

# LEVEL 1 CERTIFIED INFRARED THERMOGRAPHER® COURSE OUTLINE

1

## Equipment & Data Acquisition

- How your infrared camera works
- Spectral band
- Temperature measurement range
- Lens selection
- Optical resolution
- Operation of equipment
- Accessories
- Camera controls
- ISO 18434-1
- Safe data acquisition
- Getting a good image
- Image composition
- Image clarity (optical focus)
- Thermal tuning (range, level and span)
- Palette selection
- Emissivity determination
- Error source recognition, prevention or control
- Recognizing and dealing with radiation (reflections, reflected apparent temperature)
- Recognizing and dealing with convection
- Recognizing and dealing with conduction
- Effects of incorrect emissivity
- Camera calibration
- Environmental and operational conditions
- Data and image storage

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## Reporting & Documentation

- Report writing
- Thermographers 'and end-users' responsibilities

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## Principles of Infrared Thermography (IRT)

- Heat and heat transfer
- Conduction fundamentals
- Conductivity/resistance
- Convection fundamentals
- Radiation fundamentals
- Electromagnetic spectrum
- Atmospheric transmission
- IR wavebands and lens materials
  - Stefan-Boltzmann Law
- Emittance, reflectance and transmittance
- Emissivity
- Factors affecting emissivity

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## Image Processing

- Temperature measurement
- ISO 18434-1
- Non-contact thermometry
- Comparative quantitative thermography
- Comparative qualitative thermography
- Environmental influences
- Camera measurement tools
- Measurement tools
- Palette selection
- Level and span adjustment
- Distance (atmospheric) correction
- Image montage
- Temperature trending
- General image interpretation guidelines

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## Condition Monitoring Applications

- Machinery engineering principles (components and construction)
- Typical machinery failure modes and mechanisms and their associated thermal signatures
- Severity assessment and acceptance criteria (engineering codes and standards)
- Safety issues
- ISO 18434-1

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## General Applications

- Discussion on general industrial applications
- Active and passive thermography



## Condition Monitoring Programme Design

- General principles
- Reference temperatures
- Baseline temperatures



## Condition Monitoring Programme Management

- Safety management
- Equipment management
- Database management



## Condition Monitoring Programme Implementation

- Overview
- Safe systems of work



## Diagnostic & Pronostics

- Basic principles of diagnostics (ISO 13379)



## Training examination

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## How to register

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To see our course schedule visit:

**[www.ipilearning.com.au](http://www.ipilearning.com.au)**

Register directly on the training website or complete the registration form included in this information pack and return it by email to:

**[training@ipi-inst.com.au](mailto:training@ipi-inst.com.au)**

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## For further information

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or to find out about our course schedules and locations please contact us.

### Melbourne

12/634-644 Mitcham Road

Vermont VIC 3133

Phone: 1300 781 701 (Australia)

+61 3 9872 5055 (International)

Email: [training@ipi-inst.com.au](mailto:training@ipi-inst.com.au)

Web: [infraredtraining.com.au](http://infraredtraining.com.au)



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