LESSON PLAN

Discipline : Mechanical Engg.	Semester : 3rd	Name of the Teaching Faculty : Monalisha Behera(Sr.Lect.Mech)
Subject : Workshop Pratice II	No.of days/Per weeks Class Alloted Weeks :6	Semester From Date: 01.08.2023 To Date: 30.11.2023
Weeks	Class day	Pratical
1st	1st	Preparation of caliper
	2nd	Preparation of caliper
2nd	1st	Preparation of try square
	2nd	Preparation of try square
3rd	1st	Praparation of hammer
	2nd	Praparation of hammer
4th	1st	Preparation of hexagonal hammer
	2nd	Preparation of hexagonal hammer
5th	1st	Preparation of square hammer
	2nd	Preparation of square hammer
6th	1st	preparation of door ring with hook
	2nd	preparation of door ring with hook
7th	1st	Preparation of hexagonal head bolt
	2nd	Preparation of hexagonal head bolt
8th	1st	Prapatration of octagonal flat chisel
	2nd	Prapatration of octagonal flat chisel
9th	1st	Cuttin of slot botch,mortise and tenon joint
	2nd	Cuttin of slot botch,mortise and tenon joint
10th	1st	Praparation of single dovtail joint
	2nd	Praparation of single dovtail joint
11th	1st	Lap joint using arc welding
	2nd	Lap joint using arc welding
12th	1st	Butt joint using acr welding

	2nd	Butt joint using acr welding
13th	1st	Lap joint using gas welding
	2nd	Lap joint using gas welding
14th	1st	Joining two non ferrous parts
	2nd	Joining two non ferrous parts
15th	1st	Joining two non ferrous parts
	2nd	Checking Records

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LESSON PLAN

Discipline : Mechanical Engg.	Semester : 3rd	Name of the Teaching Faculty : Bhagyashree Patra(Lect.Mech)	
Subject : Mechanical Engg.Drawing	No.of days/Per weeks Class Alloted Weeks :6	Semester From Date: 01.08.2023 To Date: 30.11.2023	
Weeks	Class day	Pratical	
1st	1st	Draw plan, elevation and side view of different machine elements from their isometric view using AutoCAD & mini drafter (Minimum 5 Drawings).	
	2nd	Draw plan, elevation and side view of different machine elements from their isometric view using AutoCAD & mini drafter (Minimum 5 Drawings).	
2nd	1st	Bolt, nut and threads	
	2nd	Bolt, nut and threads	
3rd	1st	Screws and rivets	
	2nd	Screws and rivets	
4th	1st	Cutter Joint	
	2nd	Cutter Joint	
5th	1st	Knuckle Joint	
	2nd	Knuckle Joint	
6th	1st	Rigid Pedestal Bearing	
	2nd	Rigid Pedestal Bearing	
7th	1st	Foot step Bearing	
	2nd	Foot step Bearing	
8th	1st	Simple screw Jack	
	2nd	Simple screw Jack	
9th	1st	Checking Drawing Sheet	
	2nd	Connecting rod of IC Engine	
10th	1st	Connecting rod of IC Engine	
	2nd	Boiler Safety Valve	
11th	1st	Boiler Safety Valve	

	2nd	Spring loaded valve
12th	1st	Spring loaded valve
	2nd	Checking Drawing Sheet
13th	1st	Hydraulic Non return valve
	2nd	Hydraulic Non return valve
14th	1st	Flat belt Pulley
	2nd	Flat belt Pulley
15th	1st	Checking Drawing Sheet
	2nd	Checking Drawing Sheet

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Patra
30.07.23
Bhagyashree patra
(Lect. Mechanical)

