GUJARAT TECHNOLOGICAL UNIVERSITY

Syllabus for Bachelor of Vocation (B.Voc), 5th Semester
Branch: Production Technology
Subject Name: Quality Inspector-forged, casted or machined components (CSC/ Q 0601) Level-4
Subject Code: 21150307

Type of course: Elective

Prerequisite: Basic Knowledge of Material Science and Metallurgy

Rationale: To impart comprehensive knowledge about differentiate various defect types and select the appropriate non-destructive testing methods and their industrial applications.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE (E)	PA (M)	ESE (V)	PA (I)	
0	0	15	15	0	0	100	100	200

Sr. No.	Topic	No. of Hours	Weightage %
01	**Introduction:** Fundamentals of and introduction to destructive and non-destructive testing. Scope and limitations of NDT, Visual examination methods, Different visual examination aids.	20	10
02	**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	60	30
03	**Magnetic Particle Testing:** Important terminologies related to magnetic properties of material, principle, magnetizing technique, procedure, equipment, fluorescent magnetic particle testing method, sensitivity, application and limitations	60	30
04	**Ultrasonic Testing:** Basic principles of sound propagation, types of sound waves, Principle of UT, methods of UT, their advantages and limitations, Piezoelectric Material, Various types of transducers/probe, Calibration methods, use of standard blocks, technique for normal beam inspection, flaw characterization technique, defects in welded products by UT, Thickness determination by ultrasonic method, Study of A, B and C scan presentations, advantage, limitations acoustic emission testing – principles of AET and techniques	60	30

Course Outcome:

Sr. No.	CO statement	Marks % weightage
CO 1	Demonstrate the concepts of non-destructive testing methods.	20
CO 2	Make use of different methods of nondestructive testing	60
CO 3	Estimate the types of defect and size of defects.	20

Reference Books:

1. Practical Non-destructive Testing – Baldev Raj, T. Jayakumar & M. Thavasimuthu, 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. Quality Inspector - forged, casted or machined components (CSC/ Q 0601) Level-4, Qualification Pack: CSC/ Q 0601

List of Open Source Software/learning website:
https://nptel.ac.in