Lesson Plan on

(TH-3) (ENGINEERING MATERIAL)

(3^{rd} sem)

Prepared by

DEBI PRASAD PATRA

PTGF GP,PURI

GOVERNMENT POLYTECHNIC, PURI

DEPARTMENT OF MECHANICAL ENGINEERING

Discipline: MECHANICAL ENGG	Semester: 3RD	Name of the Teaching Faculty: Mr DEBI PRASAD PATRA, PTGF IN MECH. ENGG.
Subject:TH-3 ENGINEERING MATERIAL	No. of days/per week class allotted: 04	Semester From date: 01.08.2023 To Date: 30.11.2023 No. of Weeks: 15
PRE-REQUISITE	Basic knowledge about Engineering Material, Properties and uses.	
COURSE OUTCOMES	CO1:Realizing material requirements CO2:Realizing application area of ferrous, non ferrous and alloys. CO3:Comprehending micro-structural changes during iron-carbon phase transformation process CO4:Comprehending effect of heat treatment and its effect towards change in material properties CO5:Comprehending continuity during evolution in engineering materials and development of modern engineering materials.	

Week	Class Day	Theory / Practical Topics	DELIVERY METHOD
1ST	1ST	Engineering materials and their properties	Whiteboard
	2ND	Material classification into ferrous and non ferrous category and alloys	Whiteboard
	3RD	Properties of Materials: Physical , Chemical and Mechanical	Whiteboard
	4TH	Properties of Materials: Physical , Chemical and Mechanical	Whiteboard
2ND	1ST	Performance requirements	Whiteboard
	2ND	Material reliability and safety	Whiteboard
	3RD	Describe design procedure	Whiteboard
	4TH	QUIZ & ASSIGNMENT-I	Whiteboard
3RD	1ST	Ferrous Materials and alloys	Whiteboard
	2ND	Characteristics and application of ferrous materials	Whiteboard
	3RD	Characteristics and application of ferrous materials	PPT
	4TH	Classification, composition of ferrous materials	
4TH	1ST	application of low carbon steel	PPT
	2ND	application of medium carbon steel,high carbon steel	Whiteboard
	3RD	Alloy steel: Low alloy steel, high alloy steel	Whiteboard
	4TH	tool steel and stainless steel	Whiteboard
5TH	1ST	Tool steel: Effect of various alloying elements such as Cr, Mn, Ni, V, Mo,	Whiteboard
	2ND	QUIZ & ASSIGNMENT-II	Whiteboard
	3RD	Iron – Carbon system	Whiteboard
	4TH	Concept of phase diagram and cooling curves	Whiteboard
6TH	1ST	Concept of phase diagram and cooling curves	Whiteboard
	2ND	Features of Iron-Carbon diagram with salient micro-constituents of Iron and Steel	PPT
	3RD	Features of Iron-Carbon diagram with salient micro-constituents of Iron and Steel	Whiteboard
	4TH	Crystal imperfections	Whiteboard
	1ST	Define Crystal,classification of crystals	Whiteboard
	2ND	Ideal crystal and crystal imperfections	Whiteboard
	3RD	Classification of imperfection: Point defects, line defects, surface defects and volume defects	

7TH	4TH	Types and causes of point defects: Vacancies, Interstitials and Impurities	Whiteboard
8TH	1ST	Types and causes of line defects: Edge dislocation and screw dislocation	Whiteboard
	2ND	Effect of imperfection on material properties	PPT
	3RD	Deformation by slip and twinning	Whiteboard
	4TH	Effect of deformation on material properties	Whiteboard
9TH	1ST	**QUIZ & ASSIGNMENT-III**	Whiteboard
	2ND	Purpose of Heat Treatment	Whiteboard
	3RD	Process of heat treatment: Annealing, normalizing, hardening, tampering, stress relieving measures	Whiteboard
	4TH	Surface hardening: Carburizing and Nitriding	PPT
10TH	1ST	Effect of heat treatment on properties of steel	Whiteboard
	2ND	Hardenability of steel	Whiteboard
	3RD	Non-ferrous alloys(Aluminum alloys:)	PPT
	4TH	Composition, property and usage of Duralmin, y- alloy	PPT
11TH	1ST	Copper alloys: Composition, property and usage of CopperAluminum	
	2ND	Composition,prpperties and uses of Copper-Tin, Babbit , Phosperous bronze, brass, Copper- Nickel	Whiteboard
	3RD	Predominating elements of lead alloys, Zinc alloys and Nickel alloys	Whiteboard
	4TH	Low alloy materials like P-91, P-22 for power plants	Whiteboard
12TH	1ST	High alloy materials like stainless steel grades of duplex, super duplex materials	PPT
	2ND	Classification, composition, properties and uses of Copper base, Tin Base, Lead base, Cadmium base bearing materials	Whiteboard
	3RD	Classification, composition, properties and uses of Copper base, Tin Base, Lead base, Cadmium base bearing materials	Whiteboard
	4TH	Classification, composition, properties and uses of Ironbase and Copper base spring material	Whiteboard
13TH	1ST	Classification, composition, properties and uses of Ironbase and Copper base spring material	Whiteboard
	2ND	Properties and application of thermosetting and thermoplastic polymers	Whiteboard
	3RD	Properties of elastomers	Whiteboard
	4TH	Classification, composition, properties and uses of particulate based and fiber reinforced composites	Whiteboard
14TH	1ST	Classification, composition, properties and uses of particulate based and fiber reinforced composites	Whiteboard
	2ND	Classification and uses of ceramics	Whiteboard
	3RD	**QUIZ & ASSIGNMENT-IV**	Whiteboard
	4TH	REVISION	Whiteboard
15TH	1ST	REVISION	
	2ND		
	3RD		
	4TH	**REVISION**	

LEARNING RESOURCES:

01.A Textbook of Material Science and Metallurgy by O P Khanna

02.Engineering materials and Metallurgy by R K Rajput

WEBSITE RESOURCES:

https://www.youtube.com/watch?v=DL_jjbNyd3E&list=PLDA1CIudx-kuvk7iDdb3Lq4Hrzt0ZDKk8

https://www.youtube.com/watch?v=Kxq3TA0YbsY&list=PLoVRJrAI0FT1XsmMx23scvXWXak4zXRjz

Debi Prasad Patra

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31/07/2023

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Lesson Plan on

(TH-4) THERMAL ENGINEERING-I

(3^{rd} sem)

Prepared by

Sushri Priyanka Panigrahi

W/S SUPTD. GP,PURI

GOVERNMENT POLYTECHNIC, PURI

DEPARTMENT OF MECHANICAL ENGINEERING

Discipline: MECHANICAL ENGG	Semester: 3RD	Name of the Teaching Faculty: Mrs SUSHRI PRIYANKA PANIGRAHI, W/S SUPTD.
Subject: TH - 4 THERMAL ENGINEERING-I	No. of days/per week class allotted: 04	Semester From date: 01.08.2023 To Date: 30.11.2023 No. of Weeks: 15
PRE-REQUISITE	Basic knowledge about Thermodynamic properties ,system,different laws,and gas laws and concept of ic engineand gas power cycle.	
COURSE OUTCOMES	CO1: Comprehending significance of thermodynamics properties in order to analyze a Thermodynamic system. CO2: Comprehending & applying first & second law of thermodynamics in closed & open system. CO3: Drawing bending moment and shear force diagram and locating points in a beam where the effect is maximum or minimum. CO4: Comprehending the concept of I.C engine and gas power cycle & computing work done & efficiency thereof.	

