

## Course guide

# 205050 - 205050 - Infrared Thermography for Building Diagnostics

Last modified: 19/04/2023

**Unit in charge:** Terrassa School of Industrial, Aerospace and Audiovisual Engineering  
**Teaching unit:** 758 - EPC - Department of Project and Construction Engineering.

**Degree:** MASTER'S DEGREE IN INDUSTRIAL ENGINEERING (Syllabus 2013). (Optional subject).  
MASTER'S DEGREE IN AERONAUTICAL ENGINEERING (Syllabus 2014). (Optional subject).  
MASTER'S DEGREE IN SPACE AND AERONAUTICAL ENGINEERING (Syllabus 2016). (Optional subject).

**Academic year:** 2023    **ECTS Credits:** 3.0    **Languages:** English

### LECTURER

**Coordinating lecturer:** Blanca Tejedor

**Others:**

### TEACHING METHODOLOGY

The teaching methodology is focused on performing some tests and practices in relation with the concepts exposed over the course. The main aim is to establish a useful guideline for the student in order to detect anomalies and determine thermal properties of building elements. Like this, the student may propose improvements and solutions regarding building refurbishment.

### LEARNING OBJECTIVES OF THE SUBJECT

### STUDY LOAD

Type	Hours	Percentage
Self study	48,0	64.00
Hours large group	27,0	36.00

**Total learning time:** 75 h



## CONTENTS

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### Module 1: Introduction to Infrared thermography

**Description:**

- ? Energy Audit Process
- ? What is IRT? Definition and Applications
- ? Regulatory Framework: EN 13187:1998, RESNET's guideline
- ? Infrared Camera: How capture an image
- ? Heat Transfer in relation with IRT

**Related activities:**

- ? What is the correlation between the variables to be measured and instruments to be used?
- ? To develop a document and presentation about a specific application where IRT is relevant. The background of such application is required
- ? To enumerate and explain what conditions are needed for inspections or tests by IRT
- ? To practice with an IR camera and Software FLIR TOOLS

**Full-or-part-time:** 32h

Theory classes: 12h

Self study : 20h

### Module 2: IRT for building diagnostics

**Description:**

- ? Techniques of measurement and assessment
- ? Interpretation of a thermogram
- ? IRT for building refurbishment

**Related activities:**

- ? How detect anomalies by qualitative IRT
- ? To practice different techniques of measurement and assessment in different case studies.
- ? To analyze a sequence of thermograms recorded in a specific data acquisition interval by IR camera.
- ? To determine thermal properties of a building façade.
- ? To describe solutions for anomalies detected in buildings by IRT. It can be used techniques of refurbishment

**Full-or-part-time:** 43h

Theory classes: 15h

Self study : 28h

## GRADING SYSTEM

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20% (ATTENDANCE & PARTICIPATION IN CLASS) + 80% PRACTICES

## RESOURCES

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**Other resources:**

Material attached in virtual Campus