LESSON PLAN

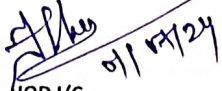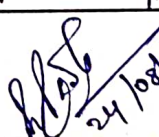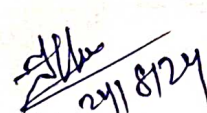| Discipline : Mechanical Engg.	Semester : 3rd	Name of the Teachnig Faculty : Mr. Amiya Kumar Singh
Subject : Production Technology	No.of days/Per weeks Class Alloted Weeks :4	Semester from date : 01.07.2024 To Date : 08.11.2024 No.of Weeks : 15

Weeks	Class day	Theory
1st	1st	Extrusion: Definition & Classification
	2nd	Direct, indirect and impact extrusion process
	3rd	Rolling Process and Classification
	4th	Differentiate between cold rolling and hot rolling process
2nd	1st	Different types of rolling mills used in Rolling process
	2nd	Welding Process and Classification
	3rd	Welding Process and Classification
	4th	fluxes used in welding
3rd	1st	Oxy-acetylene welding process
	2nd	Various types of flames used in Oxy-acetylene welding process.
	3rd	Arc welding process
	4th	Classification of Arc Welding Electrodes
4th	1st	Resistance Welding and Classification
	2nd	Various resistance welding processes such as butt welding, spot welding, flash welding, projection welding and seam welding.
	3rd	Various resistance welding processes such as butt welding, spot welding, flash welding, projection welding and seam welding.
	4th	Detailed Explanation of TIG and MIG welding process
5th	1st	Detailed Explanation of TIG and MIG welding process
	2nd	Different welding defects with causes and remedies
	3rd	Different welding defects with causes and remedies
	4th	Casting and Classify the various Casting processes
6th	1st	Procedure of Sand mould casting
	2nd	Different types of molding sands with their composition and properties.
	3rd	Different pattern and state various pattern allowances.
	4th	Different pattern and state various pattern allowances.
7th	1st	Different pattern and state various pattern allowances.
	2nd	Core and detailed classification of cores.
	3rd	Construction and working of cupola and crucible furnace.
	4th	Construction and working of cupola and crucible furnace.

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Discipline: Mechanical Engg.	Semester : 3rd	Name of the Teachnig Faculty : Mr. Nilamadhaba Sabat
8th	1st	Construction and working of cupola and crucible furnace.
	2nd	Different die casting methods
	3rd	Centrifugal casting ,true centrifugal casting, centrifuging with advantages, limitation and area of application
	4th	Centrifugal casting ,true centrifugal casting, centrifuging with advantages, limitation and area of application
9th	1st	Centrifugal casting ,true centrifugal casting, centrifuging with advantages, limitation and area of application
	2nd	Various casting defects with their causes and remedies
	3rd	Powder metallurgy process
	4th	Advantages of powder metallurgy technology technique
10th	1st	Methods of producing components by powder metallurgy technique
	2nd	Methods of producing components by powder metallurgy technique
	3rd	Methods of producing components by powder metallurgy technique
	4th	Explanation of Sintering Process
11th	1st	Explanation of Sintering Process
	2nd	Economics of powder metallurgy
	3rd	Different types of presswork process such as Blanking ,Piercing & Trimming
	4th	Different types of presswork process such as Blanking ,Piercing & Trimming
12th	1st	Different types of presswork process such as Blanking ,Piercing & Trimming
	2nd	Different types of presswork process such as Blanking ,Piercing & Trimming
	3rd	Various types of die and punch
	4th	Various types of die and punch
13th	1st	Various types of die and punch
	2nd	Simple, Compound & Progressive dies and their various advantages & disadvantages
	3rd	Jigs and fixtures and their advantages
	4th	Jigs and fixtures and their advantages
14th	1st	Principle of 3-2-1 Point location of Rectangular jig
	2nd	Principle of 3-2-1 Point location of Rectangular jig
	3rd	Principle of 3-2-1 Point location of Rectangular jig
	4th	Various types of jig and fixtures.
15th	1st	Various types of jig and fixtures.
	2nd	Various types of jig and fixtures.
	3rd	Various types of jig and fixtures.
	4th	Revision and Previous Year Question Paper Discussion

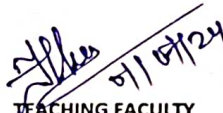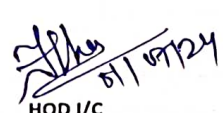24/8/2024

