

GOVT. POLYTECHNIC BOLANGIR

LESSON PLAN

Discipline : Mechanical	Semester: 3rd	Name of the Teaching Faculty :	
Subject : PRODUCTION TECHNOLOGY	No. of Days / per week class allotted : 4	Semester From date : 01.07.2024 No. of Weeks: 19	To Date : 08.11.2024
Week	Class Day	Topics	
1.7 - 6.7	1st	Extrusion: Definition & Classification	
	2nd	Explain direct, indirect and impact extrusion process.	
	3rd	Define rolling	
	4th	Classify it	
8.7 - 13.7	1st	List the different types of rolling mills used in Rolling process.	
	2nd	Explanation with figure	
	3rd	cold rolling and hot rolling process	
	4th	Differentiate between cold rolling and hot rolling process	
15.7 - 20.7	1st	Define welding	
	2nd	and classify various welding processes.	
	3rd	Explain fluxes used in welding.	
	4th	Explain Oxy-acetylene welding process.	
22.7 - 27.7	1st	Explain various types of flames used in Oxy-acetylene welding	
	2nd	Explain Arc welding process.	
	3rd	Specify arc welding electrodes.	
	4th	Define resistance welding and classify it.	
29.7 - 3.8	1st	Describe various resistance welding processes	
	2nd	such as butt welding, spot welding	
	3rd	flash welding, projection welding	
	4th	seam welding	
5.8 - 10.8	1st	Explain TIG and MIG welding process	
	2nd	State different welding defects with causes and remedies.	
	3rd	Define Casting and Classify the various Casting processes.	
	4th	Explain the procedure of Sand mould casting.	
12.8 - 17.8	1st	Explain different types of molding sands with their composition and properties.	
	2nd	Classify different pattern and state various pattern allowances.	
	3rd	Classify core.	
	4th	Describe construction and working of cupola and crucible furnace.	
19.8 - 24.8	1st	Explain die casting method.	
	2nd	Explain centrifugal casting such as true centrifugal casting, centrifuging with advantages, limitation and area of application.	
	3rd	Explain various casting defects with their causes and remedies.	
	4th	Explain sintering.	
26.8 - 31.8	1st	Define powder metallurgy process	
	2nd	Economics of powder metallurgy	
	3rd	Describe the methods of producing components by powder metallurgy technique.	
	4th	State advantages of powder metallurgy technology technique	
2.9 - 7.9	1st	Economics of powder metallurgy.	
	2nd	List various types of die and punch	
	3rd	Explain simple, Compound & Progressive dies	
	4th	Describe the various advantages & disadvantages of above dies	

9.9 - 14.9	1st	Describe Press Works with
	2nd	blanking
	3rd	piercing
	4th	trimming
16.9 - 21.9	1st	Define jigs
	2nd	Define fixtures
	3rd	list types
	4th	list types
23.9 - 28.9	1st	State advantages of using jigs
	2nd	State advantages of using jigs
	3rd	State advantages of fixtures
	4th	State advantages of fixtures
30.9 - 5.10	1st	State the principle of locations
	2nd	State the principle of locations
	3rd	Describe the methods of location with respect to 3-2-1 point
	4th	Describe the methods of location with respect to 3-2-1 point
7.10 - 12.10	1st	location of rectangular jig
	2nd	CONT..
	3rd	location of rectangular jig
	4th	List various types of jig and fixtures.
14.10 - 19.10	1st	List various types of jig and fixtures.
	2nd	CONT...
	3rd	REVISION
	4th	REVISION
21.10 - 26.10	1st	CLASS TEST
	2nd	Q & A DISCUSSION
	3rd	Q & A DISCUSSION
	4th	CLASS TEST
28.10 - 2.11	1st	OVERALL SYALBUS DISCUSSION
	2nd	DOUBT CLEARING
	3rd	DOUBT CLEARING
	4th	DOUBT CLEARING
4.11 - 8.11	1st	OVERALL SYALBUS DISCUSSION
	2nd	DOUBT CLEARING
	3rd	DOUBT CLEARING
	4th	DOUBT CLEARING

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GOVT. POLYTECHNIC BOLANGIR		
LESSON PLAN		
Discipline : Mechanical/Automobile	Semester: 3rd	Name of the Teaching Faculty : <i>Anandnarada B. S. M.</i>
Subject : STRENGTH OF MATERIAL	No. of Days / per week class allotted : 4	Semester From date : 01.07.2024 To Date : 08.11.2024 No. of Weeks : 19
Week	Class Day	Topics
1.7 - 6.7	1st	Types of load, stresses & strains
	2nd	strains, (Axial and tangential) Hooke's law, Young's modulus
	3rd	bulk modulus, modulus of rigidity, Poisson's ratio,
	4th	derive the relation between three elastic constants,
8.7 - 13.7	1st	Principle of super position, stresses in composite section
	2nd	Temperature stress, determine the temperature stress in composite bar (single core)
	3rd	Strain energy and resilience, Stress due to gradually applied, suddenly applied and impact load
	4th	Simple problems on above.
15.7 - 20.7	1st	Definition of hoop and longitudinal stress, strain
	2nd	Derivation of hoop stress, longitudinal stress
	3rd	hoop strain, longitudinal strain and volumetric strain
	4th	Computation of the change in length, diameter and volume
22.7 - 27.7	1st	Simple problems on above
	2nd	Simple problems on above
	3rd	Simple problems on above
	4th	Simple problems on above
29.7 - 3.8	1st	Determination of normal stress
	2nd	shear stress and resultant stress on oblique plane
	3rd	Location of principal plane and computation of principal stress
	4th	Location of principal plane and computation of principal stress
5.8 - 10.8	1st	Maximum shear stress using Mohr's circle
	2nd	Types of beam and load
	3rd	Concepts of Shear force and bending moment
	4th	Shear Force and Bending moment diagram
12.8 - 17.8	1st	its salient features illustration in cantilever beam
	2nd	simply supported beam and over hanging beam under point load and uniformly distributed load
	3rd	Assumptions in the theory of bending,
	4th	Bending equation
19.8 - 24.8	1st	Moment of resistance
	2nd	Section modulus & neutral axis
	3rd	Solve simple problems
	4th	Solve simple problems
26.8 - 31.8	1st	Define column
	2nd	Axial load, Eccentric load on column,
	3rd	Direct stresses
	4th	Bending stresses
2.9 - 7.9	1st	Maximum & Minimum stresses.
	2nd	Numerical problems on above
	3rd	Numerical problems on above
	4th	Numerical problems on above

