

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

Discipline: Metallurgical Engineering	Semester : 3rd	Name of the Teaching Faculty : Rueigved Mahanand
Subject : NDT Lab	No. of days / week class allotted : 04	Semester From : 01/07/2026 to 05/11/2026 Nos. of Weeks per semester : 15
Week	Class Day	Theory Topics
1 ST	1 st	Visual Inspection (VI) – Surface defects detection using magnifiers, borescopes, and optical instruments.
	2 nd	Surface defects detection using magnifiers
	3 rd	Surface defects detection using borescopes
	4th	Surface defects detection using optical instruments
2 ND	1 st	Observations and Experiment
	2 nd	Liquid Penetrant Test (LPT) process
	3 rd	Liquid Penetrant Test (LPT) process
	4th	Types of Liquid used and other Chemicals used
3 RD	1 st	Detection of surface defects in ferrous and non-ferrous metals
	2 nd	Detection of surface defects in ferrous and non-ferrous metals
	3 rd	Observation and Experiment
	4th	Observation and Experiment
4 TH	1 st	Magnetic Particle Testing (MPT):- Inspection of cracks and surface discontinuities in ferromagnetic materials
	2 nd	Magnetic Particle Testing (MPT) process
	3 rd	Inspection of cracks
	4th	Surface Preparation
5 TH	1 st	Surface discontinuities

	2 nd	Observations and Experiment
	3 rd	Ultrasonic Testing (UT)
	4 th	Ultrasonic Testing (UT) process and Parameters
6 TH	1 st	Sample Preparation
	2 nd	Ultrasonic Flow Detector operation
	3 rd	Evaluation of internal defects using ultrasonic waves
	4 th	Measuring the defects
7 TH	1 st	Basics of ultrasonic waves and transducers used in Ultrasonic Testing (UT).
	2 nd	Basics of ultrasonic waves and transducers used in Ultrasonic Testing (UT).
	3 rd	Basics of ultrasonic waves and transducers used in Ultrasonic Testing (UT).
	4 th	Basics of ultrasonic waves and transducers used in Ultrasonic Testing (UT).
8 TH	1 st	Radiographic Testing (RT)
	2 nd	Radiographic Testing (RT)
	3 rd	Introduction to X-ray & Gamma-ray Radiographic Testing.
	4 th	Introduction to X-ray & Gamma-ray Radiographic Testing.
9 TH	1 st	Introduction to X-ray & Gamma-ray Radiographic Testing.
	2 nd	Properties and Production of X-Ray
	3 rd	Properties and Production of X-Ray
	4 th	Properties and Production of X-Ray
10 TH	1 st	Properties and Production of Gama-Ray
	2 nd	Properties and Production of Gama-Ray
	3 rd	Properties and Production of Gama-Ray
	4 th	X-ray and gamma-ray inspection for defect detection in welded joints

11 TH	1 st	Preparation of Welded Joints
	2 nd	Preparation of Welded Joints
	3 rd	Preparation of Welded Joints
	4 th	Preparation of Welded Joints
12 th	1 st	Observation and Experiment
	2 nd	Observation and Experiment
	3 rd	Eddy Current Testing (ECT)
	4 th	Eddy Current Testing (ECT) basic concepts and its process
13 th	1 st	Eddy Current Testing (ECT) basic concepts and its process
	2 nd	Eddy Current Testing (ECT) basic concepts and its process
	3 rd	Identification of material defects and surface cracks using electromagnetic induction
	4 th	Identification of material defects and surface cracks using electromagnetic induction
14 th	1 st	Concept of Electromagnetic Induction
	2 nd	Concept of Electromagnetic Induction, Self Induction and Mutual Induction
	3 rd	Concept of Electromagnetic Induction, Self Induction and Mutual Induction
	4 th	Observation and Experiment
15 th	1 st	Case study on NDT applications in aerospace, automotive, and manufacturing.
	2 nd	Case study on NDT applications in aerospace, automotive, and manufacturing.

	3 rd	Case study on NDT applications in aerospace, automotive, and manufacturing.
	4th	Case study on NDT applications in aerospace, automotive, and manufacturing.

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20/07/26

Prepared by
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20/07/26

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