesh & Epicyclic gear box Overdrive torque convertor Propeller shaft & Hotch kiss drive Torque tube drive Universal joint Differential rear axles types Types of wheels & tires STEERING SYSTEM	10/12/19 11/12/19 11/12/19 12/12/19 13/12/19 13/12/19 16/12/19 17/12/19 19/12/19 20/12/19 23/12/19 24/12/19	Lecture interspersed with discussions
11 JNIT-II CO2: Gain kno utomobile & it B: "AUTOMO  12  13  14  15  16  17  18  19  20  21  22  23  NIT-III SO3: Able to uncoloring the support of the suppo	Nitriding of crankshaft  TRANSMISSION SYSTEM wledge & become familiar with the functions of is uses  BILE ENGINEERING", Er R.K. GOVINDAN.  UNIT – 2: Transmission system  Transmission system & Types of clutches  Cone clutch, single plate clutch & multi-plate clutch  Magnetic & centrifugal clutches  Fluid fly-wheel & types of gear boxes  Sliding mesh & construct mesh gear box  Synchro mesh & Epicyclic gear box  Overdrive torque convertor  Propeller shaft & Hotch kiss drive  Torque tube drive  Universal joint  Differential rear axles types  Types of wheels & tires  STEERING SYSTEM  derstand fundamentals of Steering system in an au BILE ENGINEERING", Er R.K. GOVINDAN.	10/12/19 11/12/19 11/12/19 12/12/19 13/12/19 13/12/19 16/12/19 17/12/19 19/12/19 20/12/19 23/12/19 24/12/19	Lecture interspersed with discussions
11 UNIT-II CO2: Gain kno utomobile & it 'B: "AUTOMO  12  13  14  15  16  17  18  19  20  21  22  23  NIT-III O3: Able to uno B: "AUTOMO	Nitriding of crankshaft  TRANSMISSION SYSTEM wledge & become familiar with the functions of is uses BILE ENGINEERING", Er R.K. GOVINDAN. UNIT – 2: Transmission system  Transmission system & Types of clutches  Cone clutch, single plate clutch & multi-plate clutch Magnetic & centrifugal clutches Fluid fly-wheel & types of gear boxes Sliding mesh & construct mesh gear box Synchro mesh & Epicyclic gear box Overdrive torque convertor Propeller shaft & Hotch kiss drive Torque tube drive Universal joint Differential rear axles types Types of wheels & tires STEERING SYSTEM derstand fundamentals of Steering system in an au BILE ENGINEERING", Er R.K. GOVINDAN. UNIT – 3: Steering system	10/12/19 11/12/19 11/12/19 12/12/19 13/12/19 13/12/19 16/12/19 17/12/19 19/12/19 20/12/19 23/12/19 24/12/19	Lecture interspersed with discussions
11 UNIT-II CO2: Gain kno utomobile & it 'B: "AUTOMO  12  13  14  15  16  17  18  19  20  21  22  23  NIT-III SO3: Able to unco B: "AUTOMO	TRANSMISSION SYSTEM wledge & become familiar with the functions of 's uses DBILE ENGINEERING", Er R.K. GOVINDAN. UNIT – 2: Transmission system  Transmission system & Types of clutches  Cone clutch, single plate clutch & multi-plate clutch  Magnetic & centrifugal clutches  Fluid fly-wheel & types of gear boxes Sliding mesh & construct mesh gear box Synchro mesh & Epicyclic gear box Overdrive torque convertor Propeller shaft & Hotch kiss drive  Torque tube drive Universal joint  Differential rear axles types Types of wheels & tires STEERING SYSTEM Herstand fundamentals of Steering system in an au BILE ENGINEERING", Er R.K. GOVINDAN. UNIT – 3: Steering system Steering system introduction & steering geometry	10/12/19 11/12/19 11/12/19 12/12/19 13/12/19 13/12/19 16/12/19 17/12/19 19/12/19 20/12/19 23/12/19 24/12/19	Lecture interspersed with discussions ts functions  Lecture interspersed
11 JNIT-II CO2: Gain kno cutomobile & it CB: "AUTOMO  12  13  14  15  16  17  18  19  20  21  22  23  NIT-III O3: Able to unce B: "AUTOMO  24  25	TRANSMISSION SYSTEM wledge & become familiar with the functions of 's uses DBILE ENGINEERING", Er R.K. GOVINDAN. UNIT – 2: Transmission system  Transmission system & Types of clutches  Cone clutch, single plate clutch & multi-plate clutch Magnetic & centrifugal clutches Fluid fly-wheel & types of gear boxes Sliding mesh & construct mesh gear box Synchro mesh & Epicyclic gear box Overdrive torque convertor Propeller shaft & Hotch kiss drive Torque tube drive Universal joint Differential rear axles types Types of wheels & tires STEERING SYSTEM derstand fundamentals of Steering system in an au BILE ENGINEERING", Er R.K. GOVINDAN. UNIT – 3: Steering system Steering system introduction & steering geometry Camber & caster angle	10/12/19 11/12/19 11/12/19 12/12/19 13/12/19 13/12/19 16/12/19 17/12/19 19/12/19 20/12/19 24/12/19 24/12/19 tomobile & i	Lecture interspersed with discussions  ts functions  Lecture interspersed with
11 JNIT-II CO2: Gain kno outomobile & it B: "AUTOMO  12  13  14  15  16  17  18  19  20  21  22  23  NIT-III SO3: Able to uncomobile & it B: "AUTOMO  24  25  26  I	TRANSMISSION SYSTEM wledge & become familiar with the functions of 's uses DBILE ENGINEERING", Er R.K. GOVINDAN. UNIT – 2: Transmission system  Transmission system & Types of clutches  Cone clutch, single plate clutch & multi-plate clutch  Magnetic & centrifugal clutches  Fluid fly-wheel & types of gear boxes Sliding mesh & construct mesh gear box Synchro mesh & Epicyclic gear box Overdrive torque convertor Propeller shaft & Hotch kiss drive  Torque tube drive Universal joint  Differential rear axles types Types of wheels & tires STEERING SYSTEM Herstand fundamentals of Steering system in an au BILE ENGINEERING", Er R.K. GOVINDAN. UNIT – 3: Steering system Steering system introduction & steering geometry	10/12/19 11/12/19 11/12/19 12/12/19 13/12/19 13/12/19 16/12/19 17/12/19 19/12/19 20/12/19 23/12/19 24/12/19 tomobile & i	Lecture interspersed with discussions  ts functions  Lecture interspersed

28	Center point steering	31/12/19
29	Types of steering mechanisms	03/01/20
30	Ackermann steering mechanism	04/01/20
31	Types of steering gears	05/01/20
UNIT-IV	Types of steering linkages	06/01/20
	SUSPENSION SYSTEM, BRAKING SY	STEM & ELECTRICAL SYSTEM

CO4: Able to understand fundamentals of suspension, braking & electrical systems & their functions & uses

TB:" AUTOMOBILE ENGINEERING", Er R.K. GOVINDAN.