9.9 - 14.9	1st	Buckling load computation using Euler's formula (no derivation) in
	2nd	Assumption of pure torsion
	3rd	The torsion equation for solid and hollow circular shaft
	4th	Comparison between solid and hollow shaft subjected to pure torsion
16.9 - 21.9	1st	Numerical problems PRACTISE
	2nd	Numerical problems PRACTISE
	3rd	Numerical problems PRACTISE
	4th	Numerical problems PRACTISE
23.9 - 28.9	1st	REVISION
	2nd	REVISION
	3rd	REVISION
	4th	REVISION
30.9 - 5.10	1st	REVISION
	2nd	REVISION
	3rd	REVISION
	4th	REVISION
7.10 - 12.10	1st	Numerical problems PRACTISE
	2nd	Numerical problems PRACTISE
	3rd	Numerical problems PRACTISE
	4th	Numerical problems PRACTISE
14.10 - 19.10	1st	Numerical problems PRACTISE
	2nd	REVISION
	3rd	REVISION
	4th	REVISION
21.10 - 26.10	1st	REVISION
	2nd	REVISION
	3rd	REVISION
	4th	REVISION
28.10 - 2.11	1st	REVISION
	2nd	REVISION
	3rd	REVISION
	4th	REVISION
4.11 - 8.11	1st	REVISION
	2nd	REVISION
	3rd	REVISION
	4th	REVISION

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30/6/2023

GOVT. POLYTECHNIC BOLANGIR

LESSON PLAN

Discipline : Mechanical	Semester: 3rd	Name of the Teaching Faculty : <u>Dr. Yash Kumbhar</u>
Subject : ENGINEERING MATERIAL	No. of Days / per week class allotted : 4	Semester From date : 01.07.2023 To Date : 08.11.2023 No. of Weeks: 19
Week	Class Day	Topics
1.7 - 6.7	1st	Material classification
	2nd	ferrous and non ferrous category
	3rd	alloys
	4th	Types of alloys
8.7 - 13.7	1st	Properties of Materials
	2nd	Physical , Chemical and Mechanical
	3rd	Performance requirements
	4th	Material reliability and safety
15.7 - 20.7	1st	Characteristics of ferrous materials
	2nd	application of ferrous materials
	3rd	Classification of low carbon steel
	4th	composition of low carbon steel
22.7 - 27.7	1st	application of low carbon steel
	2nd	Classification of Medium carbon steel
	3rd	composition of Medium carbon steel
	4th	application of Medium carbon steel
29.7 - 3.8	1st	Classification of High carbon steel
	2nd	composition of High carbon steel
	3rd	application of High carbon steel
	4th	Alloy steel
5.8 - 10.8	1st	Low alloy steel
	2nd	high alloy steel
	3rd	tool steel
	4th	stainless steel
12.8 - 17.8	1st	Tool steel:
	2nd	Effect of various alloying elements such as Cr, Mn, Ni, V, Mo
	3rd	Concept of phase diagram
	4th	cooling curves
19.8 - 24.8	1st	Features of Iron-Carbon diagram
	2nd	with salient micro-constituents of Iron and Steel
	3rd	Crystal defines
	4th	classification of crystals
26.8 - 31.8	1st	crystal imperfections
	2nd	Classification of imperfection
	3rd	Point defects
	4th	line defects
2.9 - 7.9	1st	volume defects
	2nd	surface defects
	3rd	Types and causes of point defects
	4th	Vacancies
9.9 - 14.9	1st	Interstitials and impurities
	2nd	Types and causes of line defects
	3rd	Edge dislocation and
	4th	screw dislocation