LESSON PLAN

Discipline : Mechanical Engg.	Semester : 3rd	Name of the Teaching Faculty : Lopamudra Swain		
Subject : Mechanical Engg Lab.	No.of days/Per weeks Class Alloted Weeks :4	Semester From Date: 01.08.2023 To Date: 30.11.2023		
Weeks	Class day	Pratical		
1st	1st	Determination of reaction in a simply supported beam using parallel force apparatus.		
	2nd	Determination of reaction in a simply supported beam using parallel force apparatus.		
2nd	1st	Determine of youngs modulus using searls apparatus.		
	2nd	Determine of youngs modulus using searls apparatus.		
3rd	1st	Dertermination of torsional rigidity of shaft using torsion testing mahine.		
	2nd	Dertermination of torsional rigidity of shaft using torsion testing mahine.		
4th	1st	Detremination of salient points from stress starin curve using universal testing machine.		
	2nd	Detremination of salient points from stress starin curve using universal testing machine.		
5th	1st	Youngs modulus,Yeild point and fracture point.		
	2nd	Youngs modulus,Yeild point and fracture point.		
6th	1st	Youngs modulus,Yeild point and fracture point.		
	2nd	Detremine of hardness no by rockwell testing machine.		
7th	1st	Detremine of hardness no by rockwell testing machine.		
	2nd	Detremine of hardness no by vickers hardness testing machine.		
8th	1st	Detremine of hardness no by vickers hardness testing machine.		
	2nd	Determination of toughness using impact testing maching.		
9th	1st	Determination of toughness using impact testing maching.		
	2nd	Charpy test		
10th	1st	Charpy test		
	2nd	Izod test		
11th	1st	Izod test		
	2nd	Joules Experiment.		
12th	1st	Joules Experiment.		

	2nd	Determination of flash point and fire point.
13th	1st	Determination of flash point and fire point.
	2nd	Determination of flash point and fire point.
14th	1st	Joules Experiment/
	2nd	Checking Notes & Experiments.
15th	1st	Checking Notes & Experiments.
	2nd	Checking Notes & Experiments.

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30/07/2023

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MATERIAL SCIENCE LESS ON PLAN

Discipline :Mechanical engineering	Semester : 3rd	Name of the Teachnig Faculty : Priyabrata Pradhan
Subject:Material Science	No.of days/Per weeks Class Alloted :4	Semester From Date: 1st Aug 2023 To Date: 30th Nov 2023
Weeks	Class day	Theory
1ST(AUG-2023)	1st	Material classification into ferrous and non ferrous category and alloys
	2nd	Properties of Materials: Physical , Chemical and Mechanical
	3rd	Performance requirements
	4th	Material reliability and safety
2ND(AUG-2023)	1st	Characteristics and application of ferrous materials
	2nd	Classification, composition and application of low,medium carbon steel
	3rd	Classification, composition and application of high carbon steel
	4th	Alloy steel: Low alloy steel, high alloy steel, tool steel and stainless steel
3RD(AUG-2023)	1st	Alloy steel: Low alloy steel, high alloy steel, tool steel and stainless steel
	2nd	Tool steel: Effect of various alloying elements such as Cr, Mn, Ni, V, Mo,
	3rd	Tool steel: Effect of various alloying elements such as Cr, Mn, Ni, V, Mo,
	4th	Concept of phase diagram
4TH(AUG-2023)	1st	Concept of phase diagram
	2nd	cooling curves
	3rd	Features of Iron-Carbon diagram
	4th	Features of Iron-Carbon diagram
1ST(SEP-2023)	1st	Crystal definition, classification of crystals
	2nd	ideal crystal and crystal imperfections
	3rd	CLASS TEST-1
	4th	CLASS TEST-1
2ND(SEP-2023)	1st	Classification of imperfection: Point defects, line defects,
	2nd	surface defects

	3rd	volume defects
	4th	Types and causes of point defects: Vacancies defect
3RD(SEP-2023)	1st	Interstitials and impurities defect
	2nd	Interstitials and impurities defect
	3rd	Types and causes of line defects: Edge dislocation
	4th	screw dislocation
4TH(SEP-2023)	1st	Effect of imperfection on material properties
	2nd	Deformation by slip and twinning
	3rd	Deformation by slip and twinning
	4th	Purpose of Heat treatment
1ST(OCT-2023)	1st	Annealing
	2nd	Normalising
	3rd	hardening, tampering
	4th	stress relieving measures
2ND(OCT-2023)	1st	INTERNAL ASSESSMENT
	2nd	INTERNAL ASSESSMENT
	3rd	INTERNAL ASSESSMENT
	4th	Surface hardening: Carburizing and Nitriding
3RD(OCT-2023)	1st	Effect of heat treatment on properties of steel
	2nd	Hardenability of steel
	3rd	Aluminum alloys: Composition, property and usage of Duralmin, y- alloy.
	4th	Copper alloys: Composition, property and usage of CopperAluminum
1ST (NOV-2023)	1st	Copper-Tin, Babbit , Phosperous bronze, brass, Copper- Nickel
	2nd	Zinc alloys and Nickel alloys
	3rd	Low alloy materials like P-91, P-22 for power plants.
	4th	High alloy materials like stainless steel
2ND (NOV-2023)	1st	composition, properties and uses of Copper base bearing material
	2nd	Tin Base, Lead base, Cadmium base bearing materials
	3rd	CLASS TEST-2

