

<b>Samrat Ashok Technological Institute, Vidisha</b>			
<i>Department of Mechanical Engineering</i>			
<b>Lecture Plan</b>			
<b>Course Code:</b>	MEC234	<b>Year/Semester :</b>	BE IIIndYear/ 3rdSemeste
<b>Course Name:</b>	Materials Science	<b>Academic Year :</b>	August-2023 / ODD
<b>L – P:</b>	3 – 2	<b>Credit :</b>	4
<b>Course Detail :</b>	Theory and Practical	<b>Term Start Date :</b>	01-08-2023
<b>Course Coordinator:</b>	Dr. Pradeep Singh	<b>Term End Date :</b>	

<b>Academic Year: 2023</b>					
<b>Name of Teacher: Dr. Pradeep Singh</b>					
<b>Subject: Material Science</b>					
<b>Theory/Tutorial: Theory</b>					
<b>Sr. No.</b>	<b>Name Of Unit/Topics</b>	<b>Hrs. Allotted</b>	<b>Actual Date</b>	<b>Teaching Aid Code</b>	<b>Remarks</b>
<b>01</b>	<b>Unit: 1-Crystal Atoms of Solid</b>	<b>1</b>			
	Structure of atom binding in solids metallic	1	03.08.2023		
	Vander walls, ionic and covalent,	1	03.08.2023		
	Space lattice and crystal system arrangement of atoms in BCC, FCC and HCP crystal	1	04.08.2023		
	Space lattice and crystal system arrangement of atoms in BCC, FCC and HCP crystal	1	10.08.2023		
	Miller indices, Directions & Planes	1	10.08.2023		
	Manufacture of Ferrous Metals: Properties types use	1	11.08.2023		
	brief description of the manufacturing processes for iron and steel makin	1	17.08.2023		
	Material Testing Techniques, NDT Methods	1	17.08.2023		
<b>02</b>	<b>Unit: 2- Plastic deformation of Metals</b>				
	Point and line defects in crystals	1	18.08.2023		
	line defects in crystals	1	24.08.2023		
	relation to mechanical properties	1	24.08.2023		
	deformation of metal by slip and twinning stress strain curves of poly crystalline materials viz.	1	25.08.2023		
	Cold and hot working of metals and their effect on mechanical properties	1	31.08.2023		
	annealing of cold worked metals, principles of re-crystallization and grain growth phenomenon	1	31.08.2023		

	fracture in metal and alloys, ductile and brittle fracture	1	01.09.2023		
	fatigue failure, Corrosion & its prevention	1	08.09.2023		
	<b>Unit: 3- Alloy Formation and Binary Diagram</b>				
<b>03</b>	Phase in metal system solution and inter-metallic compounds	1	14.09.2023		
	Hume-Rottery's rules	1	14.09.2023		
	solidification of pure metals and alloy equilibrium diagrams of isomorphous	1	15.09.2023		
	solidification of pure metals and alloy equilibrium diagrams of isomorphous	1	21.09.2023		
	non-equilibrium cooling and coring iron	1	21.09.2023		
	iron carbon equilibrium diagram	1	22.09.2023		
	Eutectic, peritectic and eutectoid system	1	29.09.2023		
	<b>Unit: 4- Heat Treatment of Alloys</b>				
<b>04</b>	Principles of Heat Treatment of Steel	1	05.10.2023		
	TTT curves heat treating processes	1	05.10.2023		
	normalizing, annealing spheroidizing	1	06.10.2023		
	hardening, tempering, case hardening	1	12.10.2023		
	austempering, mar-tempering	1	12.10.2023		
	precipitation hardening process with reference to Al,-Cu alloys	1	13.10.2023		
	precipitation hardening process with reference to Al,-Cu alloys	1	19.10.2023		
	Heat Treatment Cycle	1	19.10.2023		
	<b>Unit: 5- Miscellaneous</b>				
<b>05</b>	Non Ferrous Metals: base alloys, Bronze, Brasses, Duralumin Bearing Metals	1	20.10.2023		
	Non Ferrous Metals: base alloys, Bronze, Brasses, Duralumin Bearing Metals	1	26.10.2023		
	Plastics, Composites and ceramics: Various types, their properties and application	1	26.10.2023		
	Plastics, Composites and ceramics: Various types, their properties and application	1	27.10.2023		
	Semiconductors and insulators: Introduction and applications	1	02.11.2023		
	Smart Materials, Shape memory alloy & Intelligent Materials: Introduction and applications.	1	02.11.2023		
	Smart Materials, Shape memory alloy & Intelligent Materials: Introduction and applications.	1	03.11.2023		
<b>Teaching Aid Code:</b>		Sign of Teacher: _____			
1	White board				
2	L.C.D/overhead PROJECTOR				
3	MODEL&CHART				
4	PPT&VIDEO				
LESSON PLANNING, Rev. no. :00					

#### Reference Books:

1. Principles of Material Science and Engineering, William F.Smith, Tata McGraw-Hill Publications.
2. Engineering Physical Metallurgy, Lakhtin Y., Mir Publisher.
3. Introduction to Engineering materials Tata McGraw-Hill Publications.
4. Engineering materials properties and selection Budinski and Budinski, PHI