

Discipline : Mechanical	Semester: 3rd	Name of the Teaching Faculty : Sachidananda Padhi
Subject: EVS	No. of Days / per week class	Semester From date : 01.07.2024 To Date : 08.11.2024 No. of Weesks : 19
Week	Class Day	Topics
1.7 - 6.7	1st	The Multidisciplinary nature of environmental studies
	2nd	Definition, scope and importance, Need for public awareness.
	3rd	Renewable and non renewable resources
	4th	Forest resources, Water resources, Mineral Resources
8.7 - 13.7	1st	Food Resources, Energy Resources, Land Resources
	2nd	Role of individual in conservation of natural resources
	3rd	Equitable use of resources for sustainable lifestyles
	4th	Concept of an ecosystem. Structure and function of an ecosystem. Producers, consumers, decomposers.
15.7 - 20.7	1st	Energy flow in the ecosystems. Ecological succession. Food chains, food webs, and ecological pyramids. Introduction, types, characteristic features
	2nd	structure and function of the following ecosystem: Forest ecosystem
	3rd	Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)
	4th	Introduction-Definition: genetics, species and ecosystem diversity
22.7 - 27.7	1st	Biogeographically classification of India.
	2nd	Value of biodiversity: consumptive use, productive use, social ethical, aesthetic and opt in values.
	3rd	Biodiversity at global, national and local level.
	4th	Threats to biodiversity: Habitats loss, poaching of wild life, man wildlife conflicts.
29.7 - 3.8	1st	Definition Causes, effects and control measures of Air pollution
	2nd	Water pollution, Soil pollution
	3rd	Marine pollution, Noise pollution.
	4th	Thermal pollution, Nuclear hazards
5.8 - 10.8	1st	Solid waste Management: Causes, effects and control measures of urban and industrial wastes
	2nd	Role of an individual in prevention of pollution.
	3rd	Disaster management: Floods, earth quake, cyclone and landslides.
	4th	Social issues and the Environment
12.8- 17.8	1st	unsustainable to sustainable development.
	2nd	Urban problems related to energy.
	3rd	Water conservation, rain water harvesting, water shed management.
	4th	Resettlement and rehabilitation of people; its problems and concern
19.8 - 24.8	1st	Environmental ethics: issue and possible solutions
	2nd	Climate change, global warming, acid rain
	3rd	ozone layer depletion, nuclear accidents and holocaust, case studies
	4th	Air (prevention and control of pollution) Act

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

Discipline : Mechanical	Semester: 3rd	Name of the Teaching Faculty : Sachidananda Padhi
Subject : ENGINEERING MATERIAL	No. of Days / per week class allotted : 4	Semester From date : 01.07.2024 To Date : 08.11.2024 No. of Weeks: 19
Week	Class Day	Topics
1.7 - 6.7	1st	Material classification
	2nd	ferrous and non ferrous category
	3rd	alloys
	4th	Types of alloys
8.7 - 13.7	1st	Properties of Materials
	2nd	Physical , Chemical and Mechanical
	3rd	Performance requirements
	4th	Material reliability and safety
15.7 - 20.7	1st	Characteristics of ferrous materials
	2nd	application of ferrous materials
	3rd	Classification of low carbon steel
	4th	composition of low carbon steel
22.7 - 27.7	1st	application of low carbon steel
	2nd	Classification of Medium carbon steel
	3rd	composition of Medium carbon steel
	4th	application of Medium carbon steel
29.7 - 3.8	1st	Classification of High carbon steel
	2nd	composition of High carbon steel
	3rd	application of High carbon steel
	4th	Alloy steel
5.8 - 10.8	1st	Low alloy steel
	2nd	high alloy steel
	3rd	tool steel
	4th	stainless steel
12.8- 17.8	1st	Tool steel:
	2nd	Effect of various alloying elements such as Cr, Mn, Ni, V, Mo
	3rd	Concept of phase diagram
	4th	cooling curves
19.8 - 24.8	1st	Features of Iron-Carbon diagram
	2nd	with salient micro-constituents of Iron and Steel
	3rd	Crystal defines
	4th	classification of crystals
26.8 - 31.8	1st	crystal imperfections
	2nd	Classification of imperfection
	3rd	Point defects
	4th	line defects
2.9 - 7.9	1st	volume defects
	2nd	surface defects
	3rd	Types and causes of point defects
	4th	Vacancies