Week	Class Day	Theory / Practical Topics	DELIVERY METHOD
1ST	1ST	Thermodynamic concept & Terminology, Thermodynamic Systems (closed, open, iso	Whiteboard
	2ND	Thermodynamic properties of a system (pressure, volume, temperature, entropy, enthalpy, Internal energy and units of measurement),Intensive and extensive properties	Whiteboard
	3RD	Define thermodynamic processes, path, cycle , state, path function, point function.	Whiteboard
	4TH	Thermodynamic Equilibrium,Quasi-static Process.	Whiteboard
2ND	1ST	Conceptual explanation of energy and its sources	Whiteboard
	2ND	Work , heat and comparison between the two.	Whiteboard
	3RD	Mechanical Equivalent of Heat,Work transfer, Displacement work	Whiteboard
	4TH	**QUIZ & ASSIGNMENT-I**	Whiteboard
3RD	1ST	Laws of Thermodynamics,State & explain Zeroth law of thermodynamics.	Whiteboard
	2ND	State & explain First law of thermodynamics,Limitations of First law of thermodynamic	Whiteboard
	3RD	Application of First law of Thermodynamics (steady flow energy equation and its application to turbine and compressor)	PPT
	4TH	Second law of thermodynamics (Claucius & Kelvin Plank statements),Application of second law in heat engine, heat pump, refrigerator & determination of efficiencies & C.O.P	
4TH	1ST	Solve simple numerical on 2nd law of thermodynamics.	PPT
	2ND	Solve simple numerical on 2nd law of thermodynamics.	Whiteboard
	3RD	Laws of perfect gas: Boyle's law, Charle's law, Avogadro's law, Dalton's law of partial pressure,	Whiteboard
	4TH	Guy lussac law, General gas equation, characteristic gas constant, Universal gas constant.	Whiteboard
5TH	1ST	Explain specific heat of gas (Cp and Cv),Relation between Cp & Cv	Whiteboard
	2ND	Enthalpy of a gas,Work done during a non- flow process.	Whiteboard
	3RD	Application of first law of thermodynamics to various non flow process (Isothermal, Isobaric, Isentropic and polytrophic process)	Whiteboard
	4TH	Numericals	Whiteboard
6TH	1ST	Free expansion & throttling process.	Whiteboard
	2ND	**QUIZ & ASSIGNMENT-II**	PPT
	3RD	Internal combustion engine	Whiteboard
	4TH	Explain & classify I.C engine.	

7TH	1ST	Terminology of I.C Engine such as bore, dead centers, stroke volume, piston speed &RPM	Whiteboard
	2ND	Terminology of I.C Engine such as bore, dead centers, stroke volume, piston speed &RPM	Whiteboard
	3RD	Explain the working principle of 2-stroke & 4- stroke engine C.I & S.I engine.	Whiteboard
	4TH	Explain the working principle of 2-stroke & 4- stroke engine C.I & S.I engine.	Whiteboard
8TH	1ST	Differentiate between 2-stroke & 4- stroke engine C.I & S.I engine	Whiteboard
	2ND	**QUIZ & ASSIGNMENT-III**	Whiteboard
	3RD	Gas Power Cycle	Whiteboard
	4TH	Carnot cycle	Whiteboard
9TH	1ST	Otto cycle	Whiteboard
	2ND	Diesel cycle	Whiteboard
	3RD	Dual cycle.	Whiteboard
	4TH	Solve simple numerical on gas power cycle	Whiteboard
10TH	1ST	Solve simple numerical on gas power cycle	Whiteboard
	2ND	Solve simple numerical on gas power cycle	Whiteboard
	3RD	**QUIZ & ASSIGNMENT-IV**	PPT
	4TH	Fuels and Combustion	PPT
11TH	1ST	Define Fuel,Types of fuel.	Whiteboard
	2ND	Application of different types of fuel.	Whiteboard
	3RD	Heating values of fuel	Whiteboard
	4TH	Quality of I.C engine fuels	PPT
12TH	1ST	Octane number,	Whiteboard
	2ND	Cetane number.	Whiteboard
	3RD	Problemsolving	Whiteboard
	4TH	Problemsolving	Whiteboard
13TH	1ST	**QUIZ & ASSIGNMENT-V**	Whiteboard
	2ND	REVISION	Whiteboard
	3RD	REVISION	Whiteboard
	4TH	REVISION	Whiteboard
14TH	1ST	Numrical practice	Whiteboard
	2ND	Numrical practice	Whiteboard
	3RD	Numrical practice	Whiteboard
	4TH	REVISION	
15TH	1ST	**QUIZ & ASSIGNMENT-V**	
	2ND	**REVISION**	
	3RD		
	4TH		

LEARNING RESOURCES:

01.Thermal Engineering By R.S. Khurmi

02.Engineering Thermodynamics By P.K.Nag

03.Thermal Engineering By A.R.Basu

WEBSITE RESOURCES:

https://www.youtube.com/watch?v=5gxGfim1INo&list=PLbkIghvjQ7P-yPpjEarquTPccR4I0EHPO

https://www.youtube.com/watch?v=tZwx-r_dBa4&list=PLsSqFix02I7sR67kN65fFcZGSv-q5OIvE

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Lesson Plan on

(TH-5) ENVIRONMENTAL STUDIES

(3^{rd} sem)

Prepared by

PRATYASHA PRIYADARSHINEE

PTGF GP,PURI

GOVERNMENT POLYTECHNIC, PURI
DEPARTMENT OF ELECTRICAL ENGINEERING

Discipline: **ELECTRICAL ENGINEERING**	Semester: **3RD**	Name of the Teaching Faculty: **MS PRATYASHA PRIYADARSHINEE, PTGF CHEMISTRY.**
Subject: **ENVIRONMENTAL STUDIES**	No. ofdays/per week classallotted:**04**	SemesterFromdate: **01.08.2023** ToDate:**30.11.2023** No.of Weeks:**15**
PRE-REQUISITE	knowledge about the physical, chemical, biological, and social processes. It provides the skills necessary to obtain solutions to environmental problems	
COURSE OUTCOMES	**CO1:** Gather adequate knowledge of different pollutants, their sources and shall be aware of solid waste management systems and hazardous waste and their effects. **CO2:** Develop awareness towards preservation of environment. **CO3:**Communicate complex environmental information to both technical and non-technical audiences **CO4**:Understand and evaluate the global scale of environmental problems **CO5**: Reflect critically on their roles, responsibilities, and identities as citizens, consumers and environmental actors in a complex, interconnected world.	