16.9 - 21.9	1st	Effect of Imperfection on material properties
	2nd	Deformation by slip and twinning
	3rd	Deformation by slip and twinning
	4th	Effect of deformation on material properties
23.9 - 28.9	1st	Purpose of Heat treatment
	2nd	Process of heat treatment: Annealing, normalizing, hardening, tempering, stress relieving measures
	3rd	Surface hardening: Carburizing and Nitriding and Effect of heat treatment on properties of steel
	4th	Hardenability of steel
30.9 - 5.10	1st	Aluminum alloys: Composition, property and usage of Duralmin, y- alloy.
	2nd	Copper alloys: Composition, property and usage of Copper- Aluminum, Copper-Tin, Babbit , Phosperous bronze, brass, Copper- Nickel
	3rd	Predominating elements of lead alloys, Zinc alloys and Nickel alloys
	4th	Low alloy materials like P-91, P-22 for power plants and other high temperature services. High alloy materials like stainless steel grades of duplex, super duplex materials etc.
7.10 - 12.10	1st	Classification, composition, properties and uses of Copper base, Tin Base, Lead base, Cadmium base bearing materials
	2nd	CONT...
	3rd	Classification, composition, properties and uses of Iron- base and Copper base spring material
	4th	CONT...
14.10 - 19.10	1st	Properties and application of thermosetting and thermoplastic polymers Properties of elastomers
	2nd	Classification, composition, properties and uses of particulate based and fiber reinforced composites and Classification and uses of ceramics
	3rd	CONT..
	4th	CONT..
21.10 - 26.10	1st	CLASS TEST
	2nd	Q & A DISCUSSION
	3rd	Q & A DISCUSSION
	4th	CLASS TEST
28.10 - 2.11	1st	OVERALL SYALBUS DISCUSSION
	2nd	DOUBT CLEARING
	3rd	DOUBT CLEARING
	4th	DOUBT CLEARING
4.11 - 8.11	1st	OVERALL SYALBUS DISCUSSION
	2nd	DOUBT CLEARING
	3rd	DOUBT CLEARING
	4th	DOUBT CLEARING


 30/10/2023

GOVT. POLYTECHNIC BOLANGIR

LESSON PLAN

Discipline : Mechanical	Semester: 3rd	Name of the Teaching Faculty : <u>MANABHANJAN BHOI</u>
Subject : THERMAL ENGINEERING-I	No. of Days / per week class allotted : 4	Semester From date : 01.07.2023 To Date : 08.11.2023 No. of Weeks: 19
Week	Class Day	Topics
1.7 - 6.7	1st	Thermodynamic Systems
	2nd	closed, open, isolated
	3rd	Thermodynamic properties of a system
	4th	pressure, volume, temperature
8.7 - 13.7	1st	entropy, enthalpy, internal energy
	2nd	units of measurement
	3rd	Intensive and extensive properties
	4th	Define thermodynamic processes
15.7 - 20.7	1st	Path, cycle
	2nd	state
	3rd	Path function
	4th	Point function
22.7 - 27.7	1st	Thermodynamic Equilibrium.
	2nd	Quasi-static Process
	3rd	Conceptual explanation of energy and its sources
	4th	Work, heat
29.7 - 3.8	1st	Comparison between the two
	2nd	Mechanical Equivalent of Heat
	3rd	Work transfer
	4th	Displacement work
5.8 - 10.8	1st	State & explain Zeroth law of thermodynamics
	2nd	State & explain First law of thermodynamics
	3rd	Limitations of First law of thermodynamics
	4th	Application of First law of Thermodynamics
12.8 - 17.8	1st	steady flow energy equation and its application to turbine and compressor
	2nd	Second law of thermodynamics (Clausius & Kelvin Plank statements)
	3rd	Application of second law in heat engine, heat pump, refrigerator
	4th	determination of efficiencies &
19.8 - 24.8	1st	C.O.P (solve simple numerical)
	2nd	Laws of perfect gas Boyle's law
	3rd	Charles's law
	4th	Avogadro's law
26.8 - 31.8	1st	Dalton's law of partial pressure
	2nd	Guy lussac law
	3rd	General gas equation
	4th	characteristic gas constant
2.9 - 7.9	1st	Universal gas constant
	2nd	Explain specific heat of gas (Cp and Cv)
	3rd	Explain specific heat of gas (Cp and Cv)
	4th	Relation between Cp & Cv
9.9 - 14.9	1st	Enthalpy of a gas
	2nd	Work done during a non- flow process
	3rd	Application of first law of thermodynamics to various non flow process
	4th	Isothermal, Isobaric
16.9 - 21.9	1st	Isentropic and polytropic process
	2nd	Solve simple problems on above.
	3rd	Free expansion & throttling process
	4th	Explain I.C engine

23.9 - 28.9	1st	classify I.C engine
	2nd	Terminology of I.C Engine such as bore, dead centers, stroke volume, piston speed & RPM.
	3rd	Explain the working principle of 2-stroke & 4- stroke engine C.I & S.I engine.
	4th	Differentiate between 2-stroke & 4- stroke engine C.I & S.I engine.
30.9 - 5.10	1st	Carnot cycle
	2nd	Otto cycle.
	3rd	Diesel cycle.
	4th	Dual cycle.
7.10 - 12.10	1st	Define Fuel.
	2nd	Types of fuel.
	3rd	Application of different types of fuel.
	4th	Heating values of fuel.
14.10 - 19.10	1st	CLASS TEST
	2nd	Q & A DISCUSSION
	3rd	
	4th	
21.10 - 26.10	1st	OVERALL SYALBUS DISCAUSSION
	2nd	DOUBT CLEARING
	3rd	DOUBT CLEARING
	4th	DOUBT CLEARING
28.10 - 2.11	1st	DISCAUSSION ABOUT THERMAL POWER PLANT
	2nd	VARIOUS THERMAL PP ACROSS COUNTRY
	3rd	Q & A DISCUSSION
	4th	CLASS TEST
4.11 - 8.11	1st	Q & A DISCUSSION
	2nd	CLASS TEST
	3rd	Q & A DISCUSSION
	4th	CLASS TEST