	UNIT – 4 Suspension system, Braking system &		
	Electrical system		
	Suspension system		
33	Suspension system introduction	09/01/20	
34	Objects of suspension system	10/01/20	
35	Rigid axle suspension system	27/01/20	
36	Torsion bar & Shock absorber	28/01/20	
37	Independent suspension systems	29/01/20	
38	Braking system	25/01/20	
39	Braking system introduction & types of braking systems	30/01/20	
40	Mechanical brake system & Hydraulic brake system	31/01/20	Lecture
41	Master cylinder, wheel cylinder & tandem master cylinder	03/02/20	intersperse with
42	Requirement of brake fluid brakes	04/02/20	discussion
43	Pneumatic & vacuum brakes	05/02/20	
44	Electrical system	03/02/20	
45	Electrical system & types of circuits	05/02/20	
46	Charging circuit, generator & current	06/02/20	
47	Voltage regulator & starting system	07/02/20	
48	Bendix drive mechanism	10/02/20	
49	Solenoid switch & lighting system	11/02/20	
50	Horns, Wiper & Fuel guage	11/02/20	
51	Oil pressure guage	12/02/20	
52	Engine temperature indicator system	13/02/20	

### UNIT-V ENGINE SPECIFICATION & SAFETY SYSTEMS

CO5: Gain knowledge & become familiar with the Engine specification & their safety systems of an automobile

TB: "AUTOMOBILE ENGINEERING", Er R.K. GOVINDAN

	UNIT – 5 Engine specification & safety systems		
53	Engine specification & safety systems with regard to power	14/02/20	
54	Safety system with regard to speed, torque & no of cylinders	14/02/20	
55	Arrangement, lubrication & cooling	17/02/20	Lecture
56	Safety introduction & Types safety systems	19/02/20	interspersed
57	Seat belt construction		with
58	Air bags types & Bumper	20/02/20	discussions
59	Anti-lock braking systems (ABS)	20/02/20	
60	Wind shield	24/02/20	
61	Suspension sensors & traction control	25/02/20	
62	Mirrors & central locking	26/02/20	
63	effluents from 1	26/02/20	
64	effluents from power plants	27/02/20	
04	Electric windows	28/02/20	

65	Speed control in safety sytems	02/03/20	1
UNIT-VI E	NGINE EMISSION CONTROL & ENCINE SERV	ICE	
Coo: Able to	understand the Emissions of an engine & its control	ol & servicing	
TB: "AUTON	AOBILE ENGINEERING", Er R.K. GOVINDAN		
	UNIT - 6 Engine emission control & service		
66	Engine emission control introduction	03/03/20	
67	Types of pollutants	04/03/20	
68	Mechanism of formation	05/03/20	
69	Concentration measurement	06/03/20	
70	Methods of controlling engine modification	09/03/20	
71	Exhaust gas treatment	10/03/20	Lecture
72	Thermal & Catalytic convertors	10/03/20	
73	Use of alternative fuels for Emission control	11/03/20	interspersed with
74	National & International pollution standards	11/03/20	discussions
75	Engine Service introduction	12/03/20	discussions
76	Service details of engine cylinder head	13/03/20	
77	Valves & Valve Mechanism	13/03/20	
78	Piston connecting rod assembly	16/03/20	
79	Cylinder block & crankshaft	17/03/20	
80	Main bearings service	18/03/20	
81	Engine re-assembly precautions	19/03/20	

Signature of Faculty

PRINCIPAL

SRK Institute of Technology

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**TENTATIVE PLAN: R1642033** 

