

LESSON PLAN

- 1) Subject Code: Th-01
- 2) Subject Title: Production Technology
- 3) Semester: 3rd
- 4) Branch: Mechanical
- 5) Faculty: Dipankar Ghosh
- 6) No. of Classes / Week: 4P/week
- 7) Pre Requisite for the Subject: NIL / YES, if YES, give details: NIL
- 8) Text Book to be referred by students:

Sl. No.	Book	Author	Publication	% of Questions Asked	Year (Edition)	Whether available in Library
i	Workshop technology, Vol.- I & II	B.S Raghuwanshi	Dhanpat Rai & Co.	70	2009	Yes
ii	Production Technology, Vol. - I & II	O.P. Khanna	Dhanpat Rai Publication	30	2011	Yes

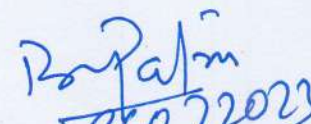
9) Course Coverage Schedule:

Ch. No.	Name of Chapter	Course to be Covered	No of periods Required	Total Class for Chapter/ Week (From-To)	Remarks
01	Metal Forming Processes	1.1 Extrusion: Definition & Classification	01	05 Week(1-2)	
		1.2 Explain direct, indirect and impact extrusion process	01		
		1.3 Define rolling. Classify it.	01		
		1.4 Differentiate between cold rolling and hot rolling process.			
		1.5 List the different types of rolling mills used in Rolling process. 1001 Q/A	02		
02	Welding	2.1 Define welding and classify various welding processes	01	11 Week (2-3-4)	
		2.2 Explain fluxes used in welding	01		
		2.3 Explain Oxy-acetylene welding process.	01		
		2.4 Explain various types of flames used in Oxy-acetylene welding process.	01		
		2.5 Explain Arc welding process	01		
		2.6 Specify arc welding electrodes	01		
		2.7 Define resistance welding and classify it.	01		
		2.8 Describe various resistance welding processes such as butt welding, spot welding, flash welding, projection welding and seam welding.	01		
		2.9Explain TIG and MIG welding process	01		
		2.10State different welding defects with	01		

Ch. No.	Name of Chapter	Course to be Covered	No of periods Required	Total Class for Chapter/ Week (From-To)	Remarks
		causes and remedies.			
		1002 Q/A	01		
03	Casting	3.1 Define Casting and Classify the various Casting processes.	01	10 Week (5-6-7)	
		3.2 Explain the procedure of Sand mould casting.			
		3.3 Explain different types of molding sands with their composition and properties	02		
		3.4 Classify different pattern and state various pattern allowances.	01		
		3.5 Classify core.	01		
		3.6 Describe construction and working of cupola and crucible furnace	02		
		3.7 Explain die casting method.	01		
		3.8 Explain centrifugal casting such as true centrifugal casting, centrifuging with advantages, limitation and area of application.	01		
		3.9 Explain various casting defects with their causes and remedies	01		
		1003 Q/A			
04	Powder Metallurgy	4.1 Define powder metallurgy process.	01	05 Week (7-8)	
		4.2 State advantages of powder metallurgy technology technique	01		
		4.3 Describe the methods of producing components by powder metallurgy technique	01		
		4.4 Explain sintering.	01		
		4.5 Economics of powder metallurgy	01		
		1004 Q/A			
05	Press Work	5.1 Describe Press Works: blanking, piercing and trimming.	01	04 Week (8-9)	
		5.2 List various types of die and punch	01		
		5.3 Explain simple, Compound & Progressive dies	01		
		5.4 Describe the various advantages & disadvantages of above dies	01		
		1005 Q/A			
06	Jigs and fixtures	6.1 Define jigs and fixtures	01	05 Week (9-10)	
		6.2 State advantages of using jigs and fixtures			
		6.3 State the principle of locations	01		
		6.4 Describe the methods of location with respect to 3-2-1 point location of rectangular jig	02		
		6.5 List various types of jig and fixtures.	01		
		1006 Q/A			


Faculty
11/07/2023


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LESSON PLAN

- 1) Subject Code: Th-2
- 2) Subject Title: Strength of Material
- 3) Semester: 3rd
- 4) Branch: Mechanical Engineering
- 5) Faculty: Amarendra Mishra
- 6) No. of Classes / Week: 04 classes/week(5 Practice)
- 7) Pre Requisite for the Subject: NIL / YES, If YES, give details: Engineering mechanics
- 8) Text Book to be referred by students:

