

BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK
DEPARTMENT OF MECHANICAL ENGINEERING



LESSON PLAN

SUBJECT: ENGINEERING MATERIAL (TH-3)

FACULTY: RUTUPARNA SAHU

ACCADEMIC SESSION: 2024-25

SEMESTER: 3rd

SEC: A

FACULTY SIGNATURE

HOD SIGNATURE

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DISCIPLINE: Mechanical Engineering	SEMESTER: 3 rd (A)		NAME OF TEACHING FACULTY: RUTUPARNA SAHU
SUBJECT: (TH-3) ENGINEERING MATERIAL	No. of Days/ per week class allotted: 04 periods per week		Semester From Date: 01-07-2024 To Date: 08-11-2024 No. of weeks: 19 weeks
	MON-1Period, TUES-1Period, WED-1Period, FRI-1Period.		
Week	Class Day	No of period available	Theory Topics
1 st	01/07/2024	1	1.1 Material classification into ferrous and non-ferrous category and alloys
	02/07/2024	1	1.2 Properties of Materials: Physical and chemical properties Mechanical properties
	03/07/2024	1	1.3 Performance requirements 1.4 Material reliability and safety
	05/07/2024	1	2.1 Characteristics and application of ferrous materials
	08/07/2024	1	2.3 Alloy steel: Low alloy steel, high alloy steel, tool steel and stainless steel
2 nd	09/07/2024	1	2.3 Alloy steel: Low alloy steel, high alloy steel, tool steel and stainless steel
	10/07/2024	1	2.4 Tool steel: Effect of various alloying elements such as Cr, Mn, Ni, V, Mo
	12/07/2024	1	2.4 Tool steel: Effect of various alloying elements such as Cr, Mn, Ni, V, Mo
	15/07/2024	1	2.4 Tool steel: Effect of various alloying elements such as Cr, Mn, Ni, V, Mo
3 rd	16/07/2024	1	Monthly Class Test
	19/07/2024	1	3.1 Concept of phase diagram

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LESSON PLAN

4 th	22/07/2024	1	3.1 Concept of phase diagram 3.1 cooling curves
	23/07/2024	1	3.1 cooling curves
5 th	24/07/2024	1	3.2 Features of Iron-Carbon diagram with salient micro-constituents of Iron and Steel
	26/07/2024	1	3.2 Features of Iron-Carbon diagram with salient micro-constituents of Iron and Steel
	29/07/2024	1	3.2 Features of Iron-Carbon diagram with salient micro-constituents of Iron and Steel
	30/07/2024	1	3.2 Features of Iron-Carbon diagram with salient micro-constituents of Iron and Steel
6 th	31/07/2024	1	4.1 Crystal defines, classification of crystals, ideal crystal and crystal imperfections
	02/08/2024	1	4.1 Crystal defines, classification of crystals, ideal crystal and crystal imperfections
	05/08/2024	1	4.1 Crystal defines, classification of crystals, ideal crystal and crystal imperfections
	06/08/2024	1	4.2 Classification of imperfection
	07/08/2024	1	4.2 Classification of imperfection
	09/08/2024	1	4.3 Types and causes of point defects: Vacancies, Interstitials and impurities
7 th	12/08/2024	1	4.3 Types and causes of point defects: Vacancies, Interstitials and impurities
	13/08/2024	1	4.4 Types and causes of line defects: Edge dislocation and screw dislocation
	14/08/2024	1	4.5 Effect of imperfection on material properties
8 th	16/08/2024	1	4.6 Deformation by slip and twinning
	20/08/2024	1	4.5 Effect of imperfection on material properties

BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK
DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN

	21/08/2024	1	4.7 Effect of deformation on material properties
	23/08/2024	1	5.1 Purpose of Heat treatment
	27/08/2024	1	5.2 Process of heat treatment
9 th			5.2 Annealing
	28/08/2024	1	5.2 Normalizing
	30/08/2024	1	5.2 Hardening
	02/09/2024	1	5.2 Tempering
	03/09/2024	1	5.3 Surface hardening: Carburizing
10 th	04/09/2024	1	5.3 Surface hardening: Nitriding
	06/09/2024	1	5.4 Effect of heat treatment on properties of steel
	09/09/2024	1	5.5 Hardenability of steel
	10/09/2024	1	6.1 Aluminum alloys: Composition, property and usage of Duralumin, y- alloy
	11/09/2024	1	6.1 Aluminum alloys: Composition, property and usage of Duralumin, y- alloy
	13/09/2024	1	6.2 Copper alloys: Composition, property and usage of Copper-Aluminum, Copper-Tin, Babbitt, Prosperous bronze, brass, Copper- Nickel
	17/09/2024	1	6.2 Copper alloys: Composition, property and usage of Copper-Aluminum, Copper-Tin, Babbitt, Prosperous bronze, brass, Copper- Nickel
12 th			6.3 Predominating elements of lead alloys
	18/09/2024	1	6.3 Predominating elements of lead alloys
	20/09/2024	1	6.3 Predominating elements of Zinc alloys and Nickel alloys
	23/09/2024	1	6.4 Low alloy materials like P-91, P-22 for power plants
13 th	24/09/2024	1	6.4 High alloy materials like stainless steel grades of duplex, super duplex materials etc.
	25/09/2024	1	6.4 High alloy materials like stainless steel grades of duplex, super duplex materials etc.
	27/09/2024	1	7.0 Bearing Material and classification

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LESSON PLAN

14 th	30/09/2024	1	7.1 Classification, composition, properties and uses of copper base, Tin Base, Lead base, Cadmium base bearing materials
	01/10/2024	1	7.1 Classification, composition, properties and uses of copper base, Tin Base, Lead base, Cadmium base bearing materials
15 th	04/10/2024	1	8.0 Spring materials
	07/10/2024	1	8.1 Classification, composition, properties and uses of Iron-base and Copper base spring material
	08/10/2024	1	8.1 Classification, composition, properties and uses of Iron-base and Copper base spring material
	09/10/2024	1	8.1 Classification, composition, properties and uses of Iron-base and Copper base spring material
	14/10/2024	1	9.0 Polymers
16 th	15/10/2024	1	9.1 Properties and application of thermosetting and thermoplastic polymers
	18/10/2024	1	9.1 Properties and application of thermosetting and thermoplastic polymers
	21/10/2024	1	9.1 Properties and application of thermosetting and thermoplastic polymers
17 th	22/10/2024	1	9.1 Properties and application of thermosetting and thermoplastic polymers
	23/10/2024	1	10.0 Composites and Ceramics
	25/10/2024	1	10.0 Composites and Ceramics
	28/10/2024	1	10.0 Composites and Ceramics
	29/10/2024	1	10.0 Composites and Ceramics
18 th	30/10/2024	1	10.0 Composites and Ceramics
	01/11/2024	1	10.0 Composites and Ceramics

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LESSON PLAN

19 th	04/11/2024	1	PYQ Discussion
	05/11/2024	1	PYQ Discussion
	06/11/2024	1	PYQ Discussion
	08/11/2024	1	PYQ Discussion