9.9 - 14.9	1st	Interstitials and impurities
	2nd	Types and causes of line defects
	3rd	Edge dislocation and
	4th	screw dislocation
16.9 - 21.9	1st	Effect of imperfection on material properties
	2nd	Deformation by slip and twinning
	3rd	Deformation by slip and twinning
	4th	Effect of deformation on material properties
23.9 - 28.9	1st	Purpose of Heat treatment
	2nd	Process of heat treatment: Annealing, normalizing, hardening, tempering, stress relieving measures
	3rd	Surface hardening: Carburizing and Nitriding and Effect of heat treatment on properties of steel
	4th	Hardenability of steel
30.9 - 5.10	1st	Aluminum alloys: Composition, property and usage of Duralmin, γ - alloy.
	2nd	Copper alloys: Composition, property and usage of Copper- Aluminum, Copper-Tin, Babbitt , Phosperous bronze, brass, Copper- Nickel
	3rd	Predominating elements of lead alloys, Zinc alloys and Nickel alloys
	4th	Low alloy materials like P-91, P-22 for power plants and other high temperature services. High alloy materials like stainless steel grades of duplex, super duplex materials etc.
7.10 - 12.10	1st	Classification, composition, properties and uses of Copper base, Tin Base, Lead base, Cadmium base bearing materials
	2nd	CONT...
	3rd	Classification, composition, properties and uses of Iron- base and Copper base spring material
	4th	CONT...
14.10 - 19.10	1st	Properties and application of thermosetting and thermoplastic polymers Properties of elastomers
	2nd	Classification, composition, properties and uses of particulate based and fiber reinforced composites and Classification and uses of ceramics
	3rd	CONT..
	4th	CONT..
21.10 - 26.10	1st	CLASS TEST
	2nd	Q & A DISCUSSION
	3rd	Q & A DISCUSSION
	4th	CLASS TEST
28.10 - 2.11	1st	OVERALL SYALBUS DISCUSSION
	2nd	DOUBT CLEARING
	3rd	DOUBT CLEARING
	4th	DOUBT CLEARING
4.11 - 8.11	1st	OVERALL SYALBUS DISCUSSION
	2nd	DOUBT CLEARING
	3rd	DOUBT CLEARING
	4th	DOUBT CLEARING

Sachidananda Reddy
24.08.24

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

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

S. S. Thorpe
01/07/24

Discipline : Mechanical	Semester: 3rd	Name of the Teaching Faculty : Manabhanjan Bhoi
Subject : THERMAL ENGINEERING-I	No. of Days / per week class allotted : 4	Semester From date : 01.07.2024 To Date : 08.11.2024 No. of Weeks: 19
Week	Class Day	Topics
1.7 - 6.7	1st	Thermodynamic Systems
	2nd	closed, open, isolated
	3rd	Thermodynamic properties of a system
	4th	pressure, volume, temperature
8.7 - 13.7	1st	entropy, enthalpy, Internal energy
	2nd	units of measurement
	3rd	Intensive and extensive properties
	4th	Define thermodynamic processes
15.7 - 20.7	1st	Path, cycle
	2nd	state
	3rd	Path function
	4th	Point function
22.7 - 27.7	1st	Thermodynamic Equilibrium.
	2nd	Quasi-static Process
	3rd	Conceptual explanation of energy and its sources
	4th	Work, heat
29.7 - 3.8	1st	Comparison between the two
	2nd	Mechanical Equivalent of Heat
	3rd	Work transfer
	4th	Displacement work
5.8 - 10.8	1st	State & explain Zeroth law of thermodynamics
	2nd	State & explain First law of thermodynamics
	3rd	Limitations of First law of thermodynamics
	4th	Application of First law of Thermodynamics
12.8 - 17.8	1st	steady flow energy equation and its application to turbine and compressor
	2nd	Second law of thermodynamics (Clausius & Kelvin Plank statements)
	3rd	Application of second law in heat engine, heat pump, refrigerator
	4th	determination of efficiencies &
19.8 - 24.8	1st	C.O.P (solve simple numerical)
	2nd	Laws of perfect gas Boyle's law
	3rd	Charle's law
	4th	Avogadro's law
26.8 - 31.8	1st	Dalton's law of partial pressure
	2nd	Guy lussac law
	3rd	General gas equation
	4th	characteristic gas constant
2.9 - 7.9	1st	Universal gas constant
	2nd	Explain specific heat of gas (Cp and Cv)
	3rd	Explain specific heat of gas (Cp and Cv)
	4th	Relation between Cp & Cv
9.9 - 14.9	1st	Enthalpy of a gas
	2nd	Work, done during a non- flow process
	3rd	Application of first law of thermodynamics to various non flow process
	4th	Isothermal, Isobaric
16.9 - 21.9	1st	Isentropic and polytrophic process
	2nd	Solve simple problems on above.
	3rd	Free expansion & throttling process
	4th	Explain I.C engine

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

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01-07-24

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

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

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