Module Specification

Thermal Performance

Version: 2024-25, v5.0, 11 Jul 2024

Contents

Part 1: Information

Module title: Thermal Performance

Module code: UBLMJ8-15-M

Level: Level 7

For implementation from: 2024-25

UWE credit rating: 15

ECTS credit rating: 7.5

College: College of Arts, Technology and Environment

School: CATE School of Architecture and Environment

Partner institutions: None

Field: Architecture and the Built Environment

Module type: Module

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: A module in the MSc Facade Engineering programme. Only suitable as CPD for people with extensive prior knowledge of Facade systems.

Features: Not applicable

Educational aims: To understand building physics in relation to heat loss through the façade, and the risk of condensation.

Outline syllabus: Many countries around the world have set tough, legally binding targets to reduce their carbon dioxide emissions significantly when compared to historical values. In response to this the regulations concerning energy use in buildings are being ever tightened.

The unit starts by introducing the different forms of heat transfer and how they relate to facades. These ideas are further developed to consider how different components and elements may be analysed and assessed.

Thermal bridging can be a significant impairment to the overall thermal performance of a façade. This unit will look at how and why thermal bridges occur, their effects, how they can be reduced and how they can be quantified.

Condensation can, in addition to being unsightly, cause material degradation, reduction in thermal insulation and result in mould which can be harmful to people. Condensation theory and principles are introduced, together with condensation risk analysis.

Part 3: Teaching and learning methods

Teaching and learning methods: The module will be delivered by means of:

Lectures and seminars which enable students to support their own independent learning by exploring deeper issues pertaining to Façade Engineering, visiting speakers will be used to provide up to date material and context to the applications of the subject area.

Directed reading examining the key principles and relevant criteria relating to a number of topics of importance to Façade Engineering.

Module Learning outcomes: On successful completion of this module students will achieve the following learning outcomes.

MO1 Examine typical energy flows into and out of building envelopes and evaluate appropriate methods of calculation.

MO2 Investigate historic issues, and potential design solutions, for aspects such as thermal insulations, thermal bridging, structural air leakage, thermal mass, wall to glazing ratios, and the risk of condensation.

MO3 Critique the role façade engineering plays in environmental qualification schemes, such as building regulations, net zero standards and passive design certification schemes.

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 118 hours

Face-to-face learning = 32 hours

Total = 0

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link https://uwe.rl.talis.com/modules/ublmj8-15-m.html

Part 4: Assessment

Assessment strategy: Assessment will be via a skills portfolio.

The written assignment will focus on a skills portfolio related to the design tools linked to thermal performance of facades, including condensation analysis. This is based on a real world practical activity which a professional Façade Engineer would need to undertake, modelled around a realistic situation.

Resit strategy will follow a similar format to the first attempt.

Assessment tasks:

Portfolio (First Sit)

Description: Skills Portfolio (2500 words)
Weighting: 100 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2, MO3

Portfolio (Resit)
Description: Skills Portfolio (2500 words)
Weighting: 100 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2, MO3

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Façade Engineering [Frenchay] MSc 2024-25

Façade Engineering [Frenchay] MSc 2024-25

Façade Engineering [Frenchay] MSc 2023-24