Engine Lubrication system, Splash & Pressure lubrication system   O3/12/19	Course Title	TENTATIVE PLAN: R16420	33		
Revision No: 00	Course little:	AUTOMOBILE ENGINEERING	Cou	rse code	: R1642033
Transmission No: 00   Prepared By: U.TANOJ   Approved By: HOD		24.6. 10 00-201)		Page N	o: 01 to 03
No. of Periods  TOPIC  Date  Mode of Delivery  INTRODUCTION  CO1: Able to understand basics of automobile engineering & their applications  TB: "AUTOMOBILE ENGINEERING", Er KIRPAL SINGH.  UNIT-1: Introduction  Introduction: Components of four-wheeler automobile-Chassis & body  2 Power unit-Power transmission  Rear wheel drive, Front wheel drive & Four-wheel drive  4 Types of Automobile Engines & Construction  5 Turbo charging & Super charging  6 Engine Lubrication system  7 Oil filters & oil pumps  8 Crankcase ventilation  9 Engine service & reboring  10 Decarbonization  11 Nitriding of crankshaft  09/12/19  11 Nitriding of crankshaft  09/12/19  12 Transmission system  12 Transmission system & Types of clutches  TB: "AUTOMOBILE ENGINEERING", Er R.K. GOVINDAN.  12 Transmission system & Types of clutches  13 Cone clutch, single plate clutch & multi-plate clutch  14 Magnetic & centrifugal clutches  15 Fluid fly-wheel & types of gear boxes  16 Sliding mesh & construct mesh gear box  16 Sliding mesh & construct mesh gear box  17 Synchro mesh & Epicyclic gear box  18 Overdrive torque convertor  17 Synchro mesh & Epicyclic gear box  19 Propeller shaft & Hotch kiss drive  20 Torque tube drive  21 Universal joint  22 Differential rear axles types  24 (12/19)  NIT-II STEERING SYSTEM  COS: Able to understand fundamentals of Steering system in an automobile & its functions  BE: "AUTOMOBILE ENGINEERING", Er R.K. GOVINDAN.  Lecture interspersed with discussions  Lecture interspersed with discussions  18 Overdrive torque convertor  17/12/19  20 Torque tube drive  21 Universal joint  22 Differential rear axles types  24 (12/19)  NIT-III STEERING SYSTEM  COS: Able to understand fundamentals of Steering system in an automobile & its functions  18 (12/12/19)  19 Propeller shaft & Hotch kiss drive  19				Approv	ed By: HOD
UNIT-I INTRODUCTION  CO1: Able to understand basics of automobile engineering & their applications  TB: "AUTOMOBILE ENGINEERING", Fr KIRPAL SINGH.    UNIT-I: Introduction	100IS: BLACK	A BOARD			
CO1: Able to understand basics of automobile engineering & their applications TB: "AUTOMOBILE ENGINEERING", Er KIRPAL SINGH.    UNIT-1: Introduction		TOTIC		Date	
Note					
Introduction: Components of four-wheeler automobile- Chassis & body   27/11/19     2	CO1: Able to u TB: "AUTOM	OBILE ENGINEERING", Er KIRPAL SINGH.	eir ap	plication	18
automobile- Chassis & body  2 Power unit- Power transmission  3 Rear wheel drive, Front wheel drive & Four-wheel drive  4 Types of Automobile Engines & Construction  5 Turbo charging & Super charging  6 Engine Lubrication system, Splash & Pressure lubrication system  7 Oil filters & oil pumps  8 Crankcase ventilation  9 Engine service & reboring  10 Decarbonization  10 Decarbonization  11 Nitriding of crankshaft  CO2: Gain knowledge & become familiar with the functions of transmission system of automobile & it's uses  TB: "AUTOMOBILE ENGINEERING", Er R.K. GOVINDAN.    UNIT - 2: Transmission system  12 Transmission system & Types of clutches  10/12/19  13 Cone clutch, single plate clutch & multi-plate clutch  14 Magnetic & centrifugal clutches  15 Fluid fly-wheel & types of gear boxes  16 Sliding mesh & construct mesh gear box  17 Synchro mesh & Epicyclic gear box  16 Sliding mesh & construct mesh gear box  17 Synchro mesh & Epicyclic gear box  18 Overdrive torque convertor  19 Propeller shaft & Hotch kiss drive  20 Torque tube drive  20 Tor	1				
Rear wheel drive, Front wheel drive & Four-wheel drive drive  Types of Automobile Engines & Construction  Types of Engine Lubrication system, Splash & Pressure Unitrication system  Oof/12/19  Engine service & reboring  Decarbonization  Oof/12/19  In Nitriding of crankshaft  Oof/12/19  TRANSMISSION SYSTEM  CO2: Gain knowledge & become familiar with the functions of transmission system of an automobile & it's uses  The "AUTOMOBILE ENGINEERING", Er R.K. GOVINDAN.  UNIT - 2: Transmission system  UNIT - 2: Transmission system  Transmission system & Types of clutches  Sliding mesh & construct mesh gear box  Torque tube drive  Torque tube drive  Ooverdrive torque convertor  Torque tube drive  Torque tube drive  Torque tube drive  Differential rear axles types  Types of wheels & tires  UNIT - 3: Steering system  UNIT - 3: Steering system  Steering system introduction & steering geometry  Coanber & caster angle  Coanber & caster angle  Torque tube drive  Coanber & caster angle  The transmission of transmission system of an automobile & tires functions  Types of wheels & tires  Coanber & caster angle  Torque tube & caster angle  Types of wheels & tires  The transmission of transmission system of an automobile & tires  The transmission system of an auto		automobile- Chassis & body	2	5/11/19	
Rear wheel drive, Front wheel drive & Four-wheel drive  4 Types of Automobile Engines & Construction 5 Turbo charging & Super charging 6 Engine Lubrication system, Splash & Pressure lubrication system, Splash & Pressure 1 University of Steering 103/12/19 8 Crankcase ventilation 9 Engine service & reboring 10 Decarbonization 11 Nitriding of crankshaft 12 TRANSMISSION SYSTEM 12 TRANSMISSION SYSTEM 12 TRANSMISSION SYSTEM 12 Transmission system & Types of clutches 13 Cone clutch, single plate clutch & multi-plate clutch 14 Magnetic & centrifugal clutches 15 Fluid fly-wheel & types of gear boxes 16 Sliding mesh & construct mesh gear box 16 Sliding mesh & construct mesh gear box 17 Synchro mesh & Epicyclic gear box 18 Overdrive torque convertor 19 Propeller shaft & Hotch kiss drive 20 Torque tube drive	2		2	7/11/19	
