Infraspection Institute®
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# DISTANCE LEARNING
# INFRARED INSPECTIONS FOR WEATHERIZATION PROFESSIONALS

## 1. Course Overview

- Learning objectives
- Course terminology
- Weatherization defined
- Verification of weatherization retrofit work practices

## 2. Basic Infrared Theory and Heat Transfer

- Heat transfer
- Conduction, convection, and radiation
  - variables affecting rate of heat transfer
- Conductors and insulators
- Electromagnetic spectrum
- Discovery of infrared spectrum
- Emittance, reflectance, and transmittance
- Atmospheric transmission
- IR wavebands, imaging systems, and lens materials

## 3. Infrared Equipment

- Selection criteria
- Range and level settings
- Image and data recording
- Self-directed learning activities for hands-on use

## 4. Infrared Building Inspections

- Theory and component construction
- Applications of thermal imaging for weatherization
  - initial building condition assessment, project monitoring, final inspection
- Insulation and material characteristics
- Building energy loss
  - conduction and convection
- Air leakage
  - air infiltration and exfiltration
- Inspection techniques
  - interior / exterior
- Weather variables and influences

4. **Infrared Building Inspections** *(continued)*

- Error sources
  - wind, solar loading, surface moisture, building construction, building contents
- Required site conditions
  - creating sufficient Delta T
- Thermal signatures
  - missing and damaged insulation
  - air leakage
  - thermal bypasses
  - latent moisture
  - pest damage
- Building Science
- Mold detection
- Inspection of building subsystems
- Verification of data
- Verification tools
- Data recording