TEACHING FACULTY   **HOD I/C**

		LESSON PLAN		
Discipline : Mechanical Engg.	**Semester : 3rd**	**Name of the Teachnig Faculty : Miss Tapati Panigrahy**		
Subject:Strength Of Material	**No.of days/Per weeks Class Alloted Weeks :4**	**Semester from date : 01.07.2024 To Date : 08.11.2024 No.of Weeks : 15**		
Weeks	**Class day**	**Theory**		
1st	1st	Types of load, stresses & strains,(Axial and tangential) Hooke's law, Young's modulus, bulk modulus, modulus of rigidity, Poisson's ratio, derive the relation between three elastic constants,		
	2nd			
	3rd			
	4th			
2nd	1st	Principle of super position, stresses in composite section		
	2nd			
	3rd	Temperature stress, determine the temperature stress in composite bar (single core)		
	4th			
3rd	1st			
	2nd			
	3rd	Strain energy and resilience, Stress due to gradually applied, suddenly applied and impact load		
	4th			
4th	1st			
	2nd	Problem solved		
	3rd			
	4th	Definition of hoop and longitudinal stress, strain		
5th	1st	Derivation of hoop stress, longitudinal stress, hoop strain, longitudinal strain and volumetric strain		
	2nd			
	3rd	Derivation of hoop stress, longitudinal stress, hoop strain, longitudinal strain and volumetric strain		
	4th	Computation of the change in length, diameter and volume		
6th	1st	Problem solved		
	2nd	Problem solved		
	3rd	Determination of normal stress, shear stress and resultant stress on oblique plane		
	4th			
7th	1st			
	2nd	Location of principal plane and computation of principal stress		
	3rd			
	4th	Location of principal plane and computation of principal stress and Maximum shear stress using Mohr's circle		
8th	1st			
	2nd	Types of beam and load		
	3rd	Concepts of Shear force and bending moment		
	4th	Shear Force and Bending moment diagram and its salient features illustration in cantilever beam, simply supported beam and over hanging beam under point load and uniformly distributed load		
9th	1st			
	2nd			
	3rd	Assumptions in the theory of bending,		
	4th			
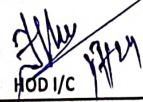
10th	1st	
	2nd	Bending equation, Moment of resistance, Section modulus& neutral axis.
	3rd	
	4th	Problem solved
11th	1st	Define column
	2nd	Axial load, Eccentric load on column
	3rd	
	4th	
12th	1st	Direct stresses, Bending stresses, Maximum& Minimum stresses. Numerical problems on above solved
	2nd	
	3rd	Buckling load computation using Euler's formula in Columns with various end conditions
	4th	
13th	1st	Assumption of pure torsion
	2nd	
	3rd	The torsion equation for solid and hollow circular shaft
	4th	
14th	1st	Comparison between solid and hollow shaft subjected to pure torsion
	2nd	
	3rd	
	4th	Full Torsion Chapter revision with problem practice
15th	1st	
	2nd	Problem solved on Simple Stress and strain
	3rd	Revision
	4th	Doubt Clear Class

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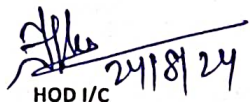
LESSON PLAN		
Discipline : Mechanical Engg.	**Semester : 3rd**	**Name of the Teachnig Faculty : Mr. Amiya Kumar Singh**
Subject:Engineering Material	No.of days/Per weeks Class Alloted Weeks :4	Semester from date : 01.07.2024 To Date : 08.11.2024 No.of Weeks : 15
Weeks	**Class day**	**Theory**
1st	1st	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	1st	Characteristics and application of ferrous materials
	2nd	
	3rd	Classification, composition and application of low carbon steel, medium carbon steel and High carbon steel
	4th	Alloy steel: Low alloy steel, high alloy steel, tool steel and stainless steel
3rd	1st	Concept of phase diagram and cooling curves
	2nd	
	3rd	Features of Iron-Carbon diagram with salient micro-constituents of Iron and Steel
	4th	
4th	1st	
	2nd	Crystal defines, classification of crystals, ideal crystal and crystal imperfections
	3rd	
	4th	Classification of imperfection: Point defects, line defects, surface defects and volume defects
5th	1st	
	2nd	
	3rd	Types and causes of point defects: Vacancies, Interstitials and impurities
	4th	Types and causes of line defects: Edge dislocation and screw dislocation
6th	1st	
	2nd	Effect of imperfection on material properties
	3rd	Deformation by slip and twinning
	4th	
7th	1st	Effect of deformation on material properties
	2nd	Purpose of Heat treatment
	3rd	
	4th	Process of heat treatment: Annealing, normalizing, hardening, tampering, stress relieving measures