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GOVT. POLYTECHNIC BOLANGIR

LESSON PLAN

Discipline : Mechanical	Semester: 3rd	Name of the Teaching Faculty : <i>Pratima Ku. Behera</i>
Subject: EVS	No. of Days / per week class	Semester From date : 01.07.2023 To Date : 08.11.2023 No. of Weeks : 19
Week	Class Day	Topics
1.7 - 6.7	1st	The Multidisciplinary nature of environmental studies
	2nd	Definition, scope and importance, Need for public awareness.
	3rd	Renewable and non renewable resources
	4th	Forest resources, Water resources, Mineral Resources
8.7 - 13.7	1st	Food Resources, Energy Resources, Land Resources
	2nd	Role of individual in conservation of natural resources
	3rd	Equitable use of resources for sustainable lifestyles
	4th	Concept of an ecosystem. Structure and function of an ecosystem. Producers, consumers, decomposers.
15.7 - 20.7	1st	Energy flow in the ecosystems. Ecological succession. Food chains, food webs, and ecological pyramids. Introduction, types, characteristic features
	2nd	structure and function of the following ecosystem: Forest ecosystem
	3rd	Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)
	4th	Introduction-Definition: genetics, species and ecosystem diversity
22.7 - 27.7	1st	Biogeographically classification of India.
	2nd	Value of biodiversity: consumptive use, productive use, social ethical, aesthetic and opt in values.
	3rd	Biodiversity at global, national and local level.
	4th	Threats to biodiversity: Habitats loss, poaching of wild life, man wildlife conflicts.
29.7 - 3.8	1st	Definition Causes, effects and control measures of Air pollution
	2nd	Water pollution, Soil pollution
	3rd	Marine pollution, Noise pollution.
	4th	Thermal pollution, Nuclear hazards
5.8 - 10.8	1st	Solid waste Management: Causes, effects and control measures of urban and industrial wastes
	2nd	Role of an individual in prevention of pollution.
	3rd	Disaster management: Floods, earth quake, cyclone and landslides.
	4th	Social issues and the Environment
12.8 - 17.8	1st	unsustainable to sustainable development.
	2nd	Urban problems related to energy.
	3rd	Water conservation, rain water harvesting, water shed management.
	4th	Resettlement and rehabilitation of people; its problems and concern
19.8 - 24.8	1st	Environmental ethics: issue and possible solutions
	2nd	Climate change, global warming, acid rain
	3rd	ozone layer depletion, nuclear accidents and holocaust, case studies
	4th	Air (prevention and control of pollution) Act

26.8 - 31.8	1st	Water (prevention and control of pollution) Act.
	2nd	Public awareness.
	3rd	Human population and the environment
	4th	Population growth and variation among nations.
2.9 - 7.9	1st	Population explosion-family welfare program.
	2nd	Environment and human health.
	3rd	Human rights
	4th	Value education
9.9 - 14.9	1st	Role of information technology In environment and human health
	2nd	CONT..
	3rd	CONT..
	4th	CONT..
16.9 - 21.9	1st	CLASS TEST
	2nd	Q & A DISCUSSION
	3rd	Q & A DISCUSSION
	4th	CLASS TEST
23.9 - 28.9	1st	CLASS TEST
	2nd	Q & A DISCUSSION
	3rd	Q & A DISCUSSION
	4th	CLASS TEST
30.9 - 5.10	1st	CLASS TEST
	2nd	Q & A DISCUSSION
	3rd	Q & A DISCUSSION
	4th	CLASS TEST
7.10 - 12.10	1st	CLASS TEST
	2nd	Q & A DISCUSSION
	3rd	Q & A DISCUSSION
	4th	CLASS TEST
14.10 - 19.10	1st	CLASS TEST
	2nd	Q & A DISCUSSION
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21.10 - 26.10	1st	CLASS TEST
	2nd	Q & A DISCUSSION
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28.10 - 2.11	1st	OVERALL SYALBUS DISCUSSION
	2nd	DOUBT CLEARING
	3rd	DOUBT CLEARING
	4th	DOUBT CLEARING
4.11 - 8.11	1st	OVERALL SYALBUS DISCUSSION
	2nd	DOUBT CLEARING
	3rd	DOUBT CLEARING
	4th	DOUBT CLEARING