5 Turbo charging & Super charging 02/12/19 6 Engine Lubrication system, Splash & Pressure lubrication system 7 Oil filters & oil pumps 04/12/19 8 Crankcase ventilation 05/12/19 10 Decarbonization 06/12/19 11 Nitriding of crankshaft 09/12/19 11 Nitriding of crankshaft 09/12/19 11 TRANSMISSION SYSTEM CO2: Gain knowledge & become familiar with the functions of transmission system of an automobile & it's uses TB: "AUTOMOBILE ENGINEERING", Er R.K. GOVINDAN.  UNIT - 2: Transmission system 12 Transmission system & Types of clutches 10/12/19 13 Cone clutch, single plate clutch & multi-plate clutch 14 Magnetic & centrifugal clutches 12/12/19 15 Fluid fly-wheel & types of gear boxes 13/12/19 16 Sliding mesh & construct mesh gear box 13/12/19 17 Synchro mesh & Epicyclic gear box 16/12/19 18 Overdrive torque convertor 17/12/19 20 Torque tube drive 20/12/19 21 Universal joint 23/12/19 22 Differential rear axles types 24/12/19 23 Types of wheels & tires 24/12/19 24 Steering system introduction & steering geometry 26/12/19 25 Camber & caster angle 27/12/19 26 King-pin rake angle 30/12/19  10 clutch clutch 21/12/19 27 Camber & caster angle 27/12/19 28 Camber & caster angle 27/12/19 29 God Alpto Construction & steering geometry 26/12/19 20 Camber & caster angle 27/12/19 21 Camber & caster angle 27/12/19 25 Camber & caster angle 27/12/19		drive	2		
Turbo charging & Super charging  Engine Lubrication system, Splash & Pressure		Types of Automobile Engines & Construction	20	9/11/19	Lecture
6 Engine Lubrication system, Splash & Pressure lubrication system of 1 lubrication system of 2 lubrication of 2 lu	5	Turbo charging & Super charging			interspersed
Iubrication system	6	Engine Lubrication system, Splash & Pressure			
7 Oil filters & oil pumps 8 Crankcase ventilation 9 Engine service & reboring 10 Decarbonization 11 Nitriding of crankshaft 12 TRANSMISSION SYSTEM 12 Transmission system 13 Cone clutch, single plate clutch & multi-plate clutch 14 Magnetic & centrifugal clutches 15 Fluid fly-wheel & types of gear boxes 16 Sliding mesh & construct mesh gear box 17 Synchro mesh & Epicyclic gear box 18 Overdrive torque convertor 19 Propeller shaft & Hotch kiss drive 20 Torque tube drive 20 Torque tube drive 20 Differential rear axles types 21 Universal joint 22 Differential rear axles types 23 Types of wheels & tires 24 Steering system 25 Camber & caster angle 26 King-pin rake angle 27 Cone clutch rake and so do not construct on the construct of the construct of the construct on the construct on the construct of the construct on the construct of the construct on th		lubrication system	0.	0/12/19	discussions
8 Crankcase ventilation 05/12/19 9 Engine service & reboring 05/12/19 10 Decarbonization 06/12/19 11 Nitriding of crankshaft 09/12/19  UNIT-II TRANSMISSION SYSTEM  CO2: Gain knowledge & become familiar with the functions of transmission system of an automobile & it's uses TB: "AUTOMOBILE ENGINEERING", Er R.K. GOVINDAN.  UNIT - 2: Transmission system  12 Transmission system & Types of clutches 10/12/19  13 Cone clutch, single plate clutch & multi-plate clutch 14 Magnetic & centrifugal clutches 12/12/19 15 Fluid fly-wheel & types of gear boxes 13/12/19 16 Sliding mesh & construct mesh gear box 13/12/19 17 Synchro mesh & Epicyclic gear box 16/12/19 18 Overdrive torque convertor 17/12/19 19 Propeller shaft & Hotch kiss drive 19/12/19 20 Torque tube drive 20/12/19 21 Universal joint 23/12/19 22 Differential rear axles types 24/12/19 23 Types of wheels & tires 24/12/19 24 Steering system an an automobile & its functions TB: "AUTOMOBILE ENGINEERING", Er R.K. GOVINDAN.  UNIT - 3: Steering system 24 Steering system introduction & steering geometry 26/12/19 25 Camber & caster angle 27/12/19 26 King-pin rake angle 30/12/19		Oil filters & oil pumps	04	1/12/19	
Engine service & reboring   10   10   10   10   10   10   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   11   1		Crankcase ventilation	_		
Decarbonization   10   Nitriding of crankshaft   09/12/19		Engine service & reboring	_	State of the process of the same	
Nitriding of crankshaft   O9/12/19					
UNIT-II TRANSMISSION SYSTEM CO2: Gain knowledge & become familiar with the functions of transmission system of an automobile & it's uses TB: "AUTOMOBILE ENGINEERING", Er R.K. GOVINDAN.  UNIT -2: Transmission system  12 Transmission system & Types of clutches  13 Cone clutch, single plate clutch & multi-plate clutch 14 Magnetic & centrifugal clutches 15 Fluid fly-wheel & types of gear boxes 13/12/19 16 Sliding mesh & construct mesh gear box 13/12/19 17 Synchro mesh & Epicyclic gear box 16/12/19 18 Overdrive torque convertor 19 Propeller shaft & Hotch kiss drive 19 Propeller shaft & Hotch kiss drive 20 Torque tube drive 20 Torque tube drive 21 Universal joint 22 Differential rear axles types 23 Types of wheels & tires UNIT-III STEERING SYSTEM CO3: Able to understand fundamentals of Steering system in an automobile & its functions TB: "AUTOMOBILE ENGINEERING", Er R.K. GOVINDAN.  UNIT -3: Steering system  Steering system introduction & steering geometry  24 Steering system introduction & steering geometry  25 Camber & caster angle 26 King-pin rake angle  27/12/19 27	11	Nitriding of crankshaft	_		
CO2: Gain knowledge & become familiar with the functions of transmission system of an automobile & it's uses  TB: "AUTOMOBILE ENGINEERING", Er R.K. GOVINDAN.    UNIT - 2: Transmission system	UNIT-II	TRANSMISSION SYSTEM			
Cone clutch, single plate clutch & multi-plate clutch  Magnetic & centrifugal clutches  Fluid fly-wheel & types of gear boxes  Sliding mesh & construct mesh gear box  Sliding mesh & construct mesh gear box  Synchro mesh & Epicyclic gear box  13/12/19  Synchro mesh & Epicyclic gear box  16/12/19  Propeller shaft & Hotch kiss drive  19/12/19  Torque tube drive  20/12/19  Universal joint  23/12/19  21 Universal joint  22 Differential rear axles types  24/12/19  3 Types of wheels & tires  NIT-III  STEERING SYSTEM  CO3: Able to understand fundamentals of Steering system in an automobile & its functions  B: "AUTOMOBILE ENGINEERING", Er R.K. GOVINDAN.  UNIT - 3: Steering system  VNIT-3: Steering system introduction & steering geometry  24 Steering system introduction & steering geometry  25 Camber & caster angle  26 King-pin rake angle  30/12/19		DBILE ENGINEERING", Er R.K. GOVINDAN. UNIT – 2: Transmission system			