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HOD I/C

Discipline : Mechanical Engg.	Semester : 3rd	Name of the Teachnig Faculty : Mr. Pradeep Kumar Padhy
8th	1st	Process of heat treatment: Annealing, normalizing, hardening, tampering, stress relieving measures
	2nd	
	3rd	Surface hardening: Carburizing and Nitriding
	4th	
9th	1st	Effect of heat treatment on properties of steel
	2nd	Hardenability of steel
	3rd	
	4th	Aluminum alloys: Composition, property and usage of Duralmin, y- alloy.
10th	1st	Copper alloys: Composition, property and usage of Copper- Aluminum, Copper-Tin, Babbit , Phosperous bronze, brass, Copper- Nickel
	2nd	
	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.
11th	1st	
	2nd	
	3rd	
	4th	Classification, composition, properties and uses of Copper base, Tin Base, Lead base, Cadmium base bearing materials
12th	1st	
	2nd	Classification, composition, properties and uses of Iron-base and Copper base spring material
	3rd	
	4th	Properties and application of thermosetting and thermoplastic polymers
13th	1st	
	2nd	
	3rd	Properties of elastomers
	4th	Classification, composition, properties and uses of particulate based and fiber reinforced composites
14th	1st	
	2nd	
	3rd	Classification and uses of ceramics
	4th	Doubt Clear Class
15th	1st	Revision on Fe-C equillibrium diagram
	2nd	
	3rd	Revison
	4th	Previous Year Question Paper Discussion

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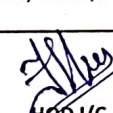| LESSON PLAN		
Discipline : Mechanical Engg.	Semester : 3rd	Name of the Teachnig Faculty : Miss. Tapati Panigrahy
Subject: Thermal -I	No.of days/Per weeks Class Alloted Weeks :4	Semester from date : 01.07.2024 To Date : 08.11.2024 No.of Weeks : 15
Weeks	Class day	Theory
1st	1st	Thermodynamic Systems (closed, open, isolated)
	2nd	Thermodynamic properties of a system -pressure, volume, temperature
	3rd	entropy,enthalpy
	4th	Internal energy and units of measurement
2nd	1st	Intensive and extensive properties
	2nd	Intensive and extensive properties
	3rd	Define thermodynamic processes, path, cycle , state, path function, point function.
	4th	Define thermodynamic processes, path, cycle , state, path function, point function.
3rd	1st	Thermodynamic Equilibrium.
	2nd	Thermodynamic Equilibrium.
	3rd	Quasi-static Process.
	4th	Quasi-static Process.
4th	1st	Conceptual explanation of energy and its sources
	2nd	Work , heat and comparison between the two.
	3rd	Mechanical Equivalent of Heat.
	4th	Work transfer, Displacement work
5th	1st	State & explain Zeroth law of thermodynamics.
	2nd	State & explain Zeroth law of thermodynamics.
	3rd	State & explain First law of thermodynamics.
	4th	State & explain First law of thermodynamics.
6th	1st	Limitations of First law of thermodynamics
	2nd	Application of First law of Thermodynamics (steady flow energy equation and its application to turbine and compressor)
	3rd	Application of First law of Thermodynamics (steady flow energy equation and its application to turbine and compressor)
	4th	Second law of thermodynamics (Claucius & Kelvin Plank statements).
7th	1st	Second law of thermodynamics (Claucius & Kelvin Plank statements).
	2nd	Application of second law in heat engine, heat pump, refrigerator
	3rd	Application of second law in heat engine, heat pump, refrigerator
	4th	determination ofefficiencies & C.O.P (solve simple numerical)
8th	1st	determination ofefficiencies & C.O.P (solve simple numerical)
	2nd	Boyle's law, Charle's law, Avogadro's law,
	3rd	Boyle's law, Charle's law, Avogadro's law,
	4th	Boyle's law, Charle's law, Avogadro's law,
9th	1st	Dalton's law of partial pressure, Guy lussac law
	2nd	Dalton's law of partial pressure, Guy lussac law
	3rd	Dalton's law of partial pressure, Guy lussac law
	4th	General gas equation, characteristic gas constant, Universal gas constant.
10th	1st	General gas equation, characteristic gas constant, Universal gas constant.
	2nd	General gas equation, characteristic gas constant, Universal gas constant.

	3rd	Explain specific heat of gas (Cp and Cv)
	4th	Explain specific heat of gas (Cp and Cv)
11th	1st	Relation between Cp & Cv.
	2nd	Relation between Cp & Cv.
	3rd	Enthalpy of a gas.
	4th	Enthalpy of a gas.
12th	1st	Work done during a non- flow process.
	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)
13th	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	Free expansion & throttling process.
	4th	Explain & classify I.C engine.
14th	1st	Terminology of I.C Engine such as bore, dead centers, stroke volume, piston speed &RPM.
	2nd	Explain the working principle of 2-stroke & 4- stroke engine C.I & S.I engine.
	3rd	Differentiate between 2-stroke & 4- stroke engine C.I & S.I engine.
	4th	Carnot cycle, Otto Cycle, Diesel Cycle, Dual Cycle
15th	1st	Solve simple numerical.
	2nd	Define Fuel, Types of fuel, Application of different fuels.
	3rd	Heating values of fuel.
	4th	Quality of I.C engine fuels Octane number, Cetane number.

