LESSON PLAN

Name of the teacher: *Farah Naaz Kazmi* **Subject:** *Production,Plannin / And Control* **Class**: *6th Sem Mech.*
Session : Feb - *June 2024*

S.No.	Month	Date	Name of the chapter	Contens to be taught	Coures outcomes	
1	Feb	31 - 3	PPC	Types of production, Concept of planning, sceduling, routing, dispatching, and follow up. Break evev analysis and Gantt chart.	To enable the student to understand the meaning of production, production management and production control- to produce goods and services of the right quality.	CO 1
		7 - 10	PLANT LOCATION AND LAYOUT	Defination. Factors affecting the site selection of plant and plant layout.	To enable the student to be in a position to maximise the profit of arranging the resources and the facilities to the best advantage of total manufacturing of the product.	CO 2
		14 - 17		Types of layouts. Techniques of making layout.		
		21 - 24	WORK STUDY	Defination.Difference between production and productivity, measures to improve productivity.	To impart the knowledge of various techniques toimprove the productivityof an organisation.	CO 3
2	March	28 - 2		Method study. Symbols, charts and diagrams.		
		6 - 9		Principle of motion economy, Therblings symbols, Simo Charts.Stop watch study.		
		13 - 16	INVENTORY CONTROL	Mat. Purchase, sotore keeping, functions & duties of store dept. Inventory & its types. ABC analysis.	To be able to practise material planning and be able to take the decisions for the purchase of the material at minimum cost.	CO 4
		20 - 23		Procurement cost, EOQ, Codification and std., concept of JIT.		
		27 - 30	INSPECTION &QUALITY CONTROL	Needs, types & stages of inspection.Stat.QC, Process capability	To control the quality of the product immediately after detecting the defects.	CO 5
3	April	3 - 6		Control charts, Concept of ISO and TQM, QC tools.		
		10 - 13	MATERIAL HANDLING	Principle of mat. Handling .Hoisting equip. Conveying equipments.	To make the student understand the various types of material handling systems to make the work more effective.	CO 6
		17 - 20	REPAIR AND MAINTENANCE	Work Station design. Obj & imp. Of maintenance., Types & nature of main.	To avoid the machines from breaking down so that the work does not hamper in any way.	CO 7
		24 - 27		Range of maintenance activities, procedure of preventive maintenance.		
		1 - 4		Schedules and advantages of preventive maintenance.		
4	May	8 - 11	COST ESTIMATION AND CONTROL	Functions and procedure of cost estimation. Elements of cost , ladder of cost.	To be able to calculate the cost of the final product.	CO 8
		15 -18		Depreciation- concept and methods of calculating depreciation.		
		22 - 25		Overhead expances, Cost control- capital cost control.		

Teacher

HOD MECH 27/1/2024

GOVT. POLYTECHNIC SUNDER NAGAR

LESSON PLAN FOR : R·A·C. MECHANICAL ENGINEERING (SEMESTER - VI) **(SESSION: JAN-JUN. 2024)**

S.NO.	MONTH	WEEK	DATE	CONTENT	REMARKS
1	JAN	5th	29,30,31	1. Principles of Refrigeration 1.1 Meaning 1.2 Refrigeration Methods 1.3 Units of Refrigeration	
2	FEB	1st	2		
		2nd	5,6,7,9	1.4 Reversed Carnet cycle 1.5 Heat pump 1.6 Coefficient of Performance 1.7 Rating of refrigeration machines	
		3rd	12,13,14,16	2. Refrigeration Systems 2.1 Air refrigeration cycle- applications and its limitations 2.2 Vapour Compression Cycle 2.3 Effect of sub cooling and super heating 2.4 Departure of Actual vapour compression cycle from theoretical cycle 2.5 Effect of varying condensing and suction temperature on coefficient of performance.	
		4th	19,20,21,23		
		5th	26,27,28	2.6 Simple mathematical calculation with pressure-enthalpy charts. 2.7 Vapour Absorption cycle 2.8 Actual vapour absorption cycle and application	
3	MAR	1st	1	3. Refrigerants 3.1 Important properties of a refrigerant 3.2 Properties and applications of commonly used refrigerants such as R11, R12, R22, NH3 and Water. 3.3 Newer Refrigerants	
		2nd	4,5,6,		
		3rd	11,12,13,15	4. Refrigeration System, Components and Controls 4.1 Function, types, specification and constructional details of components such as compressor, condenser, throttling device, evaporator, oil separator, accumulator, header. 4.2 Various controls- Solenoid Valve, thermostat, low pressure/high pressure cut out, oil safety switch	CT1
		4th	18,19,20,22		
		5th	26,27		
4	APR	1st	1,2,3,5	5. Psychometry 5.1 Various terms-Dry and wet bulb temperatures, Saturation, Dew point, adiabatic saturation, temperature, Relative humidity, absolute humidity, humidity ratio. 5.2 Psychometric chart and its uses 5.3 Psychometric processes-Sensible heating and sensible cooling, humidification and dehumidification, cooling and dehumidification, heating and humidification, and their representation on psychometric chart. 5.4 Simple Problems	
		2nd	8,9,10,12		
		3rd	16,19		CT2
		4th	22,23,24,26	6. Air-conditioning 6.1 Introduction 6.2 Metabolism in human body 6.3 Human comfort 6.4 Applications of air-conditioning	
		5th	29,30	7. Heat Load 7.1 Various types of loads 7.2 Sensible and latent heat load 7.3 Load calculations	
5	MAY	1st	1,3	8. Air-conditioning System 8.1 Description of room air conditioner 8.2 Central air-conditioning system 8.3 Round the year air conditioning system 8.4 Air distribution systems: concept of filter, damper, fan, blower, air register and diffuser	
		2nd	6,7,8		
		3rd	13,14,15,17	9. Miscellaneous Topics	HT
		4th	20,21,22,24	9.1 Evaporative cooling - Principle, Desert air cooler	