	4th	CLASS TEST-2
3RD (NOV-2023)	1st	Spring materials Classification,
	2nd	composition, properties and uses of Iron base spring material
	3rd	application of thermosetting polymer
	4th	application of thermoplastic polymers
4TH (NOV-2023)	1st	Properties of elastomers
	2nd	composition, properties and uses of particulate based ceramics
	3rd	fiber reinforced composites
	4th	Classification and uses of ceramics

Priyabrata Priyadarshi Pradhan
Dept Mechanical

30/7/2023

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PRODUCTION LESSON PLAN

Discipline : Mechanical Engg.	Semester : 3RD	Name of the Teachnig Faculty : Miss BHAGYASHREE PATRA(Lect.Mech)
Subject : Production Technology	No.of days/Per weeks Class Alloted :4	Semester From Date: 1st Aug 2023 To Date: 30th Nov 2023
Weeks	Class day	Theory
1ST(AUG-2023)	1st	1.1Extrusion: Definition & Classification
	2nd	1.2Explain direct, indirect and impact extrusion process.
	3rd	1.3Define rolling. Classify it.
	4th	1.4Differentiate between cold rolling and hot rolling process.
2ND(AUG-2023)	1st	1.5List the different types of rolling mills used in Rolling process
	2nd	1.5List the different types of rolling mills used in Rolling process
	3rd	2.1Define welding and classify various welding processes.
	4th	2.2Explain fluxes used in welding.
3RD(AUG-2023)	1st	2.3Explain Oxy-acetylene welding process.
	2nd	2.4Explain various types of flames used in Oxy-acetylene welding process.
	3rd	2.5Explain Arc welding process.
	4th	2.6Specify arc welding electrodes.
4TH(AUG-2023)	1st	2.7Define resistance welding and classify it.
	2nd	2.8Describe various resistance welding processes such as butt welding, spot welding, flash welding, projection welding and seam welding.
	3rd	2.8Describe various resistance welding processes such as butt welding, spot welding, flash welding, projection welding and seam welding.
	4th	2.9Explain TIG welding process
1ST(SEP-2023)	1st	2.9Explain MIG welding process
	2nd	2.10State different welding defects with causes and remedies.
	3rd	CLASS TEST-1

	4th	CLASS TEST-1
2ND(SEP-2023)	1st	3.1Define Casting and Classify the various Casting processes.
	2nd	Casting terminology
	3rd	3.2Explain the procedure of Sand mould casting.
	4th	3.3Explain different types of molding sands with their composition and properties.
3RD(SEP-2023)	1st	3.3Explain different types of molding sands with their composition and properties.
	2nd	3.4Classify different pattern and state various pattern allowances.
	3rd	3.4Classify different pattern and state various pattern allowances.
	4th	3.5Classify core.
4TH(SEP-2023)	1st	Properties of Core
	2nd	3.6Describe construction and working of cupola and crucible furnace.
	3rd	gravity die casting
	4th	hot chamber die casting
1ST(OCT-2023)	1st	cold chamber die casting
	2nd	3.8Explain centrifugal casting such as true centrifugal casting, centrifuging with advantages, limitation and area of application.
	3rd	3.9Explain various casting defects with their causes and remedies.
	4th	3.9Explain various casting defects with their causes and remedies.
2ND(OCT-2023)	1st	3.9Explain various casting defects with their causes and remedies.
	2nd	INTERNAL ASSESSMENT
	3rd	INTERNAL ASSESSMENT
	4th	INTERNAL ASSESSMENT
3RD(OCT-2023)	1st	4.1Define powder metallurgy process.
	2nd	4.2State advantages of powder metallurgy technology technique
	3rd	4.3Describe the methods of producing components by powder metallurgy technique.
	4th	4.3Describe the methods of producing components by powder metallurgy technique.
1ST (NOV-2023)	1st	4.4Explain sintering.
	2nd	4.5Economics of powder metallurgy.