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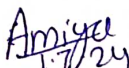**HOD I/C**

LESSON PLAN		
Discipline : Mechanical Engg.	Semester : 3rd	Name of the Teachnig Faculty : Mr. Amiya Kumar Singh
Subject:ENVIRONMEN TAL STUDIES	No.of days/Per weeks Class Alloted Weeks :4	Semester from date : 01.07.2024 To Date : 08.11.2024 No.of Weeks : 15

Weeks	Class day	Theory Topics
1st	1st	Multidisciplinary nature of environmental studies- Introduction,
	1st	Definition , Scope and importance
	2nd	Need for public awareness
	3rd	Doubt clearing
2nd	4th	Unit-2- Natural resources- Introduction , definition, Associated problems
	1st	Forest Resources- Use & over exploitation, deforestation, Case sutdies
	2nd	Timber extraction, mining, dams and their effects on forests and tribal people
	3rd	Water resources- use & over utilization of surface & ground water, floods, drought
3rd	4th	Conflicts over water, dams benefits and problems
	1st	Mineral resources- use & exploitation, environmental effects of extracting and using mineral resources
	2nd	Food resources- World food problem, Changes caused by agriculture & over grazing,
	3rd	Effects of modern agriculture, fertilizers & pesticide problems, water logging & salinity
4th	4th	Energy resources- Growing energy need, Renewable & non- renewable energy source, use of alternate energy sources
	1st	Case studies, Land resources- land as a resource, land degradation, man induces landslides,
	2nd	Soil erosion, desertification
	3rd	Role of individual in conservation of natural resources, Equitable use of resources for sustainable life styles
5th	4th	Unit-3- Ecosystem: concept of ecosystem, structure of ecosystem
	1st	Function of ecosystem, Producers, consumers,decomposers
	2nd	Energy flow in eco system ,ecological succession
	3rd	Food chain, food web, ecological pyramid
6th	4th	Forest ecosystem- definition, types, characteristics
	1st	Forest ecosystem- structure & function
	2nd	Pond ecosystem
	3rd	Stream ecosystem
7th	4th	Lake ecosystem
	1st	River ecosystem
	2nd	Ocean ecosystem
	3rd	Estuaries ecosystem

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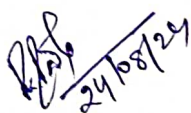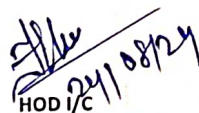
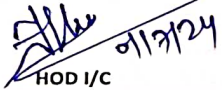| Discipline : Mechanical Engg.	Semester : 3rd	Name of the Teachnig Faculty : Mr. Nishakar Mallick
8th	4th	Unit -4- Biodiversity & its conservation: introduction, definition, genetics, species, and ecosystem diversity
	1st	Biogeographically classification of India
	2nd	Value of biodiversity
	3rd	Biodiversity at global level
9th	4th	Biodiversity at national level
	1st	Habitat loss, poaching of wild life
	2nd	Man wildlife conflicts
	3rd	Doubt clearing
10th	4th	Unit-5- Environmental pollution: introduction, definition
	1st	Air pollution, Control of air pollution
	2nd	Water pollution, Control of water pollution
	3rd	Soil pollution, Marine pollution
11th	4th	Noise pollution
	1st	Thermal pollution
	2nd	Nuclear pollution
	3rd	Solid waste management- causes, effect
12th	4th	Control measures
	1st	Waste management
	2nd	Role of individual in prevention of pollution
	3rd	Flood management, Earthquake management
13th	4th	Cyclone management
	1st	Landslides management
	2nd	Social issues & the environment: From unsustainable to sustainable development, urban problems related to energy.
	3rd	Water conservation, rain water harvesting, Water shed management,resettlement and rehabilitation of people; its problem and concern
14th	4th	Environmental ethics: issue and possible solutions. Climate change, global warming
	1st	Acid rain , ozone layer depletion, Nuclear accidents and holocaust
	2nd	Air (prevention and control of pollution) Act
	3rd	Water (prevention and control of pollution) Act
15th	4th	Public awareness
	1st	Doubt clearing
	2nd	Unit 7- Human population and the Environment: population growth and variation among nations (introduction)
	3rd	Population growth and variation among nations, Population explosion, family welfare programs
	4th	Environment and human health, Human Rights, Value Education, Role Of information technology in environment and human health.