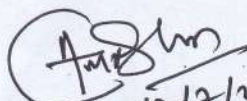
Sl No.	Book	Author	Publication	% of Questions Asked	Year (Edition)	Whether available in Library
i	A Text Book of Strength of Material	Er. R S Khurmi	S Chand & Company limited	60%	Revised Edition 2018	Yes
ii	Strength of Material	S Ramamrutham	Dhanpat Rai & Sons	40%	Revised Edition 2014	Yes

9) Course Coverage Schedule:

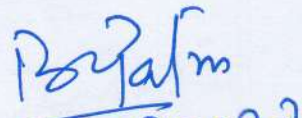
Ch. No.	Name of Chapter	Course to be Covered	No of periods Required	Total Class for Chapter/ Week (From-To)	Remarks
01	Simple Stress & Strain	1.1 Types of load, stresses & strains,(Axial and tangential) Hooke's law, Young's modulus, bulk modulus, modulus of rigidity, Poisson's ratio, derive the relation between three elastic constants,	04	10 +02 P Classes Week (1st - 2nd - 3rd)	
		1.2 Principle of super position, stresses in composite section	01		
		1.3 Temperature stress, determine the temperature stress in composite bar (single core)	02		
		1.4 Strain energy and resilience, Stress due to gradually applied, suddenly applied and impact load	02		
		1.5 Simple problems on above.	02		
		1001 practice class	02		
02	Thin Cylinder And Spherical Shell Under Internal Pressure	2.1 Definition of hoop and longitudinal stress, strain	01	04 Classes Week (3rd – 4th)	
		2.2 Derivation of hoop stress, longitudinal stress, hoop strain, longitudinal strain and volumetric strain	01		
		2.3 Computation of the change in length, diameter and volume	01		
		2.4 Simple problems on above	01		

Ch. No.	Name of Chapter	Course to be Covered	No of periods Required	Total Class for Chapter/ Week (From-To)	Remarks
03	Two Dimensional Stress Systems	3.1 Determination of normal stress, shear stress and resultant stress on oblique plane	02	06 +01P Classes Week (4th – 5th)	
		3.2 Location of principal plane and computation of principal stress	02		
		3.3 Location of principal plane and computation of principal stress and Maximum shear stress using Mohr's circle	02		
		1003 Practice on Mohr's Circle	01		
04	Bending Moment & Shear Force	4.1 Types of beam and load	01	10 +02P Classes Week (6th - 7th – 8th)	
		4.2 Concepts of Shear force and bending moment	01		
		4.3 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	08		
		1004 Practice on Shear Force and Bending moment diagram	02		
05	Theory of Simple Bending	5.1 Assumptions in the theory of bending,	01	04 Classes Week(8th - 9th)	
		5.2 Bending equation, Moment of resistance, Section modulus & neutral axis.	01		
		5.3 Solve simple problems.	01		
06	Combined Direct & Bending Stresses	6.1 Define column 6.2 Axial load, Eccentric load on column,	01	03 Classes Week (9th - 10th)	
		6.3 Direct stresses, Bending stresses, Maximum & Minimum stresses. Numerical problems on above.	01		
		6.4 Buckling load computation using Euler's formula (no derivation) in Columns with various end conditions	01		
07	Torsion	7.0 Assumption of pure torsion	01	03 Classes Week (10th)	
		7.1 The torsion equation for solid and hollow circular shaft	01		
		7.2 Comparison between solid and hollow shaft subjected to pure torsion	01		

Amarendra Mishra


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LESSON PLAN

- 1) Subject Code: Th-3
- 2) Subject Title: Engineering Material
- 3) Semester: 3rd sem
- 4) Branch: Mechanical Engg.
- 5) Faculty: Deberaj Senapati
- 6) No. of Classes / Week: 03P/week
- 7) Pre Requisite for the Subject: NIL / YES, If YES, give details:
- 8) Text Book to be referred by students:

Sl No.	Book	Author	Publication	% of Questions Asked	Year (Edition)	Whether available in Library
i	A Textbook of Material Science and Metallurgy	O P Khanna	Dhantpat Rai	70%		
ii	Engineering materials and Metallurgy	R K Rajput	S.Chand	10%		