Week	Class Day	Theory/Practical Topics	DELIVERY METHOD
1ST	1ST	The Multidisciplinary nature of environmental studies	Whiteboard
	2ND	Definition, scope and importance	Whiteboard
	3RD	Need for public awareness	Whiteboard
	4TH	**QUIZ&ASSIGNMENT-I**	Lecture notes
2ND	1ST	Renewable and non-renewable resources	Whiteboard
	2ND	Natural resources and associated problems	Whiteboard
	3RD	Forest resources: Use and over-exploitation, deforestation, case studies, Timber extraction mining, dams and their effects on forests and tribal people	Whiteboard
	4TH	Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dam's benefits and problems	Whiteboard
3RD	1ST	Mineral Resources: Use and exploitation, environmental Effects of extracting and using mineral Resources.	Whiteboard
	2ND	Food Resources: World food problems, changes caused by agriculture and over grazing, effects of modern agriculture, fertilizers- pesticides problems, water logging, salinity	Whiteboard
	3RD	Energy Resources: Growing energy need, renewable and non-renewable energy sources, use of alternate energy sources, case studies	Whiteboard
	4TH	Land Resources: Land as a resource, land degradation, man induces landslides, soil erosion, and Desertification.	Whiteboard
4TH	1ST	Role of individual in conservation of natural resources	Whiteboard
	2ND	Equitable use of resources for sustainable life styles.	Whiteboard
	3RD	**QUIZ&ASSIGNMENT-II**	Lecture notes
	4TH	Concept of an eco-system	Whiteboard
5TH	1ST	Structure and function of an eco-system	Whiteboard
	2ND	Producers, consumers, decomposers	Whiteboard
	3RD	Energy flow in the eco systems	Whiteboard
	4TH	Ecological succession	Whiteboard

6TH	1ST	Food chains, food webs and ecological pyramids	Whiteboard
	2ND	Introduction, types, characteristic features, structure and function of the following eco system	Whiteboard
	3RD	Forest ecosystem	Whiteboard
	4TH	Aquatic eco systems (ponds, streams, lakes, rivers, oceans,	Whiteboard
7TH	1ST	**QUIZ&ASSIGNMENT-III**	Lecture notes
	2ND	Biodiversity and it's Conservation	Whiteboard
	3RD	Introduction-Definition: genetics, species and ecosystem diversity	Whiteboard
	4TH	Biogeographically classification of India.	Whiteboard
8TH	1ST	Value of biodiversity: consumptive use, productive use, social ethical, aesthetic and optin values	Whiteboard
	2ND	Biodiversity at global, national and local level	Whiteboard
	3RD	Threats to biodiversity: Habitats loss, poaching of wild life, man wildlife conflicts.	Whiteboard
	4TH	**QUIZ&ASSIGNMENT-IV**	Lecture notes
9TH	1ST	Environmental Pollution(Definition Causes, effects and control measures of Air pollution)	Whiteboard
	2ND	Water pollution, Soil pollution	Whiteboard
	3RD	Marine pollution, Noise pollution	Whiteboard
	4TH	Thermal pollution, Nuclear hazards	Whiteboard
10TH	1ST	Solid waste Management: Causes, effects and control measures of urban and industrial wastes	Whiteboard
	2ND	Role of an individual in prevention of pollution	Whiteboard
	3RD	Disaster management: Floods, earth quake, cyclone and landslides	Whiteboard
	4TH	**QUIZ&ASSIGNMENT-V**	Lecture notes
11TH	1ST	Social issues and the Environment	Whiteboard
	2ND	Form unsustainable to sustainable development	Whiteboard
	3RD	Urban problems related to energy.	Whiteboard
	4TH	Water conservation, rain water harvesting, water shed management.	Whiteboard
12TH	1ST	Resettlement and rehabilitation of people; its problems and concern.	Whiteboard
	2ND	Environmental ethics: issue and possible solutions	
	3RD	Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, case studies	Whiteboard
	4TH	Air (prevention and control of pollution) Act	Whiteboard
13TH	1ST	Water (prevention and control of pollution),Public awareness	Whiteboard
	2ND	**QUIZ&ASSIGNMENT-VI**	Lecture notes
	3RD	Human population and the environment	Whiteboard
	4TH	Population growth and variation among nations	Whiteboard
14TH	1ST	Population explosion- family welfare program	
	2ND	Environment and human health	
	3RD	Human rights. Value education	
	4TH	**QUIZ&ASSIGNMENT-VII**	Lecture notes
15TH	1ST	REVISION	
	2ND	REVISION	
	3RD	REVISION	
	4TH	REVISION	

LEARNINGRESOUCES:

1. **Textbook of Environmental studies Erach Bharucha #UGC**
2. **Fundamental concepts in Environmental Studies D.D. Mishra S.Chand & Co-Ltd**
3. **Textbook of Environmental Studies K.Raghavan Nambiar SCITECH Publication Pvt. Ltd.**
4. **Environmental Engineering V.M.Domkundwar Dhanpat Rai & Co**

WEBSITERESOUCES:

01. https://youtubc.com/playlist?list=PLyqSpQzTE6M_vO7rLpxKZWqai4uJP2bDa(NPTEL)
02. https://youtu.bc/hihFHam_wNE(NPTEL)

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GOVERNMENT POLYTECHNIC, PURI