Clutch   Magnetic & centrifugal clutches   12/12/19   15   Fluid fly-wheel & types of gear boxes   13/12/19   16   Sliding mesh & construct mesh gear box   13/12/19   17   Synchro mesh & Epicyclic gear box   16/12/19   18   Overdrive torque convertor   17/12/19   19   Propeller shaft & Hotch kiss drive   19/12/19   20   Torque tube drive   20/12/19   23/12/19   23/12/19   22   Differential rear axles types   24/12/19   23   Types of wheels & tires   24/12/19   STEERING SYSTEM   CO3: Able to understand fundamentals of Steering system in an automobile & its functions   IB: "AUTOMOBILE ENGINEERING", Er R.K. GOVINDAN.   UNIT - 3: Steering system   Lecture interspersed with discussions   26   King-pin rake angle   30/12/19   30/12/19   Constitution for the constitution of the co	12		10	/12/19	
Lecture   15	13	Cone clutch, single plate clutch & multi-plate clutch	11	/12/19	
Lecture   15		Magnetic & centrifugal clutches	12	/12/19	
Sliding mesh & construct mesh gear box  13/12/19  17 Synchro mesh & Epicyclic gear box  16/12/19  18 Overdrive torque convertor  19 Propeller shaft & Hotch kiss drive  20 Torque tube drive 21 Universal joint 22 Differential rear axles types 23 Types of wheels & tires  UNIT-III STEERING SYSTEM  CO3: Able to understand fundamentals of Steering system in an automobile & its functions  TB: "AUTOMOBILE ENGINEERING", Er R.K. GOVINDAN.  UNIT - 3: Steering system  24 Steering system introduction & steering geometry  25 Camber & caster angle 26 King-pin rake angle  27 Carabir India and In		Fluid fly-wheel & types of gear boxes			Lacture
17 Synchro mesh & Epicyclic gear box 16/12/19 18 Overdrive torque convertor 19 Propeller shaft & Hotch kiss drive 19/12/19 20 Torque tube drive 20/12/19 21 Universal joint 22 Differential rear axles types 23 Types of wheels & tires 24 Steering system 24 Steering system introduction & steering geometry 25 Camber & caster angle 26 King-pin rake angle 27 Graphin Index steering system in a substance of the substanc		Sliding mesh & construct mesh gear box		A TONING TONING	
18 Overdrive torque convertor 19 Propeller shaft & Hotch kiss drive 19/12/19 20 Torque tube drive 20/12/19 21 Universal joint 22 Differential rear axles types 23 Types of wheels & tires 24/12/19 25 TERING SYSTEM  CO3: Able to understand fundamentals of Steering system in an automobile & its functions TB: "AUTOMOBILE ENGINEERING", Er R.K. GOVINDAN.  UNIT - 3: Steering system  24 Steering system introduction & steering geometry 25 Camber & caster angle 26 King-pin rake angle 27 Greeking by the discussions		Synchro mesh & Epicyclic gear box	_		-
19 Propeller shaft & Hotch kiss drive 20 Torque tube drive 20 12/19 21 Universal joint 22 2 Differential rear axles types 23 Types of wheels & tires  UNIT-III STEERING SYSTEM CO3: Able to understand fundamentals of Steering system in an automobile & its functions FB: "AUTOMOBILE ENGINEERING", Er R.K. GOVINDAN.  UNIT - 3: Steering system  24 Steering system introduction & steering geometry 25 Camber & caster angle 26 King-pin rake angle 27 Carabir le les in the later in		Overdrive torque convertor	_		
Torque tube drive  20/12/19 21 Universal joint 23/12/19 22 Differential rear axles types 24/12/19 23 Types of wheels & tires 24/12/19  UNIT-III STEERING SYSTEM CO3: Able to understand fundamentals of Steering system in an automobile & its functions FB: "AUTOMOBILE ENGINEERING", Er R.K. GOVINDAN.  UNIT - 3: Steering system  24 Steering system introduction & steering geometry 26/12/19 25 Camber & caster angle 27/12/19 26 King-pin rake angle 30/12/19		Propeller shaft & Hotch kiss drive	_	2.000	aiscussions
Universal joint   23/12/19		Torque tube drive	_		
Differential rear axles types  23 Types of wheels & tires  24/12/19  NIT-III STEERING SYSTEM  CO3: Able to understand fundamentals of Steering system in an automobile & its functions  TB: "AUTOMOBILE ENGINEERING", Er R.K. GOVINDAN.  UNIT - 3: Steering system  24 Steering system introduction & steering geometry  25 Camber & caster angle  26 King-pin rake angle  27 Graphical Advances  30/12/19			_		
Types of wheels & tires    24/12/19		Differential rear axles types			
CO3: Able to understand fundamentals of Steering system in an automobile & its functions  TB: "AUTOMOBILE ENGINEERING", Er R.K. GOVINDAN.  UNIT – 3: Steering system  Steering system introduction & steering geometry  26/12/19  Camber & caster angle  King-pin rake angle  Combined to understand fundamentals of Steering system in an automobile & its functions  Lecture interspersed with discussions		Types of wheels & tires			
UNIT – 3: Steering system  24 Steering system introduction & steering geometry  25 Camber & caster angle  26 King-pin rake angle  27 Combined a large system introduction & steering geometry  28 Steering system introduction & steering geometry  29 Steering system introduction & steering geometry interspersed with discussions	CO3: Able to un	STEERING SYSTEM derstand fundamentals of Steering system in an a	71		its functions
Steering system introduction & steering geometry  25 Camber & caster angle  26 King-pin rake angle  27 Combined angle  30/12/19  30/12/19		DILLE ENGINEERING", Er R.K. GOVINDAN.			
25 Camber & caster angle 27/12/19 26 King-pin rake angle 30/12/19	24	Steering system introduction & steering geometry	26/	12/19	interspersed
26 King-pin rake angle 30/12/19	25	Camber & caster angle	27/	12/10	
27 Combin 1 1 1 1 2	26	King-pin rake angle		Control of the Contro	discussions
	27	Combined angle toe-in & toe-out			

