Lesson Plan

Name of the Institute:	**C. V. Raman Polytechnic**
Department:	**Mechanical Engineering**
Semester/Division/Branch:	**3rd Sem/ME**
Subject Name with code:	**Engineering Materials (Th-3)**
Total No. of Class (Required):	**60**
Faculty Name:	**Mr. Chandan Sourav Sahoo**

Class No.	Brief Description of the Topic/Chapter to be taught	Remarks
1	Classification of Engineering materials	
2	Material classification into ferrous and non-ferrous category and alloys	
3	Properties of Materials: Mechanical	
4	Properties of Materials: Physical, Chemical	
5	Material reliability and safety	
6	Characteristics and application of ferrous materials	
7	Classification, composition and application of low carbon steel, medium carbon steel and High carbon steel	
8	Classification, composition and application of low carbon steel, medium carbon steel and High carbon steel	
9	Alloy steel: Low alloy steel, high alloy steel	
10	Alloy steel: tool steel and stainless steel	
11	Tool steel: Effect of various alloying elements	
12	Concept of phase diagram	
13	Concept of phase diagram	
14	Concept of cooling curves	
15	Concept of cooling curves	
16	Features of Iron-Carbon diagram	
17	Features of Iron-Carbon diagram with salient micro-constituents of Iron and Steel	

18	Features of Iron-Carbon diagram with salient micro-constituents of Iron and Steel	
19	Crystal defination, classification of crystals, ideal crystal	
20	Crystal Structures of metal	
21	Crystal Structures of metal	
22	Crystal imperfections and its classification, Types and causes of point defects: Vacancies	
23	Types and causes of point defects: Interstitials and impurities	
24	Types and causes of line defects: Edge dislocation	
25	Types and causes of line defects: screw dislocation	
26	Types and causes of surface and volume defect defects	
27	Effect of imperfection on material properties	
28	Deformation by slip and twinning	
29	Deformation by slip and twinning	
30	Effect of deformation on material properties	
31	Introduction to Heat Treatment and its purpose	
32	Process of heat treatment: Annealing	
33	Process of heat treatment: Normalizing, hardening	
34	Process of heat treatment: tempering, stress relieving measures	
35	Surface hardening: Carburizing	
36	Surface hardening: Nitriding	
37	Effect of heat treatment on properties of steel	
38	Hardenability of steel	
39	Introduction to Non-ferrous alloys	
40	Aluminum alloys: Composition and property	
41	Aluminum alloys: Usage of Duralmin, y- alloy.	
42	Copper alloys: Composition, property and usage of Copper- Aluminum, Copper-Tin	
43	Copper alloys: Composition, property and usage of Babbit , Phosperous bronze	
44	Copper alloys: Composition, property and usage of brass, Copper- Nickel	
45	Predominating elements of lead alloys	
46	Predominating elements of Zinc alloys	

47	Predominating elements of Nickel alloys	
48	Low alloy materials like P-91, P-22 for power plants and other high temperature services.	
49	High alloy materials like stainless steel grades of duplex, super duplex materials etc.	
50	Classification, composition, properties and uses of Copper base and Tin Base bearing materials	
51	Classification, composition, properties and uses of Lead base and Cadmium base bearing materials	
52	Classification, composition, properties and uses of Iron-base Spring material	
53	Classification, composition, properties and uses of copper base spring material	
54	Properties and application of thermosetting polymers	
55	Properties and application of thermoplastic polymers	
56	Properties of elastomers	
57	Classification, composition, properties and uses of particulate based composites	
58	Classification, composition, properties and uses of fiber reinforced composites	
59	Classification of ceramics	
60	Uses of ceramics	

Signature of the Faculty

Signature of the H.O.D