



## Technical Diagnostic Services Training Institute

### Infrared Training for Level I Certification 36 Hours

#### **Who should attend?**

Designed for students looking for Level I Infrared Thermography Certification. ASNT Standard CP-105 and SNT-TC-1A Students requires high school diploma or equivalent. Student is required to capture radiance in field of view.

#### **Course Description:**

Students will learn how to properly use infrared cameras to calculate temperature measurements. Students will learn by learning infrared thermographic interpretation through class lessons and supervised in-field examples. Many thermography applications will be covered throughout the class.

This is a five-day course for the application of qualitative thermal imaging for P/PM, Condition Assessment, Condition Monitoring, Quality Assurance, Forensic Investigations, and Building Sciences.

This course covers infrared theory, heat transfer concepts, equipment operation and selection, standards compliance, image analysis and report generation.

Students are trained to identify and document thermal patterns caused by improper design, workmanship or material failure. Specific applications include: electrical distribution systems, mechanical systems, steam systems, refractory systems, underground piping, active thermography, building envelopes and flat roofs.

Students are encouraged to bring their own imager for individualized training or to learn how to use it more effectively.

TDSTIs' Level I - as a Qualitative Infrared Course - (ASNT Standard CP-105 and SNT-TC-1A requires High School diploma or equivalent) "student is required to capture radiance in field of view". Successful completion of the Infrared Training for Level I Certification course will receive Level I Thermographer Certification.

**TDSTI**

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### Course Outline

1. **Basic Infrared Theory**
  - a. Heat transfer
  - b. Electromagnetic spectrum
  - c. Emittance, reflectance, and transmittance
  - d. Atmospheric transmission
  - e. IR wavebands and lens materials
  - f. Active thermographic inspection techniques
  - g. Safety practices
  - h. Confirming exceptions
  - i. Data recording
  - j. Standards for inspections
2. **Infrared Equipment**
  - a. Selection criteria
  - b. Range and level settings
  - c. Class demonstrations
  - d. Manufacturer equipment presentations (optional)
  - e. Hands-on use in class
3. **Infrared Electrical System Inspections**
  - a. Theory and thermal signatures of problems
  - b. Seven types of detectable defects
  - c. Conducting an inspection
  - d. Safety practices
  - e. Confirming exceptions
  - f. Data recording
  - g. Standards for inspections
4. **Infrared Mechanical System Inspections**
  - a. Theory and thermal signatures of problems
  - b. Rotating equipment
  - c. Power transmission components
  - d. High-temperature insulation
  - e. Steam systems, process equipment, heat exchangers, storage vessels
5. **Infrared Roof Inspections**
  - a. Theory and component construction
  - b. Insulation and material characteristics
  - c. Inspection techniques
    - i. ground based / aerial
  - d. Weather variables and influences
  - e. Required site conditions
  - f. Safety practices
  - g. Thermal signatures of latent moisture
  - h. Verification of data
  - i. Data recording
  - j. Alternate methods of moisture detection
  - k. Standards for inspections
6. **Infrared Building Inspections**
  - a. Theory and component construction
  - b. Insulation and material characteristics
  - c. Inspection techniques
    - i. interior / exterior
  - d. Weather variables and influences
  - e. Required site conditions
    - i. creating sufficient Delta T
  - f. Thermal signatures
  - g. Other tools
  - h. Verification of data
  - i. Data recording
  - j. Standards for inspections

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