9) Course Coverage Schedule:

Ch. No.	Name of Chapter	Course to be Covered	No of periods Required	Total Class for Chapter/ Week (From-To)	Remarks
01	Engineering materials and their properties	1.1 Material classification into ferrous and non ferrous category and alloys	1	3 Week (1)	
		1.2 Properties of Materials: Physical , Chemical and Mechanical	1		
		1.3 Performance requirements	1		
		1.4 Material reliability and safety	1		
02	Ferrous Materials and alloys	2.1 Characteristics and application of ferrous materials	1	3 Week (2)	
		2.2 Classification, composition and application of low carbon steel, medium carbon steel and High carbon steel	1		
		2.3 Alloy steel: Low alloy steel, high alloy steel, tool steel and stainless steel	1		
		2.4 Tool steel: Effect of various alloying elements such as Cr, Mn, Ni, V, Mo,	1		
03	Iron – Carbon system	3.1 Concept of phase diagram and cooling curves	2	4 Week (3-4)	
		3.2 Features of Iron-Carbon diagram with salient micro-constituents of Iron and Steel	2		
04	Crystal imperfections	4.1 Crystal defines, classification of crystals, ideal crystal and crystal imperfections	1	6 Week (4-5-6)	
		4.2 Classification of imperfection: Point defects, line defects, surface defects and volume defects	1		
		4.3 Types and causes of point defects: Vacancies, Interstitials and impurities	1		

Ch. No.	Name of Chapter	Course to be Covered	No of periods Required	Total Class for Chapter/ Week (From-To)	Remarks
		4.4 Types and causes of line defects: Edge dislocation and screw dislocation	1		
		4.5 Effect of imperfection on material properties	1		
		4.6 Deformation by slip and twinning	1		
		4.7 Effect of deformation on material properties			
05	Heat Treatment	5.1 Purpose of Heat treatment	1	6 Week (6-7-8)	
		5.2 Process of heat treatment: Annealing, normalizing, hardening, tempering, stress relieving measures	2		
		5.3 Surface hardening: Carburizing and Nitriding	2		
		5.4 Effect of heat treatment on properties of steel	1		
		5.5 Hardenability of steel	1		
06	Non-ferrous alloys	6.1 Aluminum alloys: Composition, property and usage of Duralmin, γ - alloy.	1	3 Week (8-9)	
		6.2 Copper alloys: Composition, property and usage of Copper- Aluminum, Copper-Tin, Babbit , Phosperous bronze, brass, Copper- Nickel	1		
		6.3 Predominating elements of lead alloys, Zinc alloys and Nickel alloys	1		
		6.4 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.			
07	Bearing Materials	7.1 Classification, composition, properties and uses of Copper base, Tin Base, Lead base, Cadmium base bearing materials	1	1 Week (9)	
08	Spring materials	8.1 Classification, composition, properties and uses of Iron-base and Copper base spring material	1	1 Week (9)	
09	Polymers	9.1 Properties and application of thermosetting and thermoplastic polymers 9.2 Properties of elastomers	1	1 Week (10)	
10	Composites and Ceramics	10.1 Classification, composition, properties and uses of particulate based and fiber reinforced composites	1	2 Week (10)	
		10.2 Classification and uses of ceramics	1		

Debaraj Senapati

Senapati
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LESSON PLAN

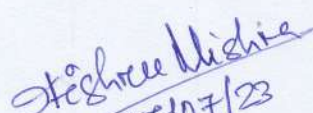
- 1) Subject Code: Th-4
- 2) Subject Title: THERMAL ENGINEERING-I
- 3) Semester: 3rd
- 4) Branch: Mechanical Engg.
- 5) Faculty: Itishree Mishra
- 6) No. of Classes / Week: 4P/week,(5 practice)
- 7) Pre Requisite for the Subject: NIL / YES, If YES, give details:
- 8) Text Book to be referred by students:

Sl No.	Book	Author	Publication	% of Questions Asked	Year (Edition)	Whether available in Library
i	Thermal Engineering	R.S. Khurmi	S.Chand	90		yes
ii	Thermal Engineering	Mahesh M Rathore	TMH	10		yes