28	Center point steering	31/12/19	1
29	Types of steering mechanisms	03/01/20	
30	Ackermann steering mechanism	04/01/20	
31	Types of steering gears	05/01/20	-
32	Types of steering linkages	06/01/20	
UNIT-IV	SUSPENSION SYSTEM BRAKING SYSTEM	P. EL ECTRI	CAI SVSTEN
CO4: Able to u	inderstand lundamentals of suspension, braking &	electrical sys	stems & their
anctions & us	CS	ciccii icai sys	ichis & then
ΓB:" AUTOM	OBILE ENGINEERING", Er R.K. GOVINDAN.		
	UNIT – 4 Suspension system, Braking system &		
	Electrical system		
	Suspension system		-
33	Suspension system introduction	09/01/20	-
34	Objects of suspension system	10/01/20	-
35	Rigid axle suspension system		
36	Torsion bar & Shock absorber	27/01/20	
37	Independent suspension systems	28/01/20	
38	Braking system	29/01/20	
39	Braking system	0.010	
37	Braking system introduction & types of braking systems	30/01/20	
40			
70	Mechanical brake system & Hydraulic brake	31/01/20	Lecture
41	system  Mostor culinder 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
41	Master cylinder, wheel cylinder & tandem master	03/02/20	interspersed with
42	cylinder		discussions
	Requirement of brake fluid brakes	04/02/20	discussions
43	Pneumatic & vacuum brakes	05/02/20	
44	Electrical system		
45	Electrical system & types of circuits	05/02/20	
46	Charging circuit, generator & current	06/02/20	
47	Voltage regulator & starting system	07/02/20	
48	Bendix drive mechanism	10/02/20	
49	Solenoid switch & lighting system	11/02/20	
50	Horns, Wiper & Fuel guage	11/02/20	
51	Oil pressure guage		
52	Engine temperature indicator system	12/02/20	
	NE SPECIFICATION & SAFETY SYSTEMS	13/02/20	
OF C : 1	VE STECIFICATION & SAFETY SYSTEMS		
stems of all at	owledge & become familiar with the Engine spatomobile	ecification &	their safety
B: "AUTOMO	BILE ENGINEERING", Er R.K. GOVINDAN.		
	UNIT - 5 Engine specification & safety systems		
53	Engine specification & safety systems with	14/02/20	
	regard to power	14/02/20	
	regard to power		
54	Safety system with record to small to a	11/00/00	
	Safety system with regard to speed, torque & no of cylinders	14/02/20	
55			Lecture
56	Arrangement, lubrication & cooling	17/02/20	interspersed
57	Safety introduction & Types safety systems	19/02/20	with
58	Seat belt construction	20/02/20	discussions
59	Air bags types & Bumper	20/02/20	410040010113
	Anti-lock braking systems (ABS)	24/02/20	
	Wind shield	25/02/20	
60		23/02/20	
60 61	Suspension sensors & traction control	26/02/20	
60 61 62	Suspension sensors & traction control Mirrors & central locking		
60 61	Suspension sensors & traction control	26/02/20	