AMAN
(LECT. M.E)

H.O.D
(M.E)
23/11/2024

GOVT. POLYTECHNIC SUNDER NAGAR

LESSON PLAN : REFRIGERATION AND AIR CONDITIONING (SESSION W.E.F.: 27 JAN.-25 MAY 2024)

MECHANICAL ENGINEERING (SEMESTER - 6TH)

S.NO	MONTH	WEEK	DATE	CONTENT (PRACTICAL) (G1)	REMARKS
1	JAN.	4th	-	----------	
		5th	29	Practice in :- i) Tube cutting ii) Tube Flaring iii) Tube bending iv) Tube joining	
2	FEB.	1st	-	----------	
		2nd	5	Study and sketch of domestic refrigerator.	
		3rd	12	Study and sketch of water cooler.	
		4th	19	Study and sketch window type room air conditioner	
		5th	26	. Testing of a refrigeration unit to find out: i) Refrigeration capacity ii) Power input iii) COP	
3	MARCH	1st	-	----------	
		2nd	4	a) Charging refrigerant in an open as well as hermetically sealed units. b) Physical detection of leakage of refrigerant by various methods.	
		3rd	11	a) Charging refrigerant in an open as well as hermetically sealed units. b) Physical detection of leakage of refrigerant by various methods.	C-T-I
		4th	18	To detect troubles/faults in a refrigeration system and to remove them.	
		5th	25	----------	HOLIDAY(25)
4	APRIL	1st	1		
		2nd	8	Visit to an ice plant / cold storage plant/central conditioning plant.	
		3rd	15	----------	HOLIDAY(15) C-T-II
		4th	22	Study and sketch of various types of expansion devices & Humidity state.	
		5th	29	Study and sketch of various types of expansion devices & Humidity state.	
5	MAY	1st	-	----------	
		2nd	6	Study and sketch of thermostat, strainer, drier, H.P. L.P. and oil safety control and service valve, two way & three ways valves, relays & solenoid valve etc	
		3rd	13	Study and sketch of thermostat, strainer, drier, H.P. L.P. and oil safety control and service valve, two way & three ways valves, relays & solenoid valve etc	H.T
		4th	20	repeat if any	
		5th	-	----------	

VISHAL CHANDEL
(Lect. Mech. Engg.)

HOD (ME)

GOVT. POLYTECHNIC SUNDER NAGAR

LESSON PLAN : REFRIGERATION AND AIR CONDITIONING (SESSION W.E.F.: 27 JAN.-25 MAY 2024)

MECHANICAL ENGINEERING (SEMESTER - 6TH)