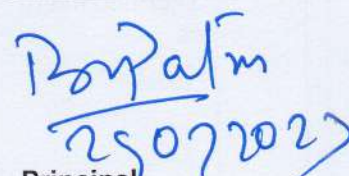
9) Course Coverage Schedule:

Ch. No.	Name of Chapter	Course to be Covered	No of periods Required	Total Class for Chapter/ Week (From-To)	Remarks
1.	Thermodynamic concept & Terminology	1.1 Thermodynamic Systems (closed, open, isolated)	1	6 Week(1-2)	
		1.2 Thermodynamic properties of a system (pressure, volume, temperature, entropy, enthalpy, Internal energy and units of measurement).	2		
		1.3 Intensive and extensive properties	1		
		1.4 Define thermodynamic processes, path, cycle, state, path function, point function			
		1.5 Thermodynamic Equilibrium	1		
		1.6 Quasi-static Process.			
		1.7 Conceptual explanation of energy and its sources			
2.	Laws of Thermodynamics	1.8 Work, heat and comparison between the two.	1	8+2(p) Week(2-3-4)	
		1.9 Mechanical Equivalent of Heat			
		1001 PRACTICE	1		
		2.1 State & explain Zeroth law of thermodynamics.	1		
		2.2 State & explain First law of thermodynamics			
		2.3 Limitations of First law of thermodynamics	3		
		2.4 Application of First law of			

Ch. No.	Name of Chapter	Course to be Covered	No of periods Required	Total Class for Chapter/ Week (From-To)	Remarks
		Thermodynamics (steady flow energy equation and its application to turbine and compressor)			
		2.4 Second law of thermodynamics (Clausius & Kelvin Planck statements). 2.5 Application of second law in heat engine, heat pump, refrigerator & determination of efficiencies & C.O.P (solve simple numerical)	4		
		1002 PRACTICE	2		
3.	Properties Processes of perfect gas	3.1 Laws of perfect gas: Boyle's law, Charles's law, Avogadro's law, Dalton's law of partial pressure, Gay Lussac law, General gas equation, characteristic gas constant, Universal gas constant	2	10+2(p) Week (4-5-6)	
		3.2 Explain specific heat of gas (C_p and C_v)	1		
		3.3 Relation between C_p & C_v . 3.4 Enthalpy of a gas			
		3.5 Work done during a non-flow process	1		
		3.6 Application of first law of thermodynamics to various non flow process (Isothermal, Isobaric, Isentropic and polytropic process)	5		
		3.6 Solve simple problems on above. 3.7 Free expansion & throttling process.	1		
		1003 PRACTICE	2		
4.	Internal combustion engine	4.1 Explain & classify I.C engine.	1	6 Week(7-8)	
		4.2 Terminology of I.C Engine such as bore, dead centers, stroke volume, piston speed & RPM.	1		
		4.3 Explain the working principle of 2-stroke & 4-stroke engine C.I & S.I engine.	3		
		4.4 Differentiate between 2-stroke & 4-stroke engine C.I & S.I engine.	1		
5.	Gas Power Cycle	5.1 Carnot cycle	1	7+1(p) Week (8-9-10)	
		5.2 Otto cycle.	1		
		5.3 Diesel cycle.	1		
		5.4 Dual cycle.	1		
		5.5 Solve simple numerical	3		
		1005 PRACTICE	1		
6.	Fuels and Combustion	6.1 Define Fuel. 6.2 Types of fuel	1	3 Week (10)	
		6.3 Application of different types of fuel. 6.4 Heating values of fuel.	1		
		6.5 Quality of I.C engine fuels Octane number, Cetane number	1		


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LESSON PLAN

- 1) Subject Code: TH 5
- 2) Subject Title: ENVIRONMENTAL STUDIES
- 3) Semester: 3rd
- 4) Branch: Civil/Comp.Sc/Elect./Mech. Engg.
- 5) No. of Classes / Week: 3P/Week
- 6) Faculty: Amrita Mallick
- 7) After completion of study of environmental studies, the student will be able to:
 1. Gather adequate knowledge of different pollutants, their sources and shall be aware of solid waste management systems and hazardous waste and their effects.
 2. Develop awareness towards preservation of environment.
- 8) Text Book to be referred by students:

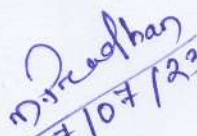
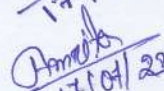
Sl No.	Book	Author	Publication	% of Questions Asked	Year (Edition)	Whether available in Library
i	Fundamental concepts in Environmental Studies	D.D. Mishra	S.Chand & Co-Ltd	90%	2009 1st	YES

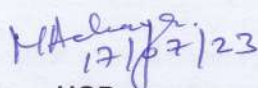
9) Course Coverage Schedule:

Ch. No.	Name of Chapter	Course to be Covered	No of periods Required	Total Class for Chapter/ Week (From-To)	Remarks
01	The Multidisciplinary nature of environmental studies	1.1 Definition, scope and importance, Need for public awareness.	1	2 Week(1)	
		1001 Topic End	1		
02	Natural Resources	2.1 Renewable and non renewable resources: a) Natural resources and associated problems.	1	8 Week(1-4)	
		Forest resources: Use and over-exploitation, deforestation, case studies, Timber extraction mining, dams and their effects on forests and tribal people			
		Water resources:- Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dam's benefits and problems.	1		
		Mineral Resources: Use and exploitation, environmental effects of extracting and using mineral resources.	1		
		Food Resources: World food problems, changes caused by agriculture and over grazing, effects of modern agriculture,	1		

		fertilizers- pesticides problems, water logging, salinity,.			
		Energy Resources: Growing energy need, renewable and nonrenewable energy sources, use of alternate energy sources, case studies	1		
		Land Resources:- Land as a resource, land degradation, man induces landslides, soil erosion, anddesertification.	1		
		2.2Role of individual in conservation of natural resources.	1		
		2.3Equitable use of resources for sustainable life styles. Equitable use of resources for sustainable life styles.	1		
		1002 Topic End			
03	Systems	3.1 Concept of an eco system.	1	5 Week(4-5)	
		3.2 Structure and function of an eco system.			
		3.3 Producers, consumers,decomposers.	1		
		3.4 Energy flow in the eco systems.			
		3.5 Ecological succession.	1		
		3.6 Food chains, food webs and ecological pyramids	1		
		3.7 Introduction, types, characteristic features, structure and function of the following eco system: - Forest ecosystem: - Aquatic eco systems (ponds, streams, lakes,rivers, oceans, estuaries)	1		
		1003 Topic End			
04	Biodiversity and it's Conservation	4.1 Introduction-Definition: genetics, species and ecosystem diversity.	1	3 Week(6)	
		4.2 Biogeographically classification of India.			
		4.3 Value of biodiversity: consumptive use, productive use, social ethical, aesthetic and optinvalues.	1		
		4.4 Biodiversity at global, national and local level.			
		4.5 Threats to biodiversity: Habitats loss, poaching of wild life, man wildlife conflicts.	1		
		1004 Topic End			
05	Environmental Pollution.	5.1Definition Causes, effects and control measures of: a) Air pollution. b) Water pollution. c) Soil pollution d) Marine pollution e) Noise pollution. f) Thermal pollution	1	3 Week(7)	

		effects and control measures of urban and industrial wastes.			
		5.3 Role of an individual in prevention of pollution. Disaster management: Floods, earth quake, cyclone and landslides.	1		
		1005 Topic End			
06	Social issues and the Environment	6.1 Form unsustainable to sustainable development.	1	5 Week(8-9)	
		6.2 Urban problems related to energy.			
		6.3 Water conservation, rain water harvesting, water shed management.	1		
		6.4 Resettlement and rehabilitation of people; its problems and concern	1		
		6.5 Environmental ethics: issue and possible solutions.			
		6.6 Climatechange, globalwarming,acidrain,ozonelayerdepl etion, nuclear accidents and holocaust, case studies.	1		
		6.7 Air (prevention and control of pollution) Act.			
		6.8 Water (prevention and control of pollution) Act.	1		
		6.9 Public awareness.			
		1006 Topic End			
07	Human population and the environment	7.1 Population growth and variation among nations	1	4 Week (9-10)	
		7.2 Population explosion- family welfare program.	1		
		7.3 Environment and humanhealth.	1		
		7.4 Human rights.			
		7.5 Value education			
		7.6 Role of information technology in environment and human health.	1		
		1007 Topic End			


 17/10/23

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 17/07/23
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