LESSON PLAN FOR ACADEMIC SESSION: 2026-27 (WINTER)

Discipline: Metallurgical Engineering	**Semester : 5th**	**Name of the Teaching Faculty : Arpita Jena**
Subject : Material testing Lab	No. of days / week class allotted : 04	Semester From : 20/07/2026 to 05/11/2026 Nos. of Weeks per semester : 15
Week	**Class Day**	**Theory Topics** .
1ST	1st	Tensile Testing of Metallic Materials Determination of yield strength, ultimate tensile strength (UTS), percentage elongation, and fracture behaviour
	2nd	Virtual Lab on Tensile Test and Stress Strain Curve of Steel
	3rd	Compression Testing of Materials Stress-strain behavior of ductile and brittle materials under compressive loading
	4th	Hardness Testing Brinell, Rockwell, and Vickers hardness, Microhardness testing on different metals
2ND	1st	Virtual Lab on Bulk and Micro Hardness Test of Materials
	2nd	Virtual Lab on Instrumented Indentation of Materials
	3rd	Impact Testing (Charpy & Izod Tests)
	4th	Study of toughness and fracture behavior under dynamic loading conditions
3RD	1st	To establish the ductile - brittle transition temperature of the material.
	2nd	To establish the ductile - brittle transition temperature of the material.
	3rd	Virtual Lab on Charpy and Izod Impact Testing of Materials
	4th	Virtual Lab on Charpy and Izod Impact Testing of Materials
4TH	1st	Requirement for Froth Flotation like Frother, Collector and Moderator.
	2nd	Operation of the process
	3rd	Special Testing Techniques
	4th	Special Testing Techniques
5TH	1st	Study of time-dependent deformation of materials under constant load and temperature
	2nd	Study of time-dependent deformation of materials under constant load and temperature
	3rd	Study of time-dependent deformation of materials under constant load and temperature

	4th	Revise
6TH	1st	Virtual Lab on Creep High Temperature Test of Materials
	2nd	Virtual Lab on Creep High Temperature Test of Materials
	3rd	Virtual Lab on Creep High Temperature Test of Materials
	4th	Tabulation
7TH	1st	Obserbation and calculation
	2nd	Obserbation and calculation
	3rd	Fatigue Testing
	4th	Fatigue Testing
8TH	1st	Obserbation and calculation
	2nd	Obserbation and calculation
	3rd	Practice
	4th	Observation and Calculation
9TH	1st	Observation of crack initiation and propagation under cyclic loading
	2nd	Observation of crack initiation and propagation under cyclic loading
	3rd	Observation of crack initiation and propagation under cyclic loading
	4th	Observation
10TH	1st	Observation
	2nd	Calculations
	3rd	Virtual Lab on Fatigue Cyclic Load Test of Materials
	4th	Virtual Lab on Fatigue Cyclic Load Test of Materials
11TH	1st	Virtual Lab on Fatigue Cyclic Load Test of Materials
	2nd	Virtual Lab on Fatigue Cyclic Load Test of Materials
	3rd	Virtual Lab on Bulk and Micro Hardness Test of Materials
	4th	Virtual Lab on Bulk and Micro Hardness Test of Materials

12th	1st	Observation
	2nd	Observation
	3rd	Calculation
	4th	Requirement for Froth Flotation like Frother, Collector and Moderator.
13th	1st	Requirement for Froth Flotation like Frother, Collector and Moderator.
	2nd	Observation
	3rd	Observation
	4th	Observation
14th	1st	Virtual Lab on Creep High Temperature Test of Materials
	2nd	Virtual Lab on Creep High Temperature Test of Materials
	3rd	Virtual Lab on Creep High Temperature Test of Materials
	4th	Virtual Lab on Fatigue Cyclic Load Test of Materials
15th	1st	Observation
	2nd	Calculation
	3rd	Revision
	4th	Revision

Prepared by
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