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HOD I/C 24|8|24

LESSON PLAN

Discipline : Mechanical Engg.	Semester : 5th	Name of the Teachnig Faculty : Mr Amiya Kumar Singh		
Subject : ENTREPRENEURSHIP MNGT & SMART TECHNOLOGY	No.of days/Per weeks Class Alloted Weeks :4	Semester from date : 01.07.2024	To Date : 08.11.2024	No.of Weeks : 15
Weeks	**Class day**	**Theory**		
1st	1st	Concept /Meaning of Entrepreneurship ⧠ Need of Entrepreneurship ⧠ Characteristics, Qualities and Types of entrepreneur, Functions		
	2nd	Barriers in entrepreneurship ⧠ Entrepreneurs vrs. Manager		
	3rd	Forms of Business Ownership: Sole proprietorship, partnership forms and others ⧠ Types of Industries, Concept of Start-ups		
	4th	Entrepreneurial support agencies at National, State, District Level(Sources): DIC, NSIC,OSIC, SIDBI, NABARD, Commercial Banks, KVIC etc		
2nd	1st	Technology Business Incubators (TBI) and Science and Technology Entrepreneur Parks		
	2nd	Business Planning ⧠ SSI, Ancillary Units, Tiny Units, Service sector Units		
	3rd	Time schedule Plan, Agencies to be contacted for Project Implementation ⧠ Assessment of Demand and supply and Potential areas of Growth		
	4th	Identifying Business Opportunity ⧠ Final Product selection		
3rd	1st	Preliminary project report ⧠ Detailed project report, Techno economic Feasibilit		
	2nd	Project Viability		
	3rd	Definitions of management ⧠ Principles of management		
	4th	Functions of management (planning, organising, staffing, directing and controlling etc.)		
4th	1st	Level of Management in an Organisation		
	2nd	Production management ⧠ Functions, Activities ⧠ Productivity ⧠ Quality control		
	3rd	Production Planning and control b) Inventory Management ⧠ Need for Inventory management		
	4th	Models/Techniques of Inventory management c) Financial Management ⧠ Functions of Financial management		
5th	1st	Management of Working capital ⧠ Costing (only concept)		
	2nd	Break even Analysis ⧠ Brief idea about Accounting Terminologies: Book Keeping, Journal entry, Petty Cash		
	3rd	Break even Analysis ⧠ Brief idea about Accounting Terminologies: Book Keeping, Journal entry, Petty Cash		
	4th	Brief idea about Accounting Terminologies: Book Keeping		
6th	1st	Brief idea about Accounting Terminologies: Book Keeping		
	2nd	Journal entry, Petty Cas		
	3rd	book, P&L Accounts, Balance Sheets(only Concepts)		
	4th	Concept of Marketing and Marketing Management		
7th	1st	Marketing Techniques (only concepts) ⧠ Concept of 4P s (Price, Place, Product, Promotion)		
	2nd	Functions of Personnel Management		
	3rd	Manpower Planning, Recruitment, Sources of manpower, Selection process, Method of Testing, Methods of Training & Development, Payment of Wages		
	4th	Manpower Planning, Recruitment, Sources of manpower, Selection process, Method of Testing, Methods of Training & Development, Payment of Wages		

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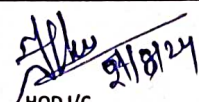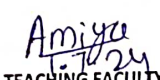**TEACHING FACULTY**

HOD I/C   6/7/24

Discipline : Mechanical Engg.	Semester : 5th	Name of the Teachnig Faculty : Mrs Shaktisawrupa Dash
8th	1st	Theories of motivation (Maslow) ▯ Methods of Improving Motivation ▯ Importance of Communication in Business
	2nd	Human relationship and Performance in Organization
	3rd	Types and Barriers of Communication
	4th	Human relationship and Performance in Organization
9th	1st	Relations with Peers, Superiors and Subordinates
	2nd	TQM concepts: Quality Policy
	3rd	Quality Management, Quality system
	4th	▯ Accidents and Safety,
10th	1st	Cause, preventive measures
	2nd	General Safety Rules
	3rd	Personal Protection Equipment(PPE)
	4th	Leadership ▯ Definition and Need/Importance ▯ Qualities and functions of a leader
11th	1st	Manager Vs Leader ▯ Style of Leadership (Autocratic, Democratic, Participative
	2nd	Definition and characteristics ▯ Importance of motivation ▯ Factors affecting motivation
	3rd	Theories of motivation (Maslow) ▯ Methods of Improving Motivation ▯ Importance of Communication in Business
	4th	Types and Barriers of Communication
12th	1st	Human relationship and Performance in Organization
	2nd	Relations with Peers, Superiors and Subordinates
	3rd	TQM concepts: Quality Policy
	4th	Quality Management, Quality system
13th	1st	▯ Accidents and Safety,
	2nd	Cause, preventive measures
	3rd	General Safety Rules
	4th	Personal Protection Equipment(PPE)
14th	1st	Intellectual Property Rights(IPR)
	2nd	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)
15th	1st	Concept of IOT, How it works
	2nd	Components of IOT, Characteristics of IOT
	3rd	Categories of IOT, Application of IOT
	4th	Smart Transportation, Smart Home, Smart Healthcare, Smart, Agriculture, Smart Energy