S.NO	MONTH	WEEK	DATE	CONTENT (PRACTICAL) (G2)	REMARKS
1	JAN.	4th	-	----------	
		5th	30	Practice in :- i) Tube cutting ii) Tube Flaring iii) Tube bending iv) Tube joining	
2	FEB.	1st	-	----------	
		2nd	6	Study and sketch of domestic refrigerator.	
		3rd	13	Study and sketch of water cooler.	
		4th	20	Study and sketch window type room air conditioner	
		5th	27	. Testing of a refrigeration unit to find out: i) Refrigeration capacity ii) Power input	
3	MARCH	1st	-	----------	
		2nd	5	. Testing of a refrigeration unit to find out: i) Refrigeration capacity ii) Power input	
		3rd	12	b) Physical detection of leakage of refrigerant by various methods.	C.T - I
		4th	19	b) Physical detection of leakage of refrigerant by various methods.	
		5th	26	To detect troubles/faults in a refrigeration system and to remove them.	
4	APRIL	1st	2	To detect troubles/faults in a refrigeration system and to remove them.	
		2nd	9	Visit to an ice plant / cold storage plant/central conditioning plant.	
		3rd	16	Study and sketch of various types of expansion devices & Humidity state.	C.T - II
		4th	23	Study and sketch of various types of expansion devices & Humidity state.	
		5th	30	Study and sketch of various types of expansion devices & Humidity state.	
5	MAY	1st	-	----------	
		2nd	7	Study and sketch of thermostat, strainer, drier, H.P. L.P. and oil safety control and service valve, two way & three ways valves, relays & solenoid valve etc	
		3rd	14	Study and sketch of thermostat, strainer, drier, H.P. L.P. and oil safety control and service valve, two way & three ways valves, relays & solenoid valve etc	H.T
		4th	21	REPEAT IF ANY	
		5th	-	----------	

VISHAL CHANDEL
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24/1/24

HOD (ME)
24/1/24

LESSON PLAN FOR : AUTOMOBILE ENGINEERING (SESSION: JAN - JUN 2024)

MECHANICAL ENGINEERING (SEMESTER - 6)

Course Outcomes:- Students will be able to

To understand the basic structure and components of an automobile.

To understand the concepts transmission and steering systems.

To understand the classification and necessity of suspension system.

To understand the concepts automotive battery, Alternator and dynamo and Lighting System and Accessories.

To identify different special vehicles.

S.NO.	MONTH	DATE	CONTENT	REMARKS
1	JAN-FEB	31,1,2,3	Introduction:Components of an automobile,Classification of automobiles, Layout of chassis, Types of drives-front wheel, rear wheel, four wheel, left hand, right hand Introduction to electric vehicle	
2	FEB	6,7,14,15,16	Clutch: Clutch Function, Constructional details of single plate and multi plate friction clutches, Centrifugal and semi centrifugal clutch	
		17,21,22,23	Gear Box: Function, Working of slide mesh, constant mesh and synchro mesh gear box, Torque converter and overdrive	
		24,27,28,29	Propeller shaft and rear axle : Propeller shaft and rear axle Function, Universal joint, Differential, Rear axle drives and different types of rear axles	
3	MAR	1,2,6,7,13	Wheels and Tyres: Types of wheels- disc wheels and wire wheel, Types of tyres used in Indian vehicles, Causes of tyre wear, Toe in, Toe out, Camber, Caster, Kingpin inclination, Tube less tyres	
		14,15,16,20, 21,	Steering System:- Function and principle, Ackerman and Davis steering gears, Types of steering gears- worm and nut, worm and wheel, Rack and pinion type, Introduction to power steering	
		22,23,27,29, 28,30	Constructional detail and working of mechanical, hydraulic and vacuum brake, Concept of brake adjustment & Bleeding of brakes, Introduction to ABS, EBD and hill assist braking system, Introduction to Traction control	
4	APR	3,4,5,6	Suspension System:- Function, Types, Working of coil spring, leaf spring, Shock absorber	
		10,12,18,19, 20	Battery: Constructional details of lead and cell battery,Specific gravity of electrolyte , Effect of temperatures, charging and discharging on specific gravity,Capacity and efficiency of battery, Battery charging, Maintenance of batteries, Checking of batteries for Voltage and specific gravity	
		24,25,26,27, 30	Dynamo and Alternator : Dynamo, Function and details, Regulators-voltage, current and compensated type, Cut out-Construction, working and their adjustment. Alternator, Construction and working, Charging of battery from alternator	
5	MAY	1,2,3,4	Introduction to special purpose vehicles : Tractors, Forklift, Cranes & Recovery vehicles	
		8,9,15,16,17 ,18,	Lighting System and Accessories : Introduction to Lighting system of automobile, Windscreen Wiper, Horn, Speedometer, HVAC system	
		22,24,25	Revision	

Virender Paul
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HOD (ME)
27/1/2024

Govt. Polytechnic Sundernagar (H.P.)