Prof. Y. S. 30/6/23

GOVT. POLYTECHNIC BOLANGIR

LESSON PLAN

Discipline : Mechanical/Automob	Semester: 5th	Name of the Teaching Faculty : <i>Ashirbad Boblu</i>
Subject : EM & ST	No. of Days / per week class allotted : 4	Semester From date : 01.07.2024 To Date : 08.11.2024 No. of Weeks : 19
Week	Class Day	Topics
1.7 - 6.7	1st	Concept /Meaning of Entrepreneurship and Need of Entrepreneurship
	2nd	Characteristics, Qualities and Types of entrepreneur, Functions , Barriers in entrepreneurship
	3rd	Entrepreneurs vs. Manager
	4th	Forms of Business Ownership: Sole proprietorship, partnership forms and others Types of Industries, Concept of Start-ups
8.7 - 13.7	1st	Entrepreneurial support agencies at National, State, District Level(Sources): DIC, NSIC,OSIC, SIDBI, NABARD, Commercial Banks, KVIC etc.
	2nd	Technology Business Incubators (TBI) and Science and Technology Entrepreneur Parks
	3rd	Business Planning, SSI, Ancillary Units, Tiny Units, Service sector Units
	4th	Time schedule Plan, Agencies to be contacted for Project Implementation
15.7 - 20.7	1st	Assessment of Demand and supply and Potential areas of Growth
	2nd	Identifying Business Opportunity , Final Product selection
	3rd	Project report Preparation , Preliminary project report, Detailed project report, Techno economic Feasibility
	4th	Project Viability
22.7 - 27.7	1st	Definitions of management , Principles of management, Functions of management (staffing, directing ,)
	2nd	planning, organising,
	3rd	and controlling etc
	4th	Level of Management in an Organisation
29.7 - 3.8	1st	Production management
	2nd	Functions,
	3rd	Productivity
	4th	Quality control
5.8 - 10.8	1st	Production
	2nd	Activities
	3rd	Inventory Management
	4th	Need for Inventory management
12.8- 17.8	1st	Models/Techniques of Inventory management
	2nd	Functions of Financial management
	3rd	Management of Working capital
	4th	Costing (only concept)
19.8 - 24.8	1st	Break even Analysis
	2nd	Brief idea about Accounting Terminologies: Book Keeping, Journal entry, Petty Cash book, P&L Accounts, Balance Sheets(only Concepts)
	3rd	Concept of Marketing and Marketing Management
	4th	Marketing Techniques (only concepts)
26.8 - 31.8	1st	Concept of 4P s (Price, Place, Product, Promotion)
	2nd	Functions of Personnel Management
	3rd	Manpower Planning, Recruitment, Sources of manpower,
	4th	Selection process, Method of Testing, Methods of Training & Development, Payment of Wages
2.9 - 7.9	1st	Leadership and Motivation
	2nd	Leadership
	3rd	Definition and Need/Importance
	4th	Qualities and functions of a leader
9.9 - 14.9	1st	Manager Vs Leader
	2nd	Style of Leadership (Autocratic, Democratic, Participative)
	3rd	Definition and characteristics
	4th	Importance of motivation

16.9 - 21.9	1st	Factors affecting motivation
	2nd	Theories of motivation (Maslow)
	3rd	Methods of Improving Motivation
	4th	Importance of Communication in Business
23.9 - 28.9	1st	Types and Barriers of Communication
	2nd	Human relationship and Performance in Organization
	3rd	Relations with Peers, Superiors and Subordinates
	4th	TQM concepts: Quality Policy, Quality Management, Quality system
30.9 - 5.10	1st	Accidents and Safety, Cause, preventive measures, General Safety Rules , Personal Protection Equipment(PPE)
	2nd	Intellectual Property Rights(IPR), Patents, Trademarks, Copyrights
	3rd	Features of Factories Act 1948 with Amendment (only salient points)
	4th	Features of Payment of Wages Act 1936 (only salient points)
7.10 - 12.10	1st	Concept of IOT, How IOT works
	2nd	Components of IOT, Characteristics of IOT, Categories of IOT
	3rd	Applications of IOT- Smart Cities, Smart Transportation, Smart Home, Smart Healthcare,
	4th	Smart Industry, Smart Agriculture, Smart Energy Management etc.
14.10 - 19.10	1st	REVISION
	2nd	REVISION
	3rd	REVISION
	4th	REVISION
21.10 - 26.10	1st	REVISION
	2nd	REVISION
	3rd	REVISION
	4th	REVISION
28.10 - 2.11	1st	REVISION
	2nd	REVISION
	3rd	REVISION
	4th	REVISION
4.11 - 8.11	1st	REVISION
	2nd	REVISION
	3rd	REVISION
	4th	REVISION

A. Babu
30/06/2024

GOVERNMENT POLYTECHNIC BOLANGIR
LESSON PLAN

Discipline : Mechanical		Semester 5th		Name of Teaching Faculty : Anandananda Biswal
Subject: Design Of Machine Element		No. of Days/ per week class allotted : 4		Semester From date : 01.07.2024 to Date :08.11.2024 No. of Weeks : 19
S.L No	Week	Class Day	Chapter	Theory / Practical Topics
1	1.7 - 6.7	1st	Chapter No 1 Introduction	Introduction to Machine Design & Classify it
2		2nd		Different mechanical engineering materials used in design with their uses and their mechanical and physical properties
3		3rd		Mechanical properties of Engineering material
4		4th		Stress Strain Curved for MS & CI with Sallient Point
5	8.7 - 13.7	1st	Chapter No 1 Introduction	Modes of Failure of elastic deflection, General Yielding & Fracture
6		2nd		State the Factor governing the design of machine elements
7		3rd		State the Factor governing the design of machine elements
8		4th		Describe design Procedure
9	15.7 - 20.7	1st	Chapter No 2 Design of Fastening Elements	Joints and their Classification
10		2nd		State types of welded Joint
11		3rd		State advantages of welded joint over other
12		4th		Design of welded joints for eccentic load
13	22.7 - 27.7	1st	Chapter No 2 Design of Fastening Elements	State types of rivetted joint and types of rivet
14		2nd		Describe failure of rivetted joint
15		3rd		we determine strength and efficiency of rivetted joints
16		4th		Determine Strength & Efficiency of Rivetted Joint
17	29.7 - 3.8	1st	Chapter No 2 Design of Fastening Elements	Design rivetted joint for pressure vessel
18		2nd		Solve numerical problems on weld
19		3rd		Solve numerical problems on rivetted joints
20		4th		Solve numerical problems on rivetted joints
21	5.8 - 10.8	1st	Chapter No 3 Design of Shafts and Keys	State function of Shafts
22		2nd		State materials for shafts
23		3rd		Design of solid & hollow shafts to transmit a given power and given rpm on basis of strength and rigidity
24		4th		Design of solid & hollow shafts to transmit a given power and given rpm on basis of strength and rigidity
25	12.8 - 17.8	1st	Chapter No 3 Design of Shafts and Keys	Design of solid & hollow shafts to transmit a given power and given rpm on basis of strength and rigidity
26		2nd		State stardard size of shafts as per I.S referring data book
27		3rd		State function of keys, types of keys and materials of keys
28		4th		Describe failure of keys, effect of keyway and problem
29	19.8 - 24.8	1st	Chapter No 3 Design of Shafts and Keys	Design of rectangular sunk key by using empirical relation for given diameter of shafts
30		2nd		State specification of parallel key, gibhead key, taper key as per I.S
31		3rd		Solve numericals on design of shafts and keys
32		4th		Solve numericals on design of shafts and keys
33	26.8 - 31.8	1st	Chapter No 4 Design of Coupling	Design of Shafts Coupling
34		2nd		Requirements of Good Shaft Coupling
35		3rd		Types of Coupling
36		4th		Design of Sleeve or Muff Coupling