65	Speed control in safety sytems	02/03/20	1
UNIT-VI E	ENGINE EMISSION CONTROL & ENGINE SERVI	ICE	
CO6: Able t	o understand the Emissions of an engine & its control	l & servicing	
TB: "AUTO	MOBILE ENGINEERING", Er R.K. GOVINDAN.	a ser viening	
	UNIT – 6 Engine emission control & service		
66	Engine emission control introduction	03/03/20	
67	Types of pollutants	04/03/20	
68	Mechanism of formation	05/03/20	
69	Concentration measurement	06/03/20	
70	Methods of controlling engine modification	09/03/20	
71	Exhaust gas treatment	10/03/20	Lecture
72	Thermal & Catalytic convertors	10/03/20	interspersed
73	Use of alternative fuels for Emission control	11/03/20	with
74	National & International pollution standards	11/03/20	discussions
75	Engine Service introduction	12/03/20	and approving
76	Service details of engine cylinder head	13/03/20	
77	Valves & Valve Mechanism	13/03/20	
78	Piston connecting rod assembly	16/03/20	
79	Cylinder block & crankshaft	17/03/20	
80	Main bearings service	18/03/20	
81	Engine re-assembly precautions	19/03/20	

Signature of Faculty

SRK Institute of Technology ENIKEPADU, VIJAYAWADA-521 108

### **TENTATIVE LESSON PLAN: R164203B** NON-DESTRUCTIVE EVALUATION

	Date: 15/11/2019	Page No	: 01 of 03
Revision No: 00	Prepared By: P. Bhagya lakshmi	Approved By : HC	
Tools: Black bo			
No. of Periods	TOPIC	Date	Mode of Delivery
<b>UNIT-I INTRO</b>	DUCTION TO NON-DESTRUCTIVE TESTING		
CO1: Able to u	nderstand the principle of radiographic technique, so	ources of radi	ographic ravs
equipment & dif	ferent techniques of radiography		0 1
TB: Non-destruc	tive test and evaluation of materials- J Prasad, GCK N	lair	
1	Introduction to non-destructive testing,	18/11/19	
	Applications		
2	Radiographic test: principle	19/11/19	
3	Advantages, dis- advantages & applications	20/11/19	
4	Sources of X rays	21/11/19	
5	Sources of Gamma Rays	22/11/19	Lecture interspersed
6	Properties of x & gamma rays and differences	25/11/19	with
7	Interaction of X and Gamma rays with Matter	26/11/19	discussions
8	Radiographic equipment	27/11/19	
9	Radiographic Techniques	28/11/19	
10	Safety Aspects of Industrial Radiography	29/11/19	
UNIT-II UL	TRASONIC TEST		
CO2:Able to u	nderstand the ultrasonic test, ultrasonic transduce defects, effectiveness & limitations of testing.	ers & their o	characteristics
TB: Non-destruc	ctive test and evaluation of materials- J Prasad, GCK I		T
TB: Non-destruc	etive test and evaluation of materials- J Prasad, GCK I Ultrasonics test: Introduction	2/12/19	<b>-</b>
TB: Non-destruct	etive test and evaluation of materials- J Prasad, GCK I Ultrasonics test: Introduction Principle of Wave Propagation	2/12/19 3/12/19	
TB: Non-destruct	ctive test and evaluation of materials- J Prasad, GCK N Ultrasonics test: Introduction Principle of Wave Propagation Reflection, Refraction, Diffraction	2/12/19 3/12/19 4/12/19	
11 12 13 14	Cive test and evaluation of materials- J Prasad, GCK N Ultrasonics test: Introduction Principle of Wave Propagation Reflection, Refraction, Diffraction Mode Conversion, Attenuation	2/12/19 3/12/19 4/12/19 5/12/19	
11 12 13 14 15	Ctive test and evaluation of materials- J Prasad, GCK N Ultrasonics test: Introduction Principle of Wave Propagation Reflection, Refraction, Diffraction Mode Conversion, Attenuation Sound Field, Piezo-electric Effect	2/12/19 3/12/19 4/12/19 5/12/19 6/12/19	Lecture
TB: Non-destructure	Ctive test and evaluation of materials- J Prasad, GCK N Ultrasonics test: Introduction Principle of Wave Propagation Reflection, Refraction, Diffraction Mode Conversion, Attenuation Sound Field, Piezo-electric Effect Ultrasonic Transducers and their Characteristics	2/12/19 3/12/19 4/12/19 5/12/19 6/12/19 10/12/19	Lecture
TB: Non-destructure	Ctive test and evaluation of materials- J Prasad, GCK N Ultrasonics test: Introduction Principle of Wave Propagation Reflection, Refraction, Diffraction Mode Conversion, Attenuation Sound Field, Piezo-electric Effect Ultrasonic Transducers and their Characteristics Ultrasonic Equipment	2/12/19 3/12/19 4/12/19 5/12/19 6/12/19 10/12/19 11/12/19	interspersed
TB: Non-destructure   11	Ultrasonics test: Introduction Principle of Wave Propagation Reflection, Refraction, Diffraction Mode Conversion, Attenuation Sound Field, Piezo-electric Effect Ultrasonic Transducers and their Characteristics Ultrasonic Equipment Variables Affecting Ultrasonic Test	2/12/19 3/12/19 4/12/19 5/12/19 6/12/19 10/12/19 11/12/19 12/12/19	interspersed with
TB: Non-destructure   11	Ultrasonics test: Introduction Principle of Wave Propagation Reflection, Refraction, Diffraction Mode Conversion, Attenuation Sound Field, Piezo-electric Effect Ultrasonic Transducers and their Characteristics Ultrasonic Equipment Variables Affecting Ultrasonic Test Methods of testing	2/12/19 3/12/19 4/12/19 5/12/19 6/12/19 10/12/19 11/12/19 12/12/19 13/12/19	interspersed with
TB: Non-destructure   11	Ultrasonics test: Introduction Principle of Wave Propagation Reflection, Refraction, Diffraction Mode Conversion, Attenuation Sound Field, Piezo-electric Effect Ultrasonic Transducers and their Characteristics Ultrasonic Equipment Variables Affecting Ultrasonic Test	2/12/19 3/12/19 4/12/19 5/12/19 6/12/19 10/12/19 11/12/19 12/12/19	interspersed

23	Effectiveness and Limitations of Ultrasonic Testing.	19/12/19	
UNIT-III I	IQUID PENETRANT TEST & EDDY CURRENT TES	T.	
CO3: Able	to understand the concept of liquid penetrant test & edd	) <b>1</b>	
& its applica	ations.	y current test	, test procedur
ΓB: Non-	destructive test and evaluation of materials- J Prasad, GC	TZ NI. ·	
24	Liquid Penetrant Test: Liquid Penetrant Test, Basic Concepts	20/12/19	
25	Principle of LPT	23/12/19	
26	Liquid Penetrant System	24/12/19	
27	Test Procedure		
28	Test Procedure	26/12/19	
29	Effectiveness and Limitations of Liquid Penetrant	27/12/19	
	Testing Testing	30/12/19	Lecture
20			interspersed
30	Eddy Current Test: Principle of Eddy Current testing	31/12/19	with
31	Eddy Current Test System	2/1/22	discussions
32	Applications of Eddy Current Testing	2/1/20	
33	Effectiveness of Eddy Current Testing	3/1/20	
34	Limitations of Eddy Current Testing	6/1/20	
NIT-IV	MAGNETIC PARTICLE TEST	7/1/20	
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46	Active and passive techniques	6/2/20	
47	Lock in and pulse thermography	7/2/20	
48	Contact thermal inspection methods	10/2/20	
49	Non -contact thermal inspection methods	11/2/20	
50	Heat sensitive paints –Heat sensitive papers		
51	thermally quenched phosphors liquid crystals	12/2/20	Lecture
52	techniques for applying liquid crystals	13/2/20	interspersed
53	other temperature sensitive coatings	14/2/20	with
54	Infrared radiation and infrared detectors	17/2/20	discussions
55	thermo mechanical behavior of materials	18/2/20	
56	IR imaging in aerospace applications	19/2/20	
57	electronic components	20/2/20	
58	Honey comb and condition	24/2/20	
59	Honey comb and sandwich structures Casestudies.	25/2/20	
	OUSTRIAL APPLICATIONS OF MER	26/2/20	

### GAL APPLICATIONS OF NDE

CO6: Able to understand and select the appropriate NDE method based on the application.