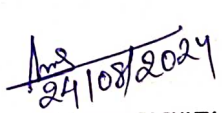**TEACHING FACULTY**   HOD I/C

LESSON PLAN

Discipline : Mechanical Engg.	Semester : 5th	Name of the Teachnig Faculty : Mr. Amiya Kymar Singh		
Subject : Design of Machine Elements	No.of days/Per weeks Class Alloted Weeks :4	Semester from date : 01.07.2024 To Date : 08.11.2024 No.of Weeks : 15		
Weeks	**Class day**	**Theory**		
1st	1st	Introduction to Machine Design and Classify it		
	2nd	Different mechanical engineering materials used in design with their uses and their mechanical and physical properties		
	3rd	Different mechanical engineering materials used in design with their uses and their mechanical and physical properties		
	4th	Define working stress, yield stress, ultimate stress & factor of safety and stress –strain curve for M.S & C.I.		
2nd	1st	Modes of Failure (By elastic deflection, general yielding & fracture		
	2nd	Modes of Failure (By elastic deflection, general yielding & fracture		
	3rd	State the factors governing the design of machine elements		
	4th	Describe design procedure.		
3rd	1st	Joints and their classification.		
	2nd	State types of welded joints .		
	3rd	State advantages of welded joints over other joints.		
	4th	Design of welded joints for eccentric loads.		
4th	1st	State types of riveted joints and types of rivets.		
	2nd	State types of riveted joints and types of rivets.		
	3rd	Describe failure of riveted joints		
	4th	Determine strength & efficiency of riveted joints.		
5th	1st	Determine strength & efficiency of riveted joints.		
	2nd	Design riveted joints for pressure vessel		
	3rd	Design riveted joints for pressure vessel		
	4th	Design riveted joints for pressure vessel		
6th	1st	Design riveted joints for pressure vessel		
	2nd	Solve numerical on Welded Joint and Riveted Joints		
	3rd	Solve numerical on Welded Joint and Riveted Joints		
	4th	Solve numerical on Welded Joint and Riveted Joints		
7th	1st	State function of shafts. 3.2 State materials for shafts.		
	2nd	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		
	3rd	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		
	4th	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		

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Discipline : Mechanical Engg.	Semester : 5th	Name of the Teachnig Faculty : Mr. Pradeep Kumar Padhy
8th	1st	State standard size of shaft as per I.S. 3.5 State function of keys, types of keys & material of keys.
	2nd	State standard size of shaft as per I.S. 3.5 State function of keys, types of keys & material of keys.
	3rd	State standard size of shaft as per I.S. 3.5 State function of keys, types of keys & material of keys.
	4th	State standard size of shaft as per I.S. 3.5 State function of keys, types of keys & material of keys.
9th	1st	State standard size of shaft as per I.S. 3.5 State function of keys, types of keys & material of keys.
	2nd	Describe failure of key, effect of key way.
	3rd	Design rectangular sunk key considering its failure against shear & crushing.
	4th	8 Design rectangular sunk key by using empirical relation for given diameter of shaft.
10th	1st	State specification of parallel key, gib-head key, taper key as per I.S.
	2nd	State specification of parallel key, gib-head key, taper key as per I.S.
	3rd	Solve numerical on Design of Shaft and keys
	4th	Solve numerical on Design of Shaft and keys
11th	1st	Design of Shaft Coupling
	2nd	Requirements of a good shaft coupling
	3rd	Types of Coupling.
	4th	Types of Coupling.
12th	1st	Design of Sleeve or Muff-Coupling
	2nd	Design of Clamp or Compression Coupling
	3rd	Solve simple numerical on above.
	4th	Solve simple numerical on above.
13th	1st	Materials used for helical spring
	2nd	Standard size spring wire. (SWG).
	3rd	Standard size spring wire. (SWG).
	4th	Terms used in compression spring
14th	1st	Terms used in compression spring
	2nd	Stress in helical spring of a circular wire.
	3rd	Stress in helical spring of a circular wire.
	4th	Deflection of helical spring of circular wire
15th	1st	Deflection of helical spring of circular wire
	2nd	Surge in spring
	3rd	Solve numerical on design of closed coil helical compression spring.
	4th	Solve numerical on design of closed coil helical compression spring.

