



GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering (Minor/Honours Degree Syllabus)

Subject Code : N115AR01

Subject Name : NDT Techniques - II (UT)

WEF Academic Year :	2025-26
Semester :	5
Category of the Course :	Compulsory

Course Scheme :

Teaching Scheme			Total Credits	Assessment Pattern and Marks				Total Marks
L	T	PR	C	Theory		Practical		
				ESE (E)	PA(M)	ESE (V)	PA (I)	
02	00	02	03	70	00	30	00	100

Course Content :

Unit No	Course Content	No. of Hours	% of Weightage	Mapped CO
1	Basic principles of sound propagation, types of sound waves, Principle of Ultrasonic Testing (UT), methods of UT, their advantages and limitations, Piezoelectric Material, Various types of transducers/probe, Calibration methods, use of standard blocks, inspection methods, a technique for normal beam inspection, flaw characterization technique, ultrasonic flaw detection equipment, modes of display.	12	43	1, 2
2	Characterization of defects in castings, forgings, rolled and welded products by UT. Thickness determination by ultrasonic method. Study of A, B and C scan presentations. Immersion testing, advantage, limitations; Acoustic Emission Testing (AET): Principles of AET and techniques.	16	57	1, 2
Total		28	100	

Course Outcome :

No	Course Outcomes	RBT Level*
01	To learn the principles, working and applications of Ultrasonic Testing.	UN/AP/AN
02	Apply Ultrasonic Testing NDT methods for a given problem and identify defects.	AP/AN/EL

*RM: Remember, UN: Understand, AP: Apply, AN: Analyze, EL: Evaluate, CR: Create



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Reference Books :

1. Practical Non-destructive Testing – Baldev Raj, T. Jayakumar & M. Thavasimuthu, 3rd Edition, Reprint 2019, Norosa Publishing House, New Delhi.
2. Treatise on Non-destructive Testing, Vol. 1, 2 & 3 Edited by Dr. E.G. Krishnadas Nair, NDT Centre, HAL, Bangalore
3. Non-destructive test and evaluation of materials Jayamangal Prasad; C G Krishnadas Nair 2nd Edition, 2011, Tata McGraw-Hill, New Delhi
4. Ultrasonic Testing of Materials, J. Krautkramer & Herbert Krautkramer, 2nd Edition, 1990, Springer.
5. Ultrasonic Methods of Testing Materials, Leszek Filipczynski, Zdzislaw Pawlowski & Jerzywehr, Butterworths, London.
6. Non-destructive testing, R. Halmshaw 2nd Edition, 1991, Butterworth-Heinemann Ltd.
7. Non Destructive Testing, Louis Cartz, 1995, ASM International, USA
8. Non-destructive testing, Warren J. McGonnagle, Gordon Breach, Science Publishers Ltd.
9. ASNT Level-II Study Guide

List of Open-Source Software/learning website :

1. <http://nptel.iitm.ac.in/>
2. <https://www.nde-ed.org/>
