

ORISSA SCHOOL OF MINING ENGINEERING, KEONJHAR

DEPARTMENT OF AUTOMOBILE ENGINEERING



LESSON PLAN

SUBJECT: ENGINEERING MATERIALS

FACULTY: SONALI ROUT

ACCADEMIC SESSION: 2026-27

SEMESTER: 3RD

Sd/-
H O D (Automobile Engg.)

Discipline:- Automobile Engineering	Semester :- 3rd	Name of the teaching faculty :- SONALI ROUT
Subject Name :- ENGINEERING MATERIAL(TH1)	No. Of Days/Week Class Allotted :- 03Periods/Week (MONDAY– 1period, WEDNESDAY-2 Period)	Semester from Date - 14/07/2026 To Date - 05/11/2026 No. of Weeks: 17
WEEK	CLASS DAY	THEORY TOPICS
1st	15.07.2026	1.1 Engineering materials and their properties: Material classification into ferrous and non-ferrous category and alloys, ,.
	15.07.2026	1.2 Properties of Materials: Physical, Chemical and Mechanical
2nd	20.07.2026	1.3 Performance requirements, Material reliability and safety
	22.07.2026	1.4 Ferrous Materials and alloys: Characteristics and application of ferrous materials
	22.07.2026	1.5 Classification, composition and application of low carbon steel, medium carbon steel and High carbon steel,
3rd	27.07.2026	1.6 Alloy steel: Low alloy steel, high alloy steel, tool steel and stainless steel
	29.07.2026	1.7 Tool steel: Effect of various alloying elements such as Cr, Mn, Ni, V, Mo
	29.07.2026	2.1 Iron – Carbon diagram: Concept of phase diagram and cooling curves,
4th	03.08.2026	2.2 Features of Iron-Carbon diagram with salient micro-constituents of Iron and Steel
	05.08.2026	2.3 Crystal imperfections: Crystal defines, classification of crystals, ideal crystal and crystal imperfections,
	05.08.2026	2.4 Classification of imperfection: Point defects, line defects, surface defects and volume defects,

5th	10.08.2026	2.5 Types and causes of point defects: Vacancies, Interstitials and impurities
	12.08.2026	2.6 Types and causes of line defects: Edge dislocation and screw dislocation
	12.08.2026	2.7 Effect of imperfection on material properties
	17.08.2026	2.8 Deformation by slip and twinning

6th	19.08.2026	2.9 Effect of deformation on material properties. by slip and twinning,
	19.08.2026	2.10 Effect of deformation on material properties
7th	24.08.2026	3.1 Heat Treatment: Purpose of Heat treatment,
	31.08.2026	3.2 Process of heat treatment: Annealing
8th	02.09.2026	3.3 Normalizing, Hardening,
	02.09.2026	3.4 Tempering, stress relieving measures, Surface hardening
9th	07.09.2026	3.5 Carburizing and Nitriding
	09.09.2026	3.6 Effect of heat treatment on properties of steel, Hardenability of steel
	09.09.2026	4.1 Non-ferrous alloys: Aluminum alloys: Composition
10th	21.09.2026	4.2 Property and usage of Duralmin, γ -alloy
	23.09.2026	4.3 Copper alloys: Composition, property
	23.09.2026	4.4 Usage of Copper Aluminum, Copper-Tin, Babbitt,
11th	28.09.2026	4.5 Usage of Phosphorous bronze, brass, Copper- Nickel
	03.10.2026	4.6 Low alloy materials like P-91, P-22 for power plants and other high temperature services.
	09.09.2026	4.7 High alloy materials like stainless steel grades of duplex, super duplex materials etc.
	21.09.2026	4.8 Bearing and spring Materials: Classification, composition, properties and uses of Copper base

12th	23.09.2026	4.9 Tin Base, Lead base, Cadmium base bearing materials.
	23.09.2026	4.10 Classification, composition, properties uses of Iron base
13th	28.09.2026	4.11 Classification, composition, properties uses of Copper base spring material
	30.09.2026	5.1 Polymers: Properties and application of thermosetting
	30.09.2026	5.2 Properties and application of thermoplastic polymers
14th	05.10.2026	5.3 Properties of elastomers.
	07.10.2026	5.4 Composites and Ceramics: Classification, composition FRC
	07.10.2026	5.5 Properties and uses of particulate based and fiber reinforced composites
15th	21.10.2026	5.6 Classification and uses of ceramics
	21.10.2026	REVISION
16th	26.10.2026	REVISION
	28.10.2026	REVISION
	28.10.2026	REVISION

17th	02.11.2026	MOCK TEST
	04.11.2026	MOCK TEST
	04.11.2026	MOCK TEST