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LESSION PLAN

Discipline : Mechanical Engg.	Semester : 5th	Name of the Teachnig Faculty : Miss Tapati Panigrahy		
Subject : Mechatronics	No.of days/Per weeks Class Alloted Weeks :4	Semester from date : 01.07.2024 To Date : 08.11.2024 No.of Weeks : 15		
Weeks	Class day	Theory		
1st	1st	Definition of Mechatronics		
	2nd	Advantages & disadvantages of Mechatronics		
	3rd	Application of Mechatronics		
	4th	Scope of Mechatronics in Industrial Sector		
2nd	1st	Components of a Mechatronics System		
	2nd	Importance of mechatronics in automation		
	3rd	Defination of Transducers		
	4th	Classification of Transducers		
3rd	1st	Electromechanical Transducers		
	2nd	Transducers Actuating Mechanisms		
	3rd	Displacement &Positions Sensors		
	4th	Velocity, motion, force and pressure sensors		
4th	1st	Velocity, motion, force and pressure sensors		
	2nd	Temperature and light sensors		
	3rd	Mechanical Actuators		
	4th	Machine, Kinematic Link, Kinematic Pair		
5th	1st	Mechanism, Slider crank Mechanism		
	2nd	Mechanism, Slider crank Mechanism		
	3rd	Gear Drive, Spur gear, Bevel gear, Helical gear, worm gear		
	4th	Gear Drive, Spur gear, Bevel gear, Helical gear, worm gear		
6th	1st	Belt & Belt drive		
	2nd	Belt & Belt drive		
	3rd	Bearings		
	4th	Bearings		
7th	1st	Electrical Actuator		
	2nd	Electrical Actuator		
	3rd	Switches and relay		
	4th	Solenoid		

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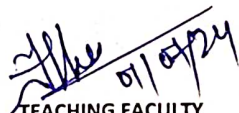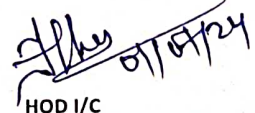
Discipline : Mechanical Engg.	Semester : 5th	Name of the Teachnig Faculty : Mr. Piyush Bhusan Dash
8th	1st	D.C Motors
	2nd	A.C Motors
	3rd	Stepper Motors
	4th	Specification and control of stepper motors
9th	1st	Servo Motors D.C & A.C
	2nd	Introduction to PLC
	3rd	Advantages of PLC
	4th	Selection and uses of PLC
10th	1st	Architecture basic internal structures
	2nd	Input/output Processing and Programming
	3rd	Mnemonics
	4th	Master and Jump Controllers
11th	1st	Introduction to Numerical Control of machines and CAD/CAM
	2nd	NC machines
	3rd	CNC machines
	4th	CAD
12th	1st	CAM
	2nd	Software and hardware for CAD/CAM
	3rd	Functioning of CAD/CAM system
	4th	Features and characteristics of CAD/CAM system
13th	1st	Application areas for CAD/CAM
	2nd	Introduction to elements of CNC machines
	3rd	Machine Structure
	4th	Introduction and Types of Guideways
14th	1st	Factors of design of guideways
	2nd	Spindle drives
	3rd	Feed drive
	4th	Spindle and Spindle Bearings
15th	1st	Definition, Function and laws of robotics
	2nd	Types of industrial robots
	3rd	Robotic systems
	4th	Advantages and Disadvantages of robots

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LESSON PLAN

Discipline :Mechanical engineering	Semester : 5th	Name of the Teachnig Faculty : Miss Tapati Panigrahy		
Subject: Hydraulic Machines &Industrial Fluid Power	No.of days/Per weeks Class Alloted Weeks :4	Semester from date : 01.07.2024 To Date : 08.11.2024 No.of Weeks : 15		
Weeks	**Class day**	**Theory**		
1st	1st	Definition hydraulic turbines		
	2nd	classification of hydraulic turbines		
	3rd	Construction and working principle of impulse turbine		
	4th	Velocity diagram of moving blades of pelton wheel		
2nd	1st	work done and derivation of various efficiencies		
	2nd	work done and derivation of various efficiencies		
	3rd	Numericals		
	4th	work done and derivation of various efficiencies		
3rd	1st	work done and derivation of various efficiencies		
	2nd	Numericals		
	3rd	Velocity diagram of moving blades of kaplan turbine		
	4th	Numericals		
4th	1st	work done and derivation of various efficiencies		
	2nd	work done and derivation of various efficiencies		
	3rd	Numericals		
	4th	Distinguish between impulse turbine and reaction turbine.		
5th	1st	Construction and working principle of centrifugal pumps		
	2nd	Construction and working principle of centrifugal pumps		
	3rd	work done and derivation of various efficiencies of centrifugal pumps.		
	4th	Numericals		
6th	1st	Numericals		
	2nd	Describe construction & working of double acting reciprocating pump.		
	3rd	Describe construction & working of double acting reciprocating pump.		
	4th	Derive the formula for power required to drive the pump (Single acting & double acting)		
7th	1st	Derive the formula for power required to drive the pump (Single acting & double acting)		
	2nd	Derive the formula for power required to drive the pump (Single acting & double acting)		
	3rd	Derive the formula for power required to drive the pump (Single acting & double acting)		
	4th	Define slip		