DEPARTMENT OF MECHANICAL ENGINEERING

Discipline: MECHANICAL ENGG	Semester: 3RD	Name of the Teaching Faculty: Mr RANJAN KUMAR NAYAK, PTGF IN MECH. ENGG.
Subject:DESIGN OF MACHINE ELEMENTS(TH.2)	No. of days/per week class allotted: 04	Semester From date: 01.08.2023 To Date: 30.11.2023 No. of Weeks: 15
PRE-REQUISITE	Basic knowledge about design of fastening element,shaft and keys, coupling and closed coil helical spring.	
COURSE OUTCOMES	CO1: . Understanding the behaviours of material and their uses. CO2: Understanding the design of various fastening elements and their industrial uses. CO3: Understanding the different failures of design elements CO4: Understanding the change of design to accomplish the different field of applications. CO5:Design closed coil helical spring and .shafts, keys, couplings required for power transmission	

Week	Class Day	Theory / Practical Topics	DELIVERY METHOD
1ST	1ST	Introduction to Machine Design and Classify it.	Whiteboard
	2ND	Different mechanical engineering materials used in design with their uses and their mechanical and physical properties	Whiteboard
	3RD	Define working stress, yield stress, ultimate stress & factor of safety and stress –strain curve for M.S & C.I	Whiteboard
	4TH	Define working stress, yield stress, ultimate stress & factor of safety and stress –strain curve for M.S & C.I	Whiteboard
2ND	1ST	Modes of Failure (By elastic deflection, general yielding & fracture)	Whiteboard
	2ND	State the factors governing the design of machine elements	Whiteboard
	3RD	Describe design procedure	Whiteboard
	4TH	**QUIZ & ASSIGNMENT-I**	Whiteboard
3RD	1ST	Design of fastening elements:	Whiteboard
	2ND	Joints and their classification.	Whiteboard
	3RD	State types of welded joints .	PPT
	4TH	State advantages of welded joints over other joints.	
4TH	1ST	Design of welded joints for eccentric loads	PPT
	2ND	numerical	Whiteboard
	3RD	numerical	Whiteboard
	4TH	State types of riveted joints and types of rivets.	Whiteboard
5TH	1ST	Describe failure of riveted joints.	Whiteboard
	2ND	Determine strength & efficiency of riveted joints	Whiteboard
	3RD	Design riveted joints for pressure vessel.	Whiteboard
	4TH	Solve numerical on riveted joint	Whiteboard
6TH	1ST	**QUIZ & ASSIGNMENT-II**	Whiteboard
	2ND	Design of shafts and Keys:	PPT
	3RD	State function of shafts.	Whiteboard
	4TH	State materials for shafts.	
	1ST	Design solid & hollow shafts to transmit a given power at given rpm based on a) Strength: (i) Shear stress, (ii) Combined bending tension; b) Rigidity: (i) Angle of twist, (ii) Deflection, (iii) Modulus of rigidity	Whiteboard

Lesson Plan on

(PR-1) MECHANICAL ENGINEERING DRAWING

(3^{rd} sem)

Prepared by

BISWAJIT NAYAK

PTGF GP,PURI

GOVERNMENT POLYTECHNIC, PURI

DEPARTMENT OF MECHANICAL ENGINEERING

Discipline: MECHANICAL ENGG	Semester: 3RD	Name of the Teaching Faculty: MR. BISWAJIT NAYAK, PTGF IN MECH. ENGG.
Subject:MECHANICAL ENGINEERING DRAWING (PR-1)	No. of days/per week class allotted: 06	Semester From date: 01.08.2023 To Date: 30.11.2023 No. of Weeks: 15
PRE-REQUISITE	Basic knowledge about drawing of different mechanical component.	
COURSE OUTCOMES	CO1: Recognizing significance of standardized representations CO2: Comprehending role of various fastening elements and offer engineering drawing thereof in manual mode . CO3: Comprehending geometrical constraints and function of components in assemblies such as bearings and screw jack CO4: Comprehending functional requirement of major components and offer engineering drawing in manual mode thereof.	

Week	Class Day	Theory / Practical Topics	DELIVERY METHOD
1ST	1ST	Revision of Engineering Drawing of 1st Year	Whiteboard
	2ND	Revision of Engineering Drawing of 1st Year	Whiteboard
	3RD	Draw plan, elevation and side view of different machine elements from their isometric view using AutoCAD & mini drafter	Whiteboard
	4TH	Draw plan, elevation and side view of different machine elements from their isometric view using AutoCAD & mini drafter	Whiteboard
	5TH	Draw plan, elevation and side view of different machine elements from their isometric view using AutoCAD & mini drafter	Whiteboard
	6TH	Draw plan, elevation and side view of different machine elements from their isometric view using AutoCAD & mini drafter	Whiteboard
2ND	1ST	Bolt, nut and threads	Whiteboard
	2ND	Bolt, nut and threads	Whiteboard
	3RD	Bolt, nut and threads	Whiteboard
	4TH	Bolt, nut and threads	Whiteboard
	5TH	Bolt, nut and threads	Whiteboard
	6TH	Bolt, nut and threads	Whiteboard
3RD	1ST	Cotter joint	Whiteboard
	2ND	Cotter joint	Whiteboard
	3RD	Cotter joint	Whiteboard
	4TH	Cotter joint	Whiteboard
	5TH	Cotter joint	Whiteboard
	6TH	Cotter joint	Whiteboard
4TH	1ST	Cotter joint	Whiteboard
	2ND	Cotter joint	Whiteboard
	3RD	Cotter joint	Whiteboard
	4TH	Knuckle joint	Whiteboard
	5TH	Knuckle joint	Whiteboard
	6TH	Knuckle joint	Whiteboard
	1ST	Knuckle joint	Whiteboard

