

Centre for Continuing Education (CCE), SVNIT, Surat
Value Added Certificate Course
Non-Destructive Testing
Course Content

- **INTRODUCTION TO NON DESTRUCTIVE TESTING**
- **MECHANICAL BEHAVIOR OF MATERIALS**
Elements of plastic deformation - work hardening, recovery, recrystallization and grain growth, Introduction to fracture mechanics and modes of failures, types of fractures in materials and their identification, Basic Principles and different types of corrosion, Testing for corrosion.
- **VISUAL TESTING**
Fundamentals of Visual Testing, Visual perception, direct and indirect methods - mirrors, magnifiers, boroscopes, fibrosopes, Fundamentals of Photoelasticity, testing of ferrites, metallic materials including raw materials and welds - Inspection objectives, inspection checkpoints, sampling plan, inspection pattern etc. classification of indications for acceptance criteria; Codes, Standards and Specifications (ASME,ASTM,AWS etc.).
- **LIQUID PENETRANT TESTING**
introduction to Penetrant testing, Penetrants and their application, Excess penetrant removal, Drying, developing, inspection, equipments and control checks
- **MAGNETIC PARTICLE TESTING**
Theory of magnetism - ferromagnetic, paramagnetic materials, Magnetization by means of direct and alternating current, surface strength characteristics, Depth of penetration factors, Direct pulsating current typical fields, advantages, Circular magnetization techniques, field around a strength conductors, right hand rule field, Prods technique, current calculation, Longitudinal magnetization.
- **ULTRA SONIC TESTING**
Nature of sound waves, wave propagation, modes of sound wave generation, Various methods of ultrasonic wave generation, Principle of pulse echo method, through transmission method, resonance method, advantages and limitations, contact testing, immersion testing, couplants.
- **EDDY CURRENT TESTING**
Principle, Instrumentation for ECT, ECT Techniques, Sensitivity, Application of ECT, Advantages and Limitations.
- **RADIOGRAPHY**
Principle, Radiation sources, Attenuation in the specimen, Radiographic imaging, Inspection Techniques, Application and limitations, Safety.
- **OTHER TECHNIQUES FOR NDT**
Acoustic emission technique, Thermography, Holography technique.