		3rd	5.1Describe Press Works: blanking, piercing and trimming.
		4th	Difference between Blanking and Punching
2ND (NOV-2023)		1st	5.2List various types of die and punch
		2nd	5.3Explain simpledies.
		3rd	CLASS TEST-2
		4th	CLASS TEST-2
3RD (NOV-2023)		1st	Compound die
		2nd	Progressive die
		3rd	difference between compound and progressive die
		4th	6.1Define jigs and fixtures
4TH (NOV-2023)		1st	6.2State advantages of using jigs and fixtures
		2nd	6.3State the principle of locations
		3rd	6.4Describe the methods of location with respect to 3-2-1 point location of rectangular jig
		4th	6.4Describe the methods of location with respect to 3-2-1 point location of rectangular jig

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30.07.23
Bhagyashree patra
(Lect. Mechanical)

LESSON PLAN

Discipline :Mechanical	Semester : 3rd	Name of the Teachnig Faculty : Mrs LOPAMUDRA SWAIN	
Subject: STRENGTH OF MATERIAL	No.of days/Per weeks Class Alloted Weeks :4	Semester :3rd	No.of Weeks : 4
Weeks	**Class day**	**Theory**	
1st week(Aug-2023)	1st	Simple stress& strain ,Types of load, stresses & strains,(Axial and tangential) Hooke's Law	
	2nd	Types of load, stresses & strains,(Axial and tangential) Hooke's Law	
	3rd	Young's modulus, bulk modulus, modulus of rigidity	
	4th	Temperature stress, determine the temperature stress in composite bar (single core)	
2nd week	1st	Temperature stress, determine the temperature stress in composite bar (single core)	
	2nd	Poisson's ratio, derive the relation between three elastic constants	
	3rd	Principle of super position, stresses in composite section	
	4th	Strain energy and resilience, Stress due to gradually applied, suddenly applied and impact load	
3rd week	1st	Simple problems on above,Thin cylinder and spherical shell under internal pressure	
	2nd	Definition of hoop and longitudinal stress, strain,Derivation of hoop stress, longitudinal stress, hoop strain	
	3rd	Computation of the change in length, diameter and volume,longitudinal strain and volumetric strain	
	4th	Two dimensional stress systems ,Determination of normal stress, shear stress and resultant stress on oblique plane	
4th week	1st	Determination of normal stress, shear stress and resultant stress on oblique plane	
	2nd	Location of principal plane and computation of principal stress	
	3rd	Location of principal plane and computation of principal stress and Maximum shear stress using Mohr's circle	
	4th	Location of principal plane and computation of principal stress and Maximum shear stress using Mohr's circle	
1st week (Sep -2023)	1st	Bending moment& shear force	
	2nd	Types of beam and load	
	3rd	CLASS TEST -1	
	4th	CLASS TEST -1	

2nd week	1st	Types of beam and load
	2nd	Concepts of Shear force and bending moment
	3rd	Shear Force and Bending moment diagram and its salient features
	4th	illustration of SFD & BMD in cantilever beam, simply supported beam
3rd week	1st	illustration of SFD & BMD in cantilever beam, simply supported beam
		illustration of SFD & BMD in cantilever beam, simply supported beam
	2nd	SFD & BMD of over hanging beam under point load and uniformly distributed load
	3rd	SFD & BMD of over hanging beam under point load and uniformly distributed load
	4th	Solve Simple problem.
4th week	1st	Theory of simple bending
	2nd	Assumptions in the theory of bending, Bending equation, Moment of resistance, Section modulus& neutral axis
	3rd	Solve simple problems
	4th	Solve simple problems
1st week (Oct -2023)	1st	Combined direct & bending stresses
	2nd	Combined direct & bending stresses
	3rd	Combined direct & bending stresses
	4th	Define column
2nd week	1st	INTERNAL
	2nd	INTERNAL
	3rd	INTERNAL
	4th	Axial load, Eccentric load on column
3rd week	1st	Axial load, Eccentric load on column
	2nd	Axial load, Eccentric load on column
	3rd	Direct stresses, Bending stresses, Maximum& Minimum stresses
	4th	Direct stresses, Bending stresses, Maximum& Minimum stresses
1st week (Nov -2023)	1st	Direct stresses, Bending stresses, Maximum& Minimum stresses
	2nd	Numerical problems on above
	3rd	Buckling load computation using Euler's formula
	4th	Torsion

2nd week	1st	Assumption of pure torsion
	2nd	Assumption of pure torsion
	3rd	CLASS TEST -2
	4 th	CLASS TEST -2
3rd week	1st	Torsion
	2nd	The torsion equation for solid & hollow circular shaft
	3rd	The torsion equation for solid & hollow circular shaft
	4th	The torsion equation for solid & hollow circular shaft
4th week	1st	Comparison between solid and hollow shaft subjected to pure torsion
	2nd	Comparison between solid and hollow shaft subjected to pure torsion
	3rd	Comparison between solid and hollow shaft subjected to pure torsion
	4th	Numerical problems on above