5TH	2ND	Knuckle joint	Whiteboard
	3RD	Knuckle joint	Whiteboard
	4TH	Knuckle joint	Whiteboard
	5TH	Knuckle joint	Whiteboard
	6TH	Knuckle joint	Whiteboard
6TH	1ST	Rigid pedestal bearing	Whiteboard
	2ND	Rigid pedestal bearing	Whiteboard
	3RD	Rigid pedestal bearing	Whiteboard
	4TH	Rigid pedestal bearing	Whiteboard
	5TH	Rigid pedestal bearing	Whiteboard
	6TH	Rigid pedestal bearing	Whiteboard
7TH	1ST	Rigid pedestal bearing	Whiteboard
	2ND	Rigid pedestal bearing	Whiteboard
	3RD	Foot step bearing	Whiteboard
	4TH	Foot step bearing	Whiteboard
	5TH	Foot step bearing	Whiteboard
	6TH	Foot step bearing	Whiteboard
8TH	1ST	Foot step bearing	Whiteboard
	2ND	Foot step bearing	Whiteboard
	3RD	Foot step bearing	Whiteboard
	4TH	Simple Screw jack	Whiteboard
	5TH	Simple Screw jack	Whiteboard
	6TH	Simple Screw jack	Whiteboard
9TH	1ST	Simple Screw jack	Whiteboard
	2ND	Simple Screw jack	Whiteboard
	3RD	Connecting rod of IC Engine	Whiteboard
	4TH	Connecting rod of IC Engine	Whiteboard
	5TH	Connecting rod of IC Engine	Whiteboard
	6TH	Connecting rod of IC Engine	Whiteboard
10TH	1ST	Connecting rod of IC Engine	Whiteboard
	2ND	Connecting rod of IC Engine	Whiteboard
	3RD	Connecting rod of IC Engine	Whiteboard
	4TH	Boiler safety valve	Whiteboard
	5TH	Boiler safety valve	Whiteboard
	6TH	Boiler safety valve	Whiteboard
11TH	1ST	Boiler safety valve	Whiteboard
	2ND	Boiler safety valve	Whiteboard
	3RD	Boiler safety valve	Whiteboard
	4TH	Boiler safety valve	Whiteboard
	5TH	Spring loaded valve	Whiteboard
	6TH	Spring loaded valve	Whiteboard
12TH	1ST	Spring loaded valve	Whiteboard
	2ND	Spring loaded valve	Whiteboard
	3RD	Spring loaded valve	Whiteboard
	4TH	Spring loaded valve	Whiteboard
	5TH	Spring loaded valve	Whiteboard
	6TH	Hydraulic non return valve	Whiteboard
	1ST	Hydraulic non return valve	

13TH	2ND	Hydraulic non return valve	Whiteboard
	3RD	Hydraulic non return valve	Whiteboard
	4TH	Hydraulic non return valve	Whiteboard
	5TH	Hydraulic non return valve	Whiteboard
	6TH	Hydraulic non return valve	Whiteboard
14TH	1ST	Flat belt pulley	Whiteboard
	2ND	Flat belt pulley	Whiteboard
	3RD	Flat belt pulley	Whiteboard
	4TH	Flat belt pulley	Whiteboard
	5TH	Flat belt pulley	Whiteboard
	6TH	Flat belt pulley	Whiteboard
15TH	1ST	Flat belt pulley	Whiteboard
	2ND	Flat belt pulley	Whiteboard
	3RD	Flat belt pulley	Whiteboard
	4TH	REVISION	Whiteboard
	5TH	REVISION	Whiteboard
	6TH	REVISION	Whiteboard

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Lesson Plan on

(PR-2) MECHANICAL ENGINEERING LAB-I

(3^{rd} sem)

Prepared by

Sushri Priyanka Panigrahi

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GOVERNMENT POLYTECHNIC, PURI

DEPARTMENT OF MECHANICAL ENGINEERING

Discipline: MECHANICAL ENGG	Semester: 3RD	Name of the Teaching Faculty: Mrs SUSHRI PRIYANKA PANIGRAHI, W/S SUPTD.
Subject: Mechanical Engg. Lab-I	No. of days/per week class allotted: 04	Semester From date: 01.08.2023 To Date: 30.11.2023 No. of Weeks: 15
PRE-REQUISITE	Basic knowledge about Stress,Strain,Torsion,Young's modulus,hardness of material and flash and fire point of fuel.	
COURSE OUTCOMES	CO1:Conducting experimentations to determine properties of a solid material subject to uniaxial loading and impact. CO2:Conducting experimentations towards determining characteristics of a fuel. CO3:Study of equipment employing using fuels.	

Week	Class Day	Theory / Practical Topics	DELIVERY METHOD
1ST	1ST	Determine end reactions in a simply supported beam using parallel force apparatus.	Lab Manual / LAB
	2ND	Determine end reactions in a simply supported beam using parallel force apparatus.	Lab Manual / LAB
	3RD	Determine end reactions in a simply supported beam using parallel force apparatus.	Lab Manual / LAB
	4TH	Determine end reactions in a simply supported beam using parallel force apparatus.	Lab Manual / LAB
2ND	1ST	Determine end reactions in a simply supported beam using parallel force apparatus.	Lab Manual / LAB
	2ND	Determine end reactions in a simply supported beam using parallel force apparatus.	Lab Manual / LAB
	3RD	Determine end reactions in a simply supported beam using parallel force apparatus.	Lab Manual / LAB
	4TH	Determination of Young's modulus using Searle's apparatus	Lab Manual / LAB
3RD	1ST	Determination of Young's modulus using Searle's apparatus	Lab Manual / LAB
	2ND	Determination of Young's modulus using Searle's apparatus	Lab Manual / LAB
	3RD	Determination of Young's modulus using Searle's apparatus	Lab Manual / LAB
	4TH	Determination of Young's modulus using Searle's apparatus	Lab Manual / LAB
4TH	1ST	Determination of Young's modulus using Searle's apparatus	Lab Manual / LAB
	2ND	Determination of torsional rigidity of the shaft using torsion testing machine	Lab Manual / LAB
	3RD	Determination of torsional rigidity of the shaft using torsion testing machine	Lab Manual / LAB
	4TH	Determination of torsional rigidity of the shaft using torsion testing machine	Lab Manual / LAB
5TH	1ST	Determination of torsional rigidity of the shaft using torsion testing machine	Lab Manual / LAB
	2ND	Determination of torsional rigidity of the shaft using torsion testing machine	Lab Manual / LAB
	3RD	Determination of torsional rigidity of the shaft using torsion testing machine	Lab Manual / LAB
	4TH	Determination of torsional rigidity of the shaft using torsion testing machine	Lab Manual / LAB
6TH	1ST	Determination of torsional rigidity of the shaft using torsion testing machine	Lab Manual / LAB
	2ND	Determination of salient points (Young's modulus, yield point, fracture point) from stress- strain curve using Universal Testing Machine	Lab Manual / LAB
	3RD	Determination of salient points (Young's modulus, yield point, fracture point) from stress- strain curve using Universal Testing Machine	Lab Manual / LAB
	4TH	Determination of salient points (Young's modulus, yield point, fracture point) from stress- strain curve using Universal Testing Machine	Lab Manual / LAB
	1ST	Determination of salient points (Young's modulus, yield point, fracture point) from stress- strain curve using Universal Testing Machine	Lab Manual / LAB

