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

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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