

## Level III Ultrasonic Testing Course Outline

### I. ASNT Certification

- Levels of certification
- Responsibilities of certification levels

### II. Review of Basic NDT Methods

- Acoustic Emission, Magnetic Particle, Liquid Penetrant, Radiography, Neutron Radiography, Thermography, Leak Testing, Visual Testing, Predictive Maintenance

### III. Principles of Ultrasonic Testing

- Principles of acoustics
- Sound wave propagation
- Interfaces
- Beam spread, Fresnel and Fraunhofer effects

### IV. UT Equipment and Materials

- Pulse-Echo instrumentation
- Digital thickness instrumentation
- Transducer operation and theory
- Couplants
- Cables
- Calibration blocks

### V. Techniques and Calibrations

- Contact UT – Straight beam, Angle beam, Surface and Plate waves, multiple transducers
- Immersion UT
- Calibration techniques (Area, Distance, FBH, SDH, IIW, Inspection & equipment calibration)

### VI. UT Evaluation of Base Material Product Forms

- Ingots, Forgings, Welds, Casting, Bars, Rods, Pipes, Tubes, Bonded structures

### VII. Codes and Procedures

- Multiple ASTM Standards
- AWS D 1.1