7TH	2ND	Determination of salient points (Young's modulus, yield point, fracture point) from stress- strain curve using Universal Testing Machine	Lab Manual / LAB
	3RD	Determination of salient points (Young's modulus, yield point, fracture point) from stress- strain curve using Universal Testing Machine	Lab Manual / LAB
	4TH	Determination of salient points (Young's modulus, yield point, fracture point) from stress- strain curve using Universal Testing Machine	Lab Manual / LAB
8TH	1ST	Determination of hardness number by Rockwell/Vickers hardness testing machine	Lab Manual / LAB
	2ND	Determination of hardness number by Rockwell/Vickers hardness testing machine	Lab Manual / LAB
	3RD	Determination of hardness number by Rockwell/Vickers hardness testing machine	Lab Manual / LAB
	4TH	Determination of hardness number by Rockwell/Vickers hardness testing machine	Lab Manual / LAB
9TH	1ST	Determination of hardness number by Rockwell/Vickers hardness testing machine	Lab Manual / LAB
	2ND	Determination of hardness number by Rockwell/Vickers hardness testing machine	Lab Manual / LAB
	3RD	Determination of hardness number by Rockwell/Vickers hardness testing machine	Lab Manual / LAB
	4TH	Determination of toughness using Impact testing machine (Charpy/Izod)	Lab Manual / LAB
10TH	1ST	Determination of toughness using Impact testing machine (Charpy/Izod)	Lab Manual / LAB
	2ND	Determination of toughness using Impact testing machine (Charpy/Izod)	Lab Manual / LAB
	3RD	Determination of toughness using Impact testing machine (Charpy/Izod)	Lab Manual / LAB
	4TH	Determination of toughness using Impact testing machine (Charpy/Izod)	Lab Manual / LAB
11TH	1ST	Determination of toughness using Impact testing machine (Charpy/Izod)	Lab Manual / LAB
	2ND	Determination of Flash point and fire point	Lab Manual / LAB
	3RD	Determination of Flash point and fire point	Lab Manual / LAB
	4TH	Determination of Flash point and fire point	Lab Manual / LAB
12TH	1ST	Determination of Flash point and fire point	Lab Manual / LAB
	2ND	Determination of Flash point and fire point	Lab Manual / LAB
	3RD	Determination of Flash point and fire point	Lab Manual / LAB
	4TH	Determination of Flash point and fire point	Lab Manual / LAB
13TH	1ST	Determination of Flash point and fire point	Lab Manual / LAB
	2ND	Joule's experiment	Lab Manual / LAB
	3RD	Joule's experiment	Lab Manual / LAB
	4TH	Joule's experiment	Lab Manual / LAB
14TH	1ST	Joule's experiment	Lab Manual / LAB
	2ND	Joule's experiment	Lab Manual / LAB
	3RD	Joule's experiment	Lab Manual / LAB
	4TH	Joule's experiment	Lab Manual / LAB
15TH	1ST	Joule's experiment	Lab Manual / LAB
	2ND		
	3RD		
	4TH	REVISION	

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Principal
G.P. Puri

Lesson Plan on

(TH-1) PRODUCTION TECHNOLOGY

(3^{rd} sem)

Prepared by

BISWAJIT NAYAK

PTGF GP,PURI

GOVERNMENT POLYTECHNIC, PURIDEPARTMENTOFMECHANICALENGINEERING

Discipline: **MECHANICAL ENGG.**	Semester: **3RD**	Name of the Teaching Faculty: **MR.BISWAJIT NAYAK, PTGFINMECH.ENGG.**
Subject: **PRODUCTION TECHNOLOGY**	No. of days/per week class allotted:0 4	**Semester From date: 01.08.2023 To Date: 30.11.2023** **No. of Weeks: 15**
PRE-REQUISITE	Production Technology involves a working knowledge in the field of product design, product development and rapid part production. It deals with the production methodology and its management to make a complete analysis on the products.	
COURSE OUTCOMES	**CO1:** Understand the different components and processes involved in press tool operation. **CO2:** Understand how to minimize the job setting and tool setting times in mass production. **CO3:** Understand the industrial requirements of fabrication systems. **CO4:** Understand the manufacturing processes like casting and powder metallurgy.	

Week	Class Day	Theory/Practical Topics	DELIVERY METHOD
1ST	1ST	Extrusion: Definition & Classification.	Whiteboard
	2ND	Explain direct, indirect and impact extrusion process.	Whiteboard
	3RD	Explain direct, indirect and impact extrusion process.	Whiteboard
	4TH	Define rolling. Classify it.	Whiteboard
2ND	1ST	D differentiate between cold rolling and hot rolling process.	Whiteboard
	2ND	List the different types of rolling mills used in Rolling process.	Whiteboard
	3RD	List the different types of rolling mills used in Rolling process.	Whiteboard
	4TH	**QUIZ &ASSIGNMENT-I**	Lecture notes
3RD	1ST	Define welding and classify various welding processes.	Whiteboard
	2ND	Define welding and classify various welding processes.	Whiteboard
	3RD	Explain fluxes used in welding	Whiteboard
	4TH	Explain fluxes used in welding	Whiteboard
4TH	1ST	Explain Oxy-acetylene welding process..	Whiteboard
	2ND	Explain various types of flames used in Oxy-acetylene welding process.	Whiteboard
	3RD	Explain various types of flames used in Oxy-acetylene welding process.	Whiteboard
	4TH	Explain Arc welding process	Whiteboard
5TH	1ST	Explain Arc welding process	Whiteboard
	2ND	Specify arc welding electrodes.	Whiteboard
	3RD	Define resistance welding and classify it.	PPT
	4TH	Define resistance welding and classify it.	Whiteboard
6TH	1ST	Describe various resistance welding processes such as butt welding, spot welding, flash welding, projection welding and seam welding	Whiteboard
	2ND	Describe various resistance welding processes such as butt welding, spot welding, flash welding, projection welding and seam welding.	Whiteboard
	3RD	Describe various resistance welding processes such as butt	Whiteboard

