Course guide
205050 - 205050 - Infrared Thermography for Building Diagnostics

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: 2022   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

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Hours large group</td>
<td>27,0</td>
<td>36.00</td>
</tr>
<tr>
<td>Self study</td>
<td>48,0</td>
<td>64.00</td>
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</tbody>
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Total learning time: 75 h
## CONTENTS

### 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

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

## RESOURCES

**Other resources:**
Material attached in virtual Campus