



**LEARNING**  
FOR PREDICTIVE MAINTENANCE TECHNOLOGIES

LEVEL 1  
CERTIFIED  
INFRARED  
THERMOGRAPHER®

PRACTICAL TRAINING FOR REAL WORLD THERMOGRAPHY

# WHY CHOOSE IPI LEARNING?

IPI Learning trains employees of large international corporations and standalone operators in cities across multiple countries, providing the most comprehensive and progressive predictive maintenance training in the world. As a one stop training centre for predictive maintenance technologies, IPI Learning course subjects include:



Infrared  
Thermography



Infrared Windows  
& Electrical Safety



Condition  
Monitoring



Vibration



Alignment



Airborne Ultrasound

“ Our training courses are designed to provide you with the skills you need to perform your surveys with confidence, competence and most importantly, results. ”

*Brenton Ward, IPI Learning Trainer*

IPI Learning has been providing expert predictive maintenance services for almost 20 years.

- ✓ Training
- ✓ Sales support
- ✓ Professional consultancy to industry

Our Trainers have decades of real world experience and are qualified in training & assesment (TAE 40110) in Australia.





## LEVEL 1 CERTIFIED INFRARED THERMOGRAPHER®

Designed for the application  
of Qualitative Thermal  
Imaging for:

- ✓ **Predictive Maintenance**
- ✓ **Condition Assessment**
- ✓ **Condition Monitoring**
- ✓ **Quality Assurance**
- ✓ **Forensic Investigations**
- ✓ **Building Sciences**

## Course overview

### 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.

## Who should apply?

- Electrical Contractors
- Building & Pest Inspectors
- Energy Auditors
- Plant Maintenance Personnel
- Reliability Engineers
- All thermographers

## Entry criteria

None

## Further study

**LEVEL 2** Certified Infrared Thermographer®

**LEVEL 3** Certified Infrared Thermographer®

**LEVEL 4** Master Thermographer®

## Inclusions (Fees)

Course tuition includes: all course presentations, Student Reference Manual, trial version of Exception Data Management & Report Generation Software® and the Infraspection Institute Certified Infrared Thermographer® exam (Flexible Learning and Classroom Learning only, extra exam fees will apply for Distance Learning). This course is fully catered.

## Student support



**Comprehensive websites**  
[Infraredtraining.com.au](http://Infraredtraining.com.au)  
[Cita.org.au](http://Cita.org.au)



**Onsite consulting & mentoring**  
Program setup  
Program audits  
Onsite training and mentoring



**Free advice from expert thermographers**  
Phone +61 3 9872 5055  
Email [sales@ipi-inst.com.au](mailto:sales@ipi-inst.com.au)  
Web forum [cita.org.au](http://cita.org.au)

# TYPES OF TRAINING



## Classroom Learning



*Undertake your training in a classroom setting dedicated to your learning.*

- Freedom from the constant distractions of the office
- Opportunity to meet with other professionals from around the world
- Ability to test drive several types of infrared cameras

**Open enrolment courses are regularly held in Melbourne and at other locations throughout Australia.**



## Flexible Learning



*Complete the theoretical portion of your certification in your own time and enjoy the interactive benefits of classroom learning for the practical experiments & equipment operation.*

### **Perfect for people who:**

- Prefer to gain hands on experience under the guidance of a practising thermographer
- Don't have time to spend 5 days in a classroom
- Are self-employed contractors who need to study after hours or to juggle training with work commitments
- Are essential employees who need the flexibility to study in between doing their daily tasks at work



## Distance Learning



*Take your infrared training wherever and whenever it's convenient for you. With IPI Learning's Distance Learning, you get the same quality course content for which we are famous.*

- We utilize state-of-the-art web servers and dynamic multimedia resources to provide a unique, quality educational experience
- Distance Learning Courses are divided into narrated one-hour online infrared lecture training units allowing you to work at a pace that's convenient for you

# LEVEL 1 CERTIFIED INFRARED THERMOGRAPHER®



## Certification & Recognition



### INFRAINSPECTION INSTITUTE

This program is compliant with international standards ISO-18436 and ASNT SNT-TC-1A. This course is also approved by the InterstNational Association of Certified Home Inspectors and meets the training requirements for their Infrared Certified professional designation and logo.



### CERTIFIED INFRARED THERMOGRAPHER'S ASSOCIATION (CITA)

CITA provides a secondary certification program to endorse your skills and training.