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Sr.Lect.Mechanical 30/07/2023
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THERMAL ENGINEERING LESSON PLAN

Discipline : Mechanical Engg.	Semester : 3Rd	Name of the Teachnig Faculty : Mrs. Monalisha Behera	
Subject : Thermal Engineering	No.of days/Per weeks Class Alloted Weeks :4	Semester From Date: 1st Aug 2023 To Date: 30th Nov 2023	
Weeks	**Class day**	**Theory**	
1ST(AUG-2023)	1st	Thermodynamic Systems (closed, open, isolated) ,Thermodynamic properties of a system (pressure, volume, temperature, entropy, enthalpy, Internal energy and units of measurement).	
	2nd	Intensive and extensive properties , Define thermodynamic processes, path, cycle , state, path function, point function,Thermodynamic Equilibrium.	
	3rd	Quasi-static Process., Conceptual explanation of energy and its sources , Work , heat and comparison between the two.	
	4th	Mechanical Equivalent of Heat,Work transfer, Displacement work	
2ND(AUG-2023)	1st	State & explain Zeroth law of thermodynamics,State & explain First law of thermodynamics.	
	2nd	3 Limitations of First law of thermodynamics,Application of First law of Thermodynamics (steady flow energy equation)	
	3rd	steady flow energy equation and its application to turbine and compressor	
	4th	steady flow energy equation and its application to turbine and compressor	
3RD(AUG-2023)	1st	Second law of thermodynamics (Claucius & Kelvin Plank statements).	
	2nd	Application of second law in heat engine	
	3rd	heat pump, refrigerator & determination of efficiencies & C.O.P (solve simple numerical)	
	4th	heat pump, refrigerator & determination of efficiencies & C.O.P (solve simple numerical)	
4TH(AUG-2023)	1st	heat pump, refrigerator & determination of efficiencies & C.O.P (solve simple numerical)	
	2nd	Explain & classify I.C engine	
	3rd	Terminology of I.C Engine such as bore, dead centers, stroke volume, piston speed &RPM	
	4th	Explain the working principle of 2-stroke S.I engine	
1ST(SEP-2023)	1st	Explain the working principle of 2-stroke c.I engine	
	2nd	Explain the working principle of 4-stroke S.I and CI engine	

	3rd	CLASS TEST-1
	4th	CLASS TEST-1
2ND(SEP-2023)	1st	Differentiate between 2-stroke C.I & S.I.
	2nd	Differentiate between 4-stroke C.I & S.I.
	3rd	Carnot cycle
	4th	Numericals
3RD(SEP-2023)	1st	Numericals
	2nd	2 Otto cycle
	3rd	Numericals
	4th	Numericals
4TH(SEP-2023)	1st	Diesel cycle.
	2nd	Numericals
	3rd	Numericals
	4th	Numericals
1ST(OCT-2023)	1st	Dual cycle.
	2nd	Numericals
	3rd	Numericals
	4th	Numericals
2ND(OCT-2023)	1st	INTERNAL ASSESSMENT
	2nd	INTERNAL ASSESSMENT
	3rd	INTERNAL ASSESSMENT
	4th	1 Laws of perfect gas: Boyle's law, Charle's law, Avogadro's law
3RD(OCT-2023)	1st	Dalton's law of partial pressure, Guy lussac law
	2nd	General gas equation, characteristic gas constant, Universal gas constant.
	3rd	Explain specific heat of gas (Cp and Cv)
	4th	Relation between Cp & Cv
1ST (NOV-2023)	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 (Isothermal, Isobaric, Isentropic and polytrophic process)
	4th	Application of first law of thermodynamics to various non flow process (Isothermal, Isobaric, Isentropic and polytrophic process)
2ND (NOV-2023)	1st	Application of first law of thermodynamics to various non flow process (Isothermal, Isobaric, Isentropic and polytrophic process)
	2nd	Solve simple problems on above.
	3rd	CLASS TEST-2
	4th	CLASS TEST-2
3RD (NOV-2023)	1st	Free expansion & throttling process.
	2nd	Free expansion & throttling process.
	3rd	Define Fuel
	4th	Types of fuel.
4TH (NOV-2023)	1st	Application of different types of fuel.
	2nd	Application of different types of fuel.
	3rd	Heating values of fuel.
	4th	Quality of I.C engine fuels Octane number, Cetane number.

Sahu

Subhransu Sahu
Department of mechanical Engg (PTGF)

Sr.Lect Mechanical
Govt.Polytechnic Angul   /07/2023