

## Course Objective

- To make the students aware about welded joints, defects and their inspection techniques along with welding procedure specification and welder performance qualification

## Contents

Introduction and classification: weld joints, weld defects, testing and inspection techniques of weldments (3 hrs)

Destructive Testing of weldments: hardness tests; tensile tests for groove and fillet welds-full section, reduced section and all-weld- metal tensile tests; root, face and side bend tests; fillet weld break tests; (4 hrs)

Non-Destructive Testing of Weldments: Visual inspection; Dye-penetrant inspection; Magnetic particle inspection; Ultrasonic Inspection; Radiographic Inspection, X-ray tubes, gamma-ray sources, defect discernibility; Eddy current inspection; Leak tests (7 hrs)

Welding Procedure Specification (WPS), Procedure Qualification Record (PQR), Welder Performance Qualification (WPQ) (4 hrs)

Practical training on following (through industrial visits and in-house facilities):

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|--|---------|
| i. Preparation of weldment;                            | (4 hrs) |
| ii. Tensile testing;                                   | (2 hrs) |
| iii. Hardness Testing;                                 | (2 hrs) |
| iv. Free and guided bend test bend test;               | (2 hrs) |
| v. Dye Penetrant test;                                 | (2 hrs) |
| vi. Ultrasonic Inspection/Magnetic Particle Inspection | (6 hrs) |

## Duration

12 weeks

## Faculty

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### Skill Set Gain / Employability Opportunity

1. Students will be able to carry out destructive and non-destructive inspection of welded joint.

2. The students will be acquainted with welding procedure specification and welder performance qualification



**J. C. Bose University of Science and Technology, YMCA, Faridabad**  
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