37	2.9 - 7.9	1st	Chapter No 4 Design of Coupling	Design of Clamp and Compression Coupling
38		2nd		Solve Numericals
39		3rd		Solve Numericals
40		4th		
41	9.9 - 14.9	1st	Chapter No 5 Design of Closed Coil Helical Spring	Material Used for Helical Spring
42		2nd		SWG Wire (Data Book reference)
43		3rd		Terms used in Compression Helical Spring
44		4th		Stress in Helical spring of circular wire
45	16.9 - 21.9	1st	Chapter No 5 Design of Closed Coil Helical Spring	Deflection of helical Spring of Circular Wire
46		2nd		Surge of Spring
47		3rd		Solve Numerical in design of Closed Coil Helical Compression Spring
48		4th		Solve Numerical
49	23.9 - 28.9	1st	Chapter No 5 Design of Closed Coil Helical Spring	Solve Numerical
50		2nd		Solve Numerical
51		3rd		Solve Numerical
52		4th		Solve Numerical
53	30.9 - 5.10	1st	Revision	Chapter 1
54		2nd		Chapter 2
55		3rd		Chapter 2
56		4th		Chapter 3
57	7.10 - 12.10	1st	Revision	Chapter 4
58		2nd		Chapter 4
59		3rd		Chapter 5
60		4th		Chapter 5
61	14.10 - 19.10	1st	Revision	Revision
62		2nd		Revision
63		3rd		Revision
64		4th		Revision
65	21.10 - 26.10	1st	Revision	Revision
66		2nd		Revision
67		3rd		Revision
68		4th		Revision
69	28.10 - 2.11	1st	Revision	Revision
70		2nd		Revision
71		3rd		Revision
72		4th		Revision
73	4.11 - 8.11	1st	Revision	Revision
74		2nd		Revision
75		3rd		Revision
76		4th		Revision


30/6/23

GOVT. POLYTECHNIC BOLANGIR

LESSON PLAN

Discipline : Mechanical	Semester: 5TH	Name of the Teaching Faculty : Siddharth Swarup Tripathy
Subject : HM & IFP	No. of Days / per week class	Semester From date : 01.07.2024 To Date : 08.11.2024 No. of Weeks : 19
Week	Class Day	Topics
1.7 - 6.7	1st	Definition and classification of hydraulic turbines
	2nd	Construction and working principle of impulse turbine.
	3rd	Velocity diagram of moving blades, work done and derivation of various efficiencies of impulse turbine
	4th	Velocity diagram of moving blades, work done and derivation of various efficiencies of Kaplan turbine
8.7 - 13.7	1st	Numerical on above
	2nd	Construction and working principle of centrifugal pumps
	3rd	Distinguish between impulse turbine and reaction turbine
	4th	Numerical on above
15.7 - 20.7	1st	Describe construction & working of single acting reciprocating pump
	2nd	Describe construction & working of double acting reciprocating pump.
	3rd	Derive the formula for power required to drive the pump (Single acting & double acting)
	4th	Define slip.
22.7 - 27.7	1st	State positive & negative slip & establish relation between slip & coefficient of
	2nd	Elements - filter-regulator-lubrication unit
	3rd	Pressure control valves
	4th	Pressure relief valves
29.7 - 3.8	1st	Pressure regulation valves
	2nd	1 3/2DCV, 5/2 DCV, 5/3DCV
	3rd	Flow control valves
	4th	Throttle valves
5.8 - 10.8	1st	ISO Symbols of pneumatic components
	2nd	Pneumatic circuits
	3rd	Direct control of single acting cylinder
	4th	Operation of double acting cylinder
12.8 - 17.8	1st	Operation of double acting cylinder with metering in and metering out control
	2nd	Hydraulic system, its merit and demerits
	3rd	Hydraulic accumulators
	4th	Pressure control valves
19.8 - 24.8	1st	Pressure relief valves
	2nd	Pressure regulation valves
	3rd	3/2DCV, 5/2 DCV, 5/3DCV
	4th	Flow control valves
26.8 - 31.8	1st	Throttle valves
	2nd	Fluid power pumps
	3rd	1 External and Internal gear pumps
	4th	Vane pump
2.9 - 7.9	1st	3 Radial piston pumps
	2nd	ISO Symbols for hydraulic components.
	3rd	Actuators
	4th	Direct control of single acting cylinder