		welding, spot welding, flash welding, projection welding and seam welding	
	4TH	Explain TIG and MIG welding process	Lecture notes
7TH	1ST	Explain TIG and MIG welding process	Whiteboard
	2ND	State different welding defects with causes and remedies	Whiteboard
	3RD	**QUIZ &ASSIGNMENT-II**	Whiteboard
	4TH	Define Casting and Classify the various Casting processes	PPT
8TH	1ST	Define Casting and Classify the various Casting processes	Whiteboard
	2ND	Explain the procedure of Sand mould casting	Whiteboard
	3RD	Explain the procedure of Sand mould casting	Whiteboard
	4TH	Explain different types of molding sands with their composition and properties	Whiteboard
9TH	1ST	Classify different pattern and state various pattern allowances.	Whiteboard
	2ND	Classify different pattern and state various pattern allowances.	Whiteboard
	3RD	Classify core. Describe construction and working of cupola and crucible furnace.	Whiteboard
	4TH	Explain die casting method	Lecture notes
10TH	1ST	Explain centrifugal casting such as true centrifugal casting, centrifuging with advantages, limitation and area of application	Whiteboard
	2ND	Explain centrifugal casting such as true centrifugal casting, centrifuging with advantages, limitation and area of application	Whiteboard
	3RD	Explain centrifugal casting such as true centrifugal casting, centrifuging with advantages, limitation and area of application	Whiteboard
	4TH	Explain centrifugal casting such as true centrifugal casting, centrifuging with advantages, limitation and area of application	Google form
11TH	1ST	Explain various casting defects with their causes and remedies.	Whiteboard
	2ND	Explain various casting defects with their causes and remedies.	Whiteboard
	3RD	**QUIZ &ASSIGNMENT-III**	Lecture notes
	4TH	Define powder metallurgy process-	Whiteboard
12TH	1ST	State advantages of powder metallurgy technology technique	Whiteboard
	2ND	Describe the methods of producing components by powder metallurgy technique.	Whiteboard
	3RD	Describe the methods of producing components by powder metallurgy technique.	Whiteboard
	4TH	Explain sintering	Whiteboard
13TH	1ST	Economics of powder metallurgy.	Whiteboard
	2ND	**QUIZ & ASSIGNMENT-IV**	Whiteboard
	3RD	Describe Press Works: blanking, piercing and trimming.	Whiteboard
	4TH	List various types of die and punch	Lecture notes
14TH	1ST	Explain simple, Compound & Progressive dies	
	2ND	Describe the various advantages & disadvantages of above dies	
	3RD	Define jigs and fixtures. State advantages of using jigs and fixtures	Whiteboard
	4TH	List various types of jig and fixtures. .State the principle of location	Whiteboard
15TH	1ST	Describe the methods of location with respect to 3-2-1 point location of rectangular jig	Whiteboard
	2ND	**QUIZ & ASSIGNMENT-V**	Google form
	3RD	**REVISION**	Whiteboard
	4TH	**REVISION**	Whiteboard

LEARNINGRESOUCES:

Production Technology, Vol. I& II by O.P. Khanna, Dhanpat Rai Publication, New Delhi
Manufacturing technology, Vol. I&II by P.N. Rao, TMH,New Delhi
Workshop technology, Vol. I& II by B.S Raghuwanshi, Dhanpat Rai & Co. New Delhi

WEBSITERESOUCES:

01: \https://www.sciencedirect.com/book/9780434901739/production-technolog
02: https://www.wileyindia.com/production-technology-vol-1-a-treatise-of-industrial-practices.html

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Principal 31/7/23
G.PPuri

Principal
Govt Polytechnic
Puri

Lesson Plan on

(TH-2 STRENGTH OF MATERIAL)

(3^{rd} sem)

Prepared by

CHINMAYEE JAYASINGH

PTGF GP,PURI

GOVERNMENT POLYTECHNIC, PURI

DEPARTMENT OF MECHANICAL ENGINEERING

Discipline: MECHANICAL ENGG	**Semester:** 3RD	**Name of the Teaching Faculty: MISS CHINMAYEE JAYASINGH, PTGF IN MECH. ENGG.**
Subject: STRENGTH OF MATERIAL (TH.2)	**No. of days/per week class allotted:** 04	**Semester From date: 01.08.2023 To Date: 30.11.2023** **No. of Weeks: 15**
PRE-REQUISITE	Basic knowledge about Stress,Strain,Thin pressure vessel,Bending moment and Shear force diagram and torsion.	
COURSE OUTCOMES	CO1: Determine stress, strain under uniaxial loading in simple and single core composite bars. CO2: Determine shear stress besides normal stress and computation of resultant stress in two dimensional objects. CO3: Drawing bending moment and shear force diagram and locating points in a beam where the effect is maximum or minimum. CO4: Determining bending stress and torsional shear stress in simple cases.	

Week	Class Day	Theory / Practical Topics	DELIVERY METHOD
1ST	1ST	Types of load, stresses & strains,(Axial and tangential) Hooke's law,	Whiteboard
	2ND	Young's modulus, bulk modulus, modulus of rigidity, Poisson's ratio	Whiteboard
	3RD	Derive the relation between three elastic constants	Whiteboard
	4TH	Principle of super position,stresses in composite section	Whiteboard
2ND	1ST	Numerical based on principle of superposition	Whiteboard
	2ND	Temperature stress, determine the temperature stress in composite bar (single core)	Whiteboard
	3RD	Strain energy and resilience, Stress due to gradually applied, suddenly applied and impact load.	Whiteboard
	4TH	Numerical based on thermal stress.	Whiteboard
3RD	1ST	**QUIZ & ASSIGNMENT-I**	Whiteboard
	2ND	Thin cylinder and spherical shell under internal pressure	Whiteboard
	3RD	Definition of hoop and longitudinal stress, strain	Whiteboard
	4TH	Derivation of hoop stress, longitudinal stress, hoop strain, longitudinal strain and volumetric strain.	PPT
4TH	1ST	Computation of the change in length, diameter and volume	
	2ND	Solve simple numerical on thin cylinder pressure vessel.	PPT
	3RD	Determination of normal stress, shear stress and resultant stress on oblique plane	Whiteboard
	4TH	Location of principal plane and computation of principal stress and Maximum shear stress using Mohr's circle.	Whiteboard
5TH	1ST	Numerical based on Mohr's circle.	Whiteboard
	2ND	**QUIZ & ASSIGNMENT-II**	Whiteboard
	3RD	Types of beam and load,	Whiteboard
	4TH	Concepts of Shear force and bending moment.	Whiteboard
6TH	1ST	Shear Force and Bending moment diagram and its salient features illustration in cantilever beam, simply supported beam	Whiteboard
	2ND	Shear force and Bending moment diagram over hanging beam under point load and uniformly distributed load	Whiteboard
	3RD	Numerical based on BMD and SFD.	PPT
	4TH	Numerical based on BMD and SFD.	Whiteboard
	1ST	**QUIZ & ASSIGNMENT-III**	Whiteboard

