GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering (Minor/Honours Degree Syllabus)

Subject Code : N114AR01

Subject Name : NDT Techniques - I (VI, LPT, MPT)

WEF Academic Year :	2024-25
Semester :	4
Category of the Course :	Compulsory

Course Scheme :

Teaching Scheme			Total Credits	Assessment Pattern and Marks				Total Marks
				Theory		Practical		
L	T	PR	C	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	Defects in casting, forging, heat-treated and other products namely rolled/machined, welded products etc., Causes of defects, Defects: reason for rejection of product. Testing: Need of Testing, Fundamental of destructive and non-destructive testing. Scope and limitations of NDT.	06	22	3
2	Visual inspection methods, Different visual inspection aids. Leak and pressure testing: Definition of a leak and its types, Principle, Various methods of pressure and leak testing, application, and limitation.	06	22	1, 2
3	Dye penetrant Testing/ liquid penetrant testing: Principle, Procedure, characteristics of penetrant, types of penetrants, penetrant testing materials, fluorescent penetrant testing method– sensitivity, application, and limitations.	08	28	1, 3
4	Magnetic Particle Testing: Important terminologies related to magnetic properties of material, Principle, magnetizing technique, procedure, equipment, fluorescent magnetic particle testing methods, sensitivity, application, and limitations.	08	28	1, 3
	Total	**28**	**100**	

Course Outcome :

After Completion of the Course, Student will able to :

No	Course Outcomes	RBT Level*
01	To learn the principles, working and applications of Visual inspection, liquid penetrant testing and magnetic particle testing.	UN/AP/AN
02	Inspect different metals and alloys by visual inspection method.	AP/AN/EL
03	Apply liquid penetrant testing and magnetic particle 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

Reference books :

1. Practical Non-destructive Testing – Baldev Raj, T. Jayakumar & M. Thavasimuthu, 3rd Edition, Reprint 2019, Norosa Publishing House, New Delhi.
2. Treaties 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. Non-destructive testing, R. Halmshaw 2nd Edition, 1991, Butterworth-Heinemann Ltd.
5. Non Destructive Testing, Louis Cartz, 1995, ASM International, USA
6. Non-destructive testing, Warren J. McGonnagle, Gordon Breach, Science Publishers Ltd.
7. ASNT Level-II Study Guide

List of Open-Source Software/learning website :

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

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