9.9 - 14.9	1st	Operation of double acting cylinder
	2nd	Operation of double acting cylinder with metering in and metering out control
	3rd	Comparison of hydraulic and pneumatic system
	4th	Hydraulic circuits
16.9 - 21.9	1st	SOLVE SIMPLE NUMERICALS
	2nd	SOLVE SIMPLE NUMERICALS
	3rd	SOLVE SIMPLE NUMERICALS
	4th	SOLVE SIMPLE NUMERICALS
23.9 - 28.9	1st	SOLVE SIMPLE NUMERICALS ON RECIPROCATING PUMPS
	2nd	SOLVE SIMPLE NUMERICALS ON RECIPROCATING PUMPS
	3rd	SOLVE SIMPLE NUMERICALS ON RECIPROCATING PUMPS
	4th	SOLVE SIMPLE NUMERICALS ON RECIPROCATING PUMPS
30.9 - 5.10	1st	SOLVE SIMPLE NUMERICALS ON HYDRULIC TURBINES
	2nd	SOLVE SIMPLE NUMERICALS ON HYDRULIC TURBINES
	3rd	SOLVE SIMPLE NUMERICALS ON HYDRULIC TURBINES
	4th	SOLVE SIMPLE NUMERICALS ON HYDRULIC TURBINES
7.10 - 12.10	1st	REVISION
	2nd	REVISION
	3rd	REVISION
	4th	REVISION
14.10 - 19.10	1st	REVISION
	2nd	REVISION
	3rd	REVISION
	4th	REVISION
21.10 - 26.10	1st	REVISION
	2nd	REVISION
	3rd	REVISION
	4th	REVISION
28.10 - 2.11	1st	REVISION
	2nd	REVISION
	3rd	REVISION
	4th	REVISION
4.11 - 8.11	1st	REVISION
	2nd	REVISION
	3rd	REVISION
	4th	REVISION

14.10 - 19.10	2nd	REVISION
	3rd	REVISION
	4th	REVISION

21.10 - 26.10	1st	REVISION
	2nd	REVISION
	3rd	REVISION
	4th	REVISION

28.10 - 2.11	1st	REVISION
	2nd	REVISION
	3rd	REVISION
	4th	REVISION

4.11 - 8.11	1st	REVISION
	2nd	REVISION
	3rd	REVISION
	4th	REVISION

GOVT. POLYTECHNIC BOLANGIR

LESSON PLAN

Discipline : Mechanical	Semester: 5TH	Name of the Teaching Faculty : Ashirbad Babu
Subject : MECHATRONICS	No. of Days / per week class allotted : 4	Semester From date : 01.07.2024 To Date : 08.11.2024 No. of Weeks : 19
Week	Class Day	Topics
1.7 - 6.7	1st	Definition of Mechatronics
	2nd	Advantages & disadvantages of Mechatronics
	3rd	Application of Mechatronics
	4th	Scope of Mechatronics in Industrial Sector
8.7 - 13.7	1st	Components of a Mechatronics System
	2nd	Importance of mechatronics in automation
	3rd	Defination of Transducers
	4th	Classification of Transducers
15.7 - 20.7	1st	Electromechanical Transducers
	2nd	Transducers Actuating Mechanisms
	3rd	Displacement & Positions Sensors , Velocity, motion, force and pressure sensors.
	4th	Temperature and light sensors
22.7 - 27.7	1st	Machine, Kinematic Link, Kinematic Pair
	2nd	Mechanism, Slider crank Mechanism
	3rd	Gear Drive, Spur gear, Bevel gear, Helical gear, worm gear
	4th	Belt & Belt drive
29.7 - 3.8	1st	BEARINGS
	2nd	Switches and relay
	3rd	Solenoid
	4th	D.C Motors
5.8 - 10.8	1st	A.C Motors
	2nd	Stepper Motors
	3rd	Specification and control of stepper motors
	4th	Servo Motors D.C & A.C
12.8 - 17.8	1st	Introduction
	2nd	Advantages of PLC
	3rd	Selection and uses of PLC
	4th	Architecture basic Internal structures
19.8 - 24.8	1st	Input/output Processing and Programming
	2nd	Mnemonics
	3rd	Master and Jump Controllers
	4th	Master and Jump Controllers
26.8 - 31.8	1st	NC machines
	2nd	CNC machines
	3rd	CAD/CAM
	4th	CAD
2.9 - 7.9	1st	CAM
	2nd	Software and hardware for CAD/CAM
	3rd	Functioning of CAD/CAM system
	4th	Features and characteristics of CAD/CAM system

9.9 - 14.9	1st	Application areas for CAD/CAM
	2nd	Introduction
	3rd	Machine Structure
	4th	Guideways/Slide ways
16.9 - 21.9	1st	Introduction and Types of Guideways
	2nd	Factors of design of guideways
	3rd	Spindle drives
	4th	Feed drive
23.9 - 28.9	1st	Spindle and Spindle Bearings
	2nd	Definition, Function and laws of robotics
	3rd	Types of Industrial robots
	4th	Robotic systems
30.9 - 5.10	1st	Advantages and Disadvantages of robots
	2nd	REVISION
	3rd	REVISION
	4th	REVISION
7.10 - 12.10	1st	REVISION
	2nd	REVISION
	3rd	REVISION
	4th	REVISION
14.10 - 19.10	1st	REVISION
	2nd	REVISION
	3rd	REVISION
	4th	REVISION
21.10 - 26.10	1st	REVISION
	2nd	REVISION
	3rd	REVISION
	4th	REVISION
28.10 - 2.11	1st	REVISION
	2nd	REVISION
	3rd	REVISION
	4th	REVISION
4.11 - 8.11	1st	REVISION
	2nd	REVISION
	3rd	REVISION
	4th	REVISION