TB: Non-destructive test and evaluation of materials-

60	Industrial Applications of NDE: Span of NDE Activities Railways	Nair 27/2/20	
61	Nuclear		
62	Non-nuclear	28/2/20	
63	Chemical Industries	2/3/20	
64	Aircraft and Aerospace Industries	3/3/20	
65	, Automotive Industries,	4/3/20	_
66	Offshore Gas and Petroleum Projects	5/3/20	Lecture
67	Coal Mining Industry,	6/3/20	interspersed
68	NDE of pressure vessels	9/3/20	with
69	Castings, welded constructions.	11/3/20	discussions
		12/3/20	
70	Revision		
71	Revision	13/3/20	
72	Revision	16/3/20	
		17/3/20	

Signature of Faculty

Signature of HOD

PRINCIPAL SRK Institute of Technology

# TENTATIVE LESSON PLAN: R164203B NON-DESTRUCTIVE EVALUATION

Section : Sec I	B Date: 15/11/2019	Page No	: 01 of 03
Revision No: 0	O Prepared By: P.Bhagya lakshmi		ed By : HOD
Tools: Black bo			
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT-I INTRO	DUCTION TO NON-DESTRUCTIVE TESTIN	G	
CO1: Able to u	nderstand the principle of radiographic technique,	sources of radi	ographic rays
equipment & dif	ferent techniques of radiography		-Brapane rays
TB: Non-destruc	tive test and evaluation of materials- J Prasad, GCK	Nair	
1	Introduction to non-destructive testing Applications	18/11/19	
2	Radiographic test: principle	19/11/19	
3	Advantages, dis- advantages & applications	20/11/19	
4	Sources of X rays	21/11/19	
5	Sources of Gamma Rays	22/11/19	Lecture
6	Properties of x & gamma rays and differences	25/11/19	interspersed
7	Interaction of X and Gamma rays with Matter	26/11/19	with
8	Radiographic equipment	27/11/19	discussions
9	Radiographic Techniques	28/11/19	
10	Safety Aspects of Industrial Radiography		

CO2: Able to understand the ultrasonic test, ultrasonic transducers & their characteristics, interpretation of defects, effectiveness & limitations of testing.

TB: Non-destructive test and evaluation of materials- J Prasad, GCK Nair

11	Tile	Nair	
	Ultrasonics test: Introduction	2/12/19	
12	Principle of Wave Propagation		
13	Reflection, Refraction, Diffraction	3/12/19	
14	Mode Conversion, Attenuation	4/12/19	
15	Constitution, Attenuation	5/12/19	
	Sound Field, Piezo-electric Effect	6/12/19	
16	Ultrasonic Transducers and their Characteristics	10/12/19	Lastura
17	Ultrasonic Equipment		Lecture
18	Variables Affecting Ultrasonic Test	11/12/19	interspersed
19	Methods of testing	12/12/19	with
		13/12/19	discussions
20	Interpretations	16/12/19	
21	Guidelines for Acceptance, Rejection		
22	Ultrasonic Testing, and	17/12/19	
	b, with	18/12/19	

23	Effectiveness and Limitations of Ultrasonic Testing	19/12/19	
IINIT_III II	IOUID DENETDANT TEST & EDDY CUDDENT TOO	<b>T</b>	
	QUID PENETRANT TEST & EDDY CURRENT TEST		
& its applicat	o understand the concept of liquid penetrant test & eddy	current test,	test procedure
ce its applicat	dons.		
TB: Non-d	lestructive test and evaluation of materials- J Prasad, GCI	V Noin	
24	Liquid Penetrant Test: Liquid Penetrant Test	20/12/19	T
	Basic Concepts	20/12/17	
25	Principle of LPT	23/12/19	
26	Liquid Penetrant System	24/12/19	
27	Test Procedure	26/12/19	
28	Test Procedure	27/12/19	
29	Effectiveness and Limitations of Liquid Penetrant Testing	30/12/19	Lecture interspersed
30	Eddy Current Test: Principle of Eddy Current testing	31/12/19	with discussions
31	Eddy Current Test System	2/1/20	
32	Applications of Eddy Current Testing	3/1/20	
33	Effectiveness of Eddy Current Testing	6/1/20	
34 UNIT-IV I	Limitations of Eddy Current Testing  MAGNETIC PARTICLE TEST  o understand the concept of Magnetic particle test, test responses to the concept of the concep	7/1/20	o interpret the
34 UNIT-IV I CO4: Able to various surfac IB: Non-desti	Limitations of Eddy Current Testing  MAGNETIC PARTICLE TEST  o understand the concept of Magnetic particle test, test pose & sub-surface flaws ructive test and evaluation of materials- J Prasad, GCK No.	7/1/20 procedure & t	o interpret the
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34 UNIT-IV M CO4: Able to various surfact (TB: Non-destrict) 35 36	Limitations of Eddy Current Testing  MAGNETIC PARTICLE TEST  o understand the concept of Magnetic particle test, test posses & sub-surface flaws  ructive test and evaluation of materials- J Prasad, GCK No.  Magnetic Particle Test: Magnetic Materials  Magnetization of Materials	7/1/20 procedure & t air 8/1/20 9/1/20	o interpret the
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46	Active and passive techniques	6/2/20	
47	Lock in and pulse thermography	7/2/20	
48	Contact thermal inspection methods	10/2/20	
49	Non -contact thermal inspection methods	11/2/20	
50	Heat sensitive paints –Heat sensitive papers	12/2/20	Lecture
51	thermally quenched phosphors liquid crystals	13/2/20	interspersed
52	techniques for applying liquid crystals	14/2/20	with
53	other temperature sensitive coatings	17/2/20	discussions
54	Infrared radiation and infrared detectors	18/2/20	
55	thermo mechanical behavior of materials	19/2/20	
56	IR imaging in aerospace applications	23/2/20	
57	electronic components	24/2/20	
58	Honey comb and sandwich structures	25/2/20	
59	Casestudies.	26/2/20	

### UNIT-VI INDUSTRIAL APPLICATIONS OF NDE

CO6: Able to understand and select the appropriate NDE method based on the application.

TB: Non-destructive test and evaluation of materials- J Prasad, GCK Nair

60	Industrial Applications of NDE: Span of NDE Activities Railways	27/2/20	
61	Nuclear	28/2/20	
62	Non-nuclear	2/3/20	
63	Chemical Industries	3/3/20	
64	Aircraft and Aerospace Industries	4/3/20	
65	Automotive Industries	5/3/20	Lecture
66	Offshore Gas and Petroleum Projects	6/3/20	interspersed
67	Coal Mining Industry	9/3/20	with
68	NDE of pressure vessels	11/3/20	discussions
69	Castings, welded constructions	12/3/20	
70	Revision	13/3/20	
71	Revision	15/3/20	
72	Revision	17/3/20	

Signature of Faculty

Signature of HOD

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