Lesson Plan(Lab/Workshop)

Name of Teacher- Ajay Kumar

Name of Lab/Workshop: **Automobile Engineering**		Semester: 6th	Branch: Mechanical Engg.	Remark
Sr. No.	Description of Lab/Workshop:	Group I	Group II	
1	Study of different types of clutches and adjust the clutch pedal play.	29 Jan, 5 Feb	30 Jan, 6 Feb	
2	Study of front axle, rear axle and differential of an automobile.	12,19 Feb	13,20 Feb	
3	Study of different types of gear box.	26 Feb	27 Feb	
4	Study of steering system of the automobile.	4 March	5 March	
5	Study of hydraulic brake system of an automobile, bleeding of hydraulic brakes.	11 March	12 March	
6	Procedure of rotation of wheels, balancing of wheels and alignment of wheels.	18 March	19 March	
7	Charging of lead acid battery, measuring cell voltage and specific gravity.	1 April	26 March	
8	Study of dynamo/alternator of an automobile and fan belt adjustment.	8 April	2 April	
9	Study of different electrical accessories of an automobile.	22 April	9 April	
10	Spark plug cleaning and gap setting.	29 April	16 April	
11	Driving practice on four wheelers one hour/student in the semester.	6,13,20 May	23,30 April & 7,14,21 May	

Signature of Teacher

Sign of H.O.D.

27/1/2024.

LESSON PLAN FOR : COMPUTER AIDED DRAFTING (SESSION: JAN - JUN 2024)				
MECHANICAL ENGINEERING (SEMESTER - 6)				
S.NO.	MONTH	DATE	CONTENT	REMARKS
1	JAN-FEB	29,30,31,1	Introduction to CAD - Introduction to CAD: - Advantages and applications, setting the drawing environment: Limits, Grid, Snap, Axis, Units, Ortho, Coordinates ON, OFF Units and Color.	Group G-1,G2
2	FEB	5,6,7,8	2D Drawing entities - Point - Line - Arc - circle, Ellipse, Polygon, and Trace. Object Selection using Object Snap (OSNAP).	
		12,13,14,15	Editing commands: Selection of entities by different methods - copy, Move, Scale, Rotate, Fillet, Chamfer, Mirror, Array-Polar, Rectangular. Measure, Divide, and Erase. - Drawing Display Methods: Zoom, Pan, and View.	
		19,20,21,22	Adding Texts and Dimensions: Text, Dimension-linear, continued, angular,. 2. More Learning for Productivity of Drawing - Pedit commands. Working on multiple layers Layer concepts in CAD	Group G-1,G2
		25,26,27,28	Various options with layer command - Hatch command - Creating line types library and user made library. - Preparing the schematic drawing of a workshop building in one layer, the blocks of machines in another Layer and Electrical connection on another layer.	
3	MAR	4,5,6,7	3. Advanced CAD Features - Drawing 2D figure of complex shape - Extruding it into a 3D drawing - Understanding 3D Co-ordinate values, Creating and viewing a drawing in 3D.	
		11,12,13,14	Rotating the drawings- Meshing 3D drawing,Turning a 3D into 2D Ortho Graphic projection	
		18,19,20,21	4. Advanced 3D Features - Understanding model space and paper space. - Drawing and working in UCS. - UCS icon, 3D editing-Union, Subtraction, 3 D Orbit.,Basic 3D entities command, Box, Cylinder, Cone, Chamfer, Revolve.	Group G-1,G2
		26,27,28	5. Drawing of Following Automobile components a) 2D drawings - Connecting rod, Gear tooth profile	
4	APR	1,2,3,4	Brake assembly, Single plate clutch	
		8,9,10,16	Universal coupling	Group G-1,G2
		22,23,24,25, 29,30	Protected type flange coupling,Meshing gears	
5	MAY	1,2,7,8,9	Developing CAD slides and presenting it.	
		13,14,15,16	Drawing Practice	Group G-1,G2
		20,21,22	Drawing Practice	

Virender Paul
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27/1/2024.