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Discipline :Mechanical engineering	Semester : 5th	Name of the Teachnig Faculty : Mr Nilamadhaba Sabat
8th	1st	State positive & negative slip & establish relation between slip & coefficient of discharge.
	2nd	
	3rd	Numericals
	4th	Elements –filter-regulator-lubrication unit
9th	1st	Pressure relief valves
	2nd	Pressure regulation valves
	3rd	3/2DCV, 5/2 DCV, 5/3 DCV
	4th	Flow control valves
10th	1st	Throttle valves
	2nd	ISO Symbols of pneumatic components
	3rd	ISO Symbols of pneumatic components
	4th	Direct control of single acting cylinder
11th	1st	Operation of double acting cylinder
	2nd	metering in
	3rd	metering out
	4th	Comparison of hydraulic and pneumatic system
12th	1st	Hydraulic system-Merits & Demerits
	2nd	Pressure control valves
	3rd	Pressure relief valves
	4th	Pressure regulation valves
13th	1st	3/2DCV, 5/2 DCV, 5/3 DCV
	2nd	Flow control valves
	3rd	Throttle valves
	4th	External gear pumps, Internal gear pumps
14th	1st	Vane pump
	2nd	Radial piston pumps
	3rd	ISO Symbols for hydraulic components.
	4th	Actuators
15th	1st	Direct control of single acting cylinder
	2nd	Operation of double acting cylinder
	3rd	Operation of double acting cylinder with metering in and metering out control
	4th	Comparison of hydraulic & pneumatic system

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LESSON PLAN

Discipline : Mechanical Engg.	Semester : 5th	Name of the Teachnig Faculty : Miss. Tapati Panigrahy
Subject : REFRIGERATION AND AIR CONDITIONING	No.of days/Per weeks Class Alloted Weeks :4	Semester from date : 01.07.2024 To Date : 08.11.2024 No.of Weeks : 15
Weeks	Class day	Theory
1st	1st	Definition of refrigeration and unit of refrigeration.
	2nd	Definition of COP, Refrigerating effect (R.E)
	3rd	Definition of COP, Refrigerating effect (R.E)
	4th	Principle of working of open and closed air system of refrigeration.
2nd	1st	Principle of working of open and closed air system of refrigeration.
	2nd	Calculation of COP of Bell-Coleman cycle and numerical on it.
	3rd	schematic diagram of simple vapors compression refrigeration system'
	4th	schematic diagram of simple vapors compression refrigeration system'
3rd	1st	Cycle with dry saturated vapors after compression.
	2nd	Cycle with wet vapors after compression.
	3rd	Cycle with superheated vapors after compression.
	4th	Cycle with superheated vapors before compression.
4th	1st	Cycle with sub cooling of refrigerant
	2nd	Representation of above cycle on temperature entropy and pressure enthalpy diagram
	3rd	Representation of above cycle on temperature entropy and pressure enthalpy,diagram
	4th	Numerical on above (determination of COP,mass flow)
5th	1st	Simple vapor absorption refrigeration system
	2nd	Practical vapor absorption refrigeration system
	3rd	COP of an ideal vapor absorption refrigeration system
	4th	Numerical on COP.
6th	1st	Numerical on COP.
	2nd	Principle of working and constructional details of reciprocating and rotary compressors.
	3rd	Centrifugal compressor only theory
	4th	Important terms.
7th	1st	Hermetically and semi hermetically sealed compressor.
	2nd	Principle of working and constructional details of air cooled and water cooled condenser
	3rd	Heat rejection ratio.
	4th	Cooling tower and spray pond.
8th	1st	Principle of working and constructional details of an evaporator.
	2nd	Types of evaporator.
	3rd	Bare tube coil evaporator, finned evaporator, shell and tube evaporator.
	4th	Automatic expansion valve
9th	1st	Thermostatic expansion valve
	2nd	Classification of refrigerants
	3rd	Desirable properties of an ideal refrigerant.
	4th	Designation of refrigerant.
10th	1st	Thermodynamic Properties of Refrigerants.
	2nd	Chemical properties of refrigerants.
	3rd	commonly used refrigerants, R-11, R-12, R-22, R-134a, R-717
	4th	Substitute for CFC

11th	1st	cold storage,dairy refrigeration
	2nd	ice plant, water cooler
	3rd	frost free refrigerator
	4th	Psychometric terms
12th	1st	Adiabatic saturation of air by evaporation of water
	2nd	Psychometric chart and uses.
	3rd	Psychometric processes
	4th	Sensible heating and Cooling
13th	1st	Cooling and Dehumidification
	2nd	Heating and Humidification
	3rd	Adiabatic cooling with humidification
	4th	Total heating of a cooling process
14th	1st	SHF, BPF,
	2nd	Adiabatic mixing
	3rd	Problems on above.
	4th	Effective temperature and Comfort chart
15th	1st	Factors affecting comfort air conditioning. .
	2nd	Equipment used in an air-conditioning.
	3rd	Classification of air-conditioning system
	4th	Winter Air Conditioning System, Summer Air Conditioning

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