A. Babu

30/06/2023

GOVT. POLYTECHNIC BOLANGIR
LESSON PLAN

Discipline : Mechanical	Semester:5th	Name of the Teaching Faculty : <u>MANABHANJAN BHOI</u>
Subject : R & AC	No. of Days / per week class	Semester From date : 01.07.2024 To Date : 08.11.2024 No. of Weeks : 19
Week	Class Day	Topics
1.7 - 6.7	1st	1.1 Definition of refrigeration and unit of refrigeration.
	2nd	1.2 Definition of COP, Refrigerating effect (R.E)
	3rd	1.3 Principle of working of open and closed air system of refrigeration.
	4th	1.3.1 Calculation of COP of Bell-Coleman cycle and numerical on it.
8.7 - 13.7	1st	2.1 schematic diagram of simple vapors compression refrigeration system
	2nd	2.2.1 Cycle with dry saturated vapors after compression.
	3rd	2.2.2 Cycle with wet vapors after compression.
	4th	2.2.3 Cycle with superheated vapors after compression.
15.7 - 20.7	1st	2.2.4 Cycle with superheated vapors before compression.
	2nd	2.2.5 Cycle with sub cooling of refrigerant
	3rd	2.2.6 Representation of above cycle on temperature entropy and pressure enthalpy diagram
	4th	2.2.6 Representation of above cycle on temperature entropy and pressure enthalpy diagram
22.7 - 27.7	1st	2.2.7 Numerical on above (determination of COP, mass flow)
	2nd	2.2.7 Numerical on above (determination of COP, mass flow)
	3rd	3.1 Simple vapor absorption refrigeration system
	4th	3.1 Simple vapor absorption refrigeration system
29.7 - 3.8	1st	3.2 Practical vapor absorption refrigeration system
	2nd	3.2 Practical vapor absorption refrigeration system
	3rd	3.3 COP of an ideal vapor absorption
	4th	3.4. Numerical on COP.
5.8 - 10.8	1st	3.4. Numerical on COP.
	2nd	4.1 REFRIGERANT COMPRESSORS 4.1.1 Principle of working and constructional details of reciprocating and rotary compressors.
	3rd	4.1.2 Centrifugal compressor only theory 4.1.3 Important terms.
	4th	4.1.4 Hermetically and semi hermetically sealed compressor.
12.8- 17.8	1st	4.2.1 Principle of working and constructional details of air cooled and water cooled condenser
	2nd	4.2.2 Heat rejection ratio. 4.2.3 Cooling tower and spray pond.
	3rd	4.2.3 Cooling tower and spray pond.
	4th	1.6.1 Principle of working and constructional details of an evaporator.

19.8 - 24.8	1st	1.6.2 Types of evaporator. 1.6.3 Bare tube coil evaporator, finned evaporator, shell and tube evaporator.
	2nd	5.1 EXPANSION VALVES 5.1.1 Capillary tube
	3rd	5.1.2 Automatic expansion valve 5.1.3 Thermostatic expansion valve
	4th	5.2.1 Classification of refrigerants 5.2.2 Desirable properties of an ideal refrigerant.
26.8 - 31.8	1st	5.2.3 Designation of refrigerant.
	2nd	5.2.4 Thermodynamic Properties of Refrigerants.
	3rd	5.2.5 Chemical properties of refrigerants. 5.2.6 commonly used refrigerants, R-11, R-12, R-22, R-134a, R-717
	4th	5.2.7 Substitute for CFC 5.3 Applications of refrigeration
2.9 - 7.9	1st	5.3.1 cold storage
	2nd	5.3.2 dairy refrigeration
	3rd	5.3.3 ice plant
	4th	5.3.4 water cooler 5.3.5 frost free refrigerator
9.9 - 14.9	1st	6.1 Psychometric terms
	2nd	6.2 Adiabatic saturation of air by evaporation of water
	3rd	6.3 Psychometric chart and uses.
	4th	6.4.1 Sensible heating and Cooling 6.4.2 Cooling and Dehumidification
16.9 - 21.9	1st	6.4.3 Heating and Humidification 6.4.4 Adiabatic cooling with humidification
	2nd	6.4.5 Total heating of a cooling process
	3rd	6.4.6 SHF, BPF,
	4th	6.4.7 Adiabatic mixing
23.9 - 28.9	1st	6.4.8 Problems on above.
	2nd	6.5 Effective temperature and Comfort chart
	3rd	7.1 Factors affecting comfort air conditioning. .
	4th	7.2 Equipment used in an air-conditioning.
30.9 - 5.10	1st	7.3 Classification of air-conditioning system
	2nd	7.4 Winter Air Conditioning System
	3rd	7.5 Summer air-conditioning system.
	4th	7.6 Numerical on above
7.10 - 12.10	1st	Numerical practise
	2nd	Numerical practise
	3rd	Numerical practise
	4th	Numerical practise
	1st	REVISION

JPShc
30/06/23