DEPARTMENT OF MECHANICAL ENGG. 6th SEMESTER

LESSON PLAN FOR CNC MACHINES AND AUTOMATION (SESSION: JAN-JUN 2024) MECHANICAL ENGG. 6th SEMESTER

S.NO.	MONTH	WEEK	DAY	PARTICULARS	REMARKS
1	JAN	5TH	29,30	Basic concepts of NC, CNC & DNC, advantages & disadvantage of CNC Machines, Application of CNC Machines	
	FEB	1ST	1,2	Difference between conventional & CNC Machines, Profitable applications of CNC MachinesIntroduction to CAM	
2		2ND	5,6,8,9	Machine control unit, NC control, PLC control, its advantages &disadvantages, Application and limitations of PLC machines,	
		3RD	12,13,15,16	Axis designate of CNC machines,special constructional requirement of CNC machines, slide ways, bolt screw & nut assembly,Lubrication & cooling of CNC machines,	
		4TH	19,20,22,23	Spindle & spindle motors, axis drives motor,	
		5TH	26,27,29	removal &safety provision of CNC machines, Swarf Feedback mechanism in CNC machines.Tooling of CNC Machines:	
3	MAR	1ST	1	Introduction, various cutting tools for CNC machines,	
		2ND	4,5,7	Work holding devices, automatic tool changer. Open & close loop control system, fundamental problem in control:	
		3RD	11,12,14,15	Accuracy, resolution, repeatability, instability, response & damping,	
		4TH	18,19,21,22	Types of position control: • Point to point • Straight line • Continuous	CT-1
		5TH	26,28	programming and basic concepts of part programming, Part NC words, part programming formats,	
4	APRIL	1ST	1,2,4,5	simple programming for rational components	
		2ND	8,9,12	part programming using canned cycles, subroutines and do loops, tool off set cutter radius compensation and wear compensation	
		3RD	16,18,19	Common Problems in CNC Machines:	
		4TH	22,23,25,26	Common problems in mechanical, electrical systems, Common problems in pneumatic,	CT-2
		5TH	29,30	electronic and PC components of NC machines. diagnostic study of common problems and remedies,	
5	MAY	1ST	2,3	use of on-time fault finding diagnosis tools in CNC machines	
		2ND	6,7,9	Industrial Automation: Meaning of automation, need of automation, different types of automation	
		3RD	13,14,16,17	Advantages/ disadvantages of automation,	HOUSE TEST
		4TH	20,21,24	Components of automated system, concept of FMS.	

Prepared by
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HOD, MED
2-11-2024

LESSON PLAN FOR CNC MACHINES AND AUTOMATION LAB (SESSION: JAN-JUN2024) MECHANICAL ENGG. 6th SEMESTER

S.NO.	MONTH	WEEK	DAY		PARTICULARS	REMARKS
			GROUP-I	GROUP-II		
1	JAN	5TH	30	29,31	Study the constructional details of CNC lathe.	
	FEB	1ST	1	NIL	Study the constructional details of CNC milling machine.	
		2ND	6,8	5,7	Study the constructional details of CNC milling machine.	
2		3RD	13,15	12,14	Study the constructional details and working of: Automatic tool changer and tool setter,	
		4TH	20,22	19,21	Multiple pallets,Swarf removal,Safety devices	
		5TH	27,29	26,28	Fundamental of part programming for 2- axis and 3-axis:	
	MAR	1ST	NIL	NIL		
		2ND	5,7	4,6	Plain turning and facing operations, Taper turning operations	
3		3RD	12,14	11,13	Thread cutting operations, Operation along contour using circular interpolation	CT-1
		4TH	19,21	18,20	Develop a part programme for the following milling operations and make the job on CNC milling machine	
		5TH	26,28	27	Plain milling	
	APRIL	1ST	2,4	1,3	Slot milling	
		2ND	9	8,10	Pocket milling	
4		3RD	16,18	NIL	Preparation of work instruction for machine operator.	CT-2
		4TH	23,25	22,24	Preparation of preventive maintenance schedule for CNC machine.	
		5TH	30	29	Demonstration through industrial visit for awareness of actual working of FMS in production.	
	MAY	1ST	2	1	Use of software for turning operations on CNC turning center.	
		2ND	7,9	6,8	Use of software for milling operations on machine centres.	
5		3RD	14,16	13,15		HOUSE TEST
		4TH	21	20,22	Revison/ Doubt Session	

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27/11/2024

LESSON PLAN FOR - STUDENT CENTERED ACTIVITIES (SESSION :- JAN- JUN 2024)

MECHANICAL ENGINEERING (SEMESTER - 6TH)

S.NO.	MONTH	WEEK	DATE	CONTENT	REMARKS
1	JAN	1st	29,30	Quiz	
2	FEB	1st	~	~	
		2nd	5,6	Quiz	
		3rd	12,13	Cultural Activity / Natti / Folk Singing	
		4th	19,20	Cultural Activity / Natti / Folk Singing	
		5th	26,27	Group Discussion	
3	MAR	1st	~	~	
		2nd	4,5	Group Discussion	
		3rd	11,12	Campus Cleaning	
		4th	18,19	Campus Cleaning	
		5th	26	Poster Making	
4	APR	1st	1,2	Poster Making	
		2nd	8,9	Wall Painting	
		3rd	16	Wall Painting	
		4th	22,23	Running	
		5th	29,30	Running	
5	MAY	1st	~	~	
		2nd	6,7	Long Jump	
		3rd	13,14	Volleyball	
		4th	20,21	Volleyball	

Avinash Kumar
(Sr. Lecturer Mech. Engg.)

HOD(ME)
27/1/2024