Our program ensures that you meet the requirements set forth by the following standards:

- SNT-TC-1A
- ISO 18436

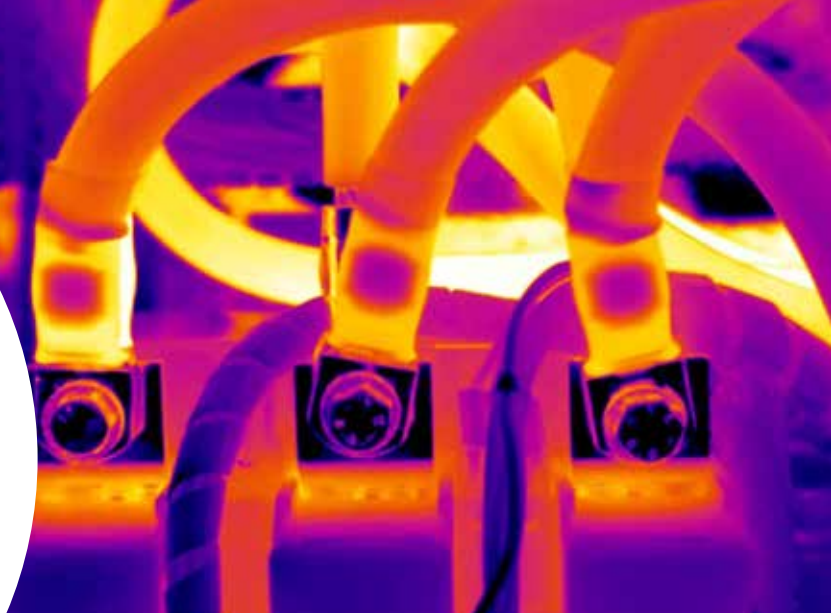


### AUSTRALIAN INSTITUTE OF NON DESTRUCTIVE TESTING (AINDT)

At the completion of the course students may also apply for 3rd party certification through the AINDT.

Course name	Level 1 Certified Infrared Thermographer®
Course code	CIT1
Entry requirements	N/A
Study mode	Classroom Learning, Flexible Learning, Distance Learning, Onsite Learning, Refresher Course
CLASSROOM Learning Course Times	<b>5 Days (36hrs)</b> Monday-Thursday 8.00am - 5.00pm Friday 8.00am - Noon <i>*Times may vary for some locations</i>
FLEXIBLE Learning Course Times	<b>Online Learning (20hrs)</b> <b>Classroom Learning 2 days (16hrs)</b> Wednesday 8.00am - 5.00pm Thursday 8.00am - 5.00pm <i>*Times may vary for some locations</i>
DISTANCE Learning	Course Times: 32 hours online learning
Locations	Melbourne, Sydney, Brisbane, Perth, New Zealand
Trainers	Brenton Ward Garry Ward
Assessment	Written exam, Practical assessment
Fees	AUD \$2,995.00 + GST* (Classroom Learning) AUD \$2,795.00 + GST* (Flexible Learning) AUD \$2,995.00 + GST* (Distance Learning)

# LEVEL 1 CERTIFIED INFRARED THERMOGRAPHER® COURSE OUTLINE



	Monday	Tuesday	Wednesday	Thursday	Friday
7.45am	Registration	Optional hands-on operation of images			Questions & Course Wrap up
8.00am	Course Overview & Ground rules	Image Operation & Selection	Rotating Equipment Theory Detectable Defects Conducting Inspections	Structural Inspectors Theory High/Low Temp Apps Detectable Defects Conducting Inspections Energy Loss Radiation Convection Conduction Safety Practices Data Confirmation Standards & Reporting	
9.00am	Introductions		Energy Loss Radiation Convection Conduction Safety Practices Data Confirmation Standards & Reporting		
10.00am	Overview of IR Applications		Electrical Systems Inspections Theory Detectable Defects Conducting Inspections		Power Transmission & Alignment
11.00am	Heat Transfer Concepts		Steam & Fluid Systems		
noon	Lunch				
1.00pm	Heat Transfer Concepts	Electrical Systems Inspections Safety Practices Data Confirmation Standards & Reporting	Active Thermography Theory & Applications	Insulated Roof Inspections Theory Detectable Defects Conducting Inspections Safety Practices Data Confirmation Standards & Reporting	
2.00pm	Basic Infrared Theory & Thermal Imaging Systems		Recording Images & Producing Hardcopy		
3.00pm		Nine Steps to Setup an IR Program	Generating a Qualitative IR Report		
4.00pm	Workshop E, R & T Emittance, Reflectance & Transmittance	Workshop Image Operation	Workshop Standards & Reporting Using Data Management & Reporting Software	Workshop Introduction to Quantitative Analysis	
5.00pm	End of Day				

# 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

2

## Reporting & Documentation

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

3

## 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

4

## 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

5

## 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

6

## 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 & Prognostics

- Basic principles of diagnostics (ISO 13379)



## Training examination

## How to register

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)**

## For further information

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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