7TH	2ND	Theory of simple bending	Whiteboard
	3RD	Assumptions in the theory of bending	Whiteboard
	4TH	Bending equation	Whiteboard
8TH	1ST	Moment of resistance, Section modulus& neutral axis	Whiteboard
	2ND	Numerical based on Bending equation.	PPT
	3RD	Numerical based on Bending equation.	Whiteboard
	4TH	Define column	Whiteboard
9TH	1ST	Axial load, Eccentric load on column	Whiteboard
	2ND	Direct stresses, Bending stresses, Maximum& Minimum stresses	Whiteboard
	3RD	Numerical based on Bending stress.	PPT
	4TH	Buckling load computation using Euler's formula	Whiteboard
10TH	1ST	Numerical based on Euler's formula.	Whiteboard
	2ND	Numerical based on Euler's formula.	PPT
	3RD	Euler's formula for Columns with various end conditions.	PPT
	4TH	Euler's formula for Columns with various end conditions.	
11TH	1ST	Euler's formula for Columns with various end conditions.	Whiteboard
	2ND	**QUIZ & ASSIGNMENT-IV**	Whiteboard
	3RD	Torsion	Whiteboard
	4TH	Assumption of pure torsion	PPT
12TH	1ST	The torsion equation for solid and hollow circular shaft	Whiteboard
	2ND	The torsion equation for solid and hollow circular shaft	Whiteboard
	3RD	Comparison between solid and hollow shaft subjected to pure torsion	Whiteboard
	4TH	Comparison between solid and hollow shaft subjected to pure torsion	Whiteboard
13TH	1ST	**QUIZ & ASSIGNMENT-V**	Whiteboard
	2ND	REVISION	Whiteboard
	3RD	REVISION	Whiteboard
	4TH	REVISION	Whiteboard
14TH	1ST	REVISION	Whiteboard
	2ND	REVISION	Whiteboard
	3RD	REVISION	Whiteboard
	4TH	REVISION	
15TH	1ST	**QUIZ & ASSIGNMENT-V**	
	2ND	**REVISION**	
	3RD		
	4TH		

LEARNING RESOURCES:

01. Strength of Materials By R K Rajput
02. Strength of Materials By R.S khurmi
03. Strength of Materials By S Ramamrutham

WEBSITE RESOURCES:

https://learnmech.com/strength-of-material-som-notes-free-pdf/

https://www.youtube.com/playlist?list=PLdVPhVskZsyZpas6ZzQZ9P-PmrQ0k7YxC

Chinmayee Jayasingh 31/07/23

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Principal 07/8/23

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Lesson Plan on

(PR-3) WORKSHOP-II

(3^{rd} sem)

Prepared by

Ranjan Kumar Nayak

PTGF, MECHANICAL ENGG.

GOVERNMENT POLYTECHNIC, PURIDEPARTMENTOFMECHANICALENGINEERING

Discipline:MECHANICAL ENGG.	Semester: 3RD	Name of the Teaching Faculty: **MR. RANJAN KUMAR NAYAK, PTGF IN MECH.ENGG.**
Subject: **Workshop practice-II**	No. of days/per week class allotted:**04**	**Semester From date: 01.08.2023 To Date: 30.11.2023** **No. of Weeks: 15**
PRE-REQUISITE	Basic knowledge about workshop practice-II	
COURSE OUTCOMES	**CO1:** Practicing fitting, carpentry, smithy and machining **CO2:** Understanding the tools and equipment used in the practices **CO3:** Realize the time and resource utilization in the practices	

Week	Class Day	Theory/Practical Topics	DELIVERY METHOD
1ST	1ST	Fitting practice:-demonstration of various fitting tools	whiteboard
	2ND	Preparation of caliper	Job
	3RD	Preparation of caliper	Job
	4TH	Preparation of try square	Job
2ND	1ST	Preparation of try square	Job
	2ND	Preparation of try square	Job
	3RD	Preparation of hammer, square , Hexagonal	Job
	4TH	Preparation of hammer, square , Hexagonal	Job
3RD	1ST	Preparation of hammer, square , Hexagonal	Job
	2ND	Preparation of hammer, square , Hexagonal	Job
	3RD	Preparation of hammer, square , Hexagonal	Job
	4TH	Preparation of hammer, square , Hexagonal	Job
4TH	1ST	Preparation of hammer, square , Hexagonal	Job
	2ND	Preparation of hammer, square , Hexagonal	Job
	3RD	Fitting practice:-demonstration of various smith tools	Whiteboard
	4TH	Preparation of door ring with hook	Job
5TH	1ST	Preparation of hexagonal head bolt	Job
	2ND	Preparation of hexagonal head bolt	Job
	3RD	Preparation of hexagonal head bolt	Job
	4TH	Preparation of hexagonal head bolt	Job
6TH	1ST	Preparation of hexagonal head bolt	Job
	2ND	Preparation of octagonal flat chisel	Job
	3RD	Preparation of octagonal flat chisel	Job
	4TH	Preparation of octagonal flat chisel	Job
7TH	1ST	Preparation of octagonal flat chisel	Job
	2ND	Preparation of octagonal flat chisel	Job
	3RD	Preparation of octagonal flat chisel	Job
	4TH	Fitting practice:-demonstration of various carpentry tools	whiteboard
8TH	1ST		

	2ND	Cutting of slot, botch, mortise and Tenon Joint	Job
	3RD	Cutting of slot, botch, mortise and Tenon Joint	Job
	4TH	Cutting of slot, botch, mortise and Tenon Joint	Job
9TH	1ST	Preparation of single dove tail joint	Job
	2ND	Preparation of single dove tail joint	Job
	3RD	Preparation of single dove tail joint	Job
	4TH	Preparation of single dove tail joint	Job
10TH	1ST	Preparation of single dove tail joint	Job
	2ND	Preparation of single dove tail joint	Whiteboard
	3RD	Fitting practice:-demonstration of various welding tools	Job
	4TH	Lap & Butt Joint using Arc Welding	Job
11TH	1ST	Lap & Butt Joint using Arc Welding	Job
	2ND	Lap & Butt Joint using Arc Welding	Job
	3RD	Lap & Butt Joint using Arc Welding	Job
	4TH	Lap & Butt Joint using Arc Welding	Job
12TH	1ST	Lap & Butt Joint using Arc Welding	Job
	2ND	Lap & Butt Joint using Arc Welding	Job
	3RD	Lap Joint using Gas Welding	Job
	4TH	Lap Joint using Gas Welding	Job
13TH	1ST	Lap Joint using Gas Welding	Job
	2ND	Lap Joint using Gas Welding	Job
	3RD	Lap Joint using Gas Welding	Job
	4TH	Lap Joint using Gas Welding	Job
14TH	1ST	Joining Two non-ferrous parts through	Job
	2ND	Joining Two non-ferrous parts through	Job
	3RD	Joining Two non-ferrous parts through	Job
	4TH	Joining Two non-ferrous parts through	Job
15TH	1ST	Joining Two non-ferrous parts through	Job
	2ND	Joining Two non-ferrous parts through	Job
	3RD	Joining Two non-ferrous parts through	Job
	4TH	Joining Two non-ferrous parts through	

Rajan Kumar Nayak
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