



## MODULE SPECIFICATION

Part 1: Information			
Module Title	Thermal Performance		
Module Code	UBLMJ8-15-M	Level	Level 7
For implementation from	2018-19		
UWE Credit Rating	15	ECTS Credit Rating	7.5
Faculty	Faculty of Environment & Technology	Field	Architecture and the Built Environment
Department	FET Dept of Architecture & Built Environ		
Module type:	Standard		
Pre-requisites	None		
Excluded Combinations	None		
Co- requisites	Introduction to Façade Systems 2018-19		
Module Entry requirements	None		

Part 2: Description
<p><b>Overview:</b> Co- requisites: students must have already completed or be currently enrolled in UBLLYS-15-M Introduction to Façade Systems. This requirement is compulsory for FT and PT students. Advisory for CPD students who only intend to take an individual module.</p> <p><b>Educational Aims:</b> To understand building physics in relation to heat loss through the façade, and the risk of condensation.</p> <p><b>Outline Syllabus:</b> 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.</p> <p>The unit starts by introducing the different forms of heat transfer and how they relate to façades. These ideas are further developed to consider how different components and elements may be analysed and assessed.</p> <p>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 minimised and how they can be quantified.</p> <p>Condensation can, in addition to being unsightly, cause material degradation, reduction in</p>

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thermal insulation and result in mould which can be harmful to people. Condensation theory and principles are introduced, together with condensation risk analysis.

**Teaching and Learning Methods:** The module is delivered by way of five study days for face to face teaching. Recorded lectures and the use of email discussion groups of virtual learning environments (VLEs) and other technology-aided means are also employed.

The module will be delivered by means of a series of lectures, seminars and tutorials.

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

A series of tutorials are designed to provide knowledge and practical skills relevant to façade engineering.

Group work and Presentations by and to the group by the students will also be used to enable students to develop the skills and capabilities to analyse problems, negotiate, make decisions and present solutions to problems.

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

### Part 3: Assessment

Component A, Video Presentation shares knowledge among peers of their research into a new material or technology and assesses the Preparatory Work.

Component B1, The Essay supports assimilation and reflection of taught material, with literature and application to real world examples.

Component B2, The Case Study: Calculations are based on a real world practical activity which a professional Façade Engineer would need to undertake, modelled around a realistic situation.

First Sit Components	Final Assessment	Element weighting	Description
Written Assignment - Component B		38 %	Essay (1000 words and images)
Presentation - Component A		25 %	Video Presentation (7-10 mins)
Case Study - Component B	✓	37 %	Case study: calculations
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Written Assignment - Component B		38 %	Essay (1000 words and images)
Presentation - Component A		25 %	Video presentation (7-10 mins)
Case Study - Component B	✓	37 %	Case study: Calculations

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<b>Part 4: Teaching and Learning Methods</b>																	
Learning Outcomes	<p>On successful completion of this module students will achieve the following learning outcomes:</p> <table border="1"> <thead> <tr> <th style="text-align: left;"><b>Module Learning Outcomes</b></th> <th style="text-align: left;"><b>Reference</b></th> </tr> </thead> <tbody> <tr> <td>Identify energy flows into and out of building envelopes and evaluate appropriate methods of calculation</td> <td>MO1</td> </tr> <tr> <td>Critically evaluate the benefits of controlled air leakage through building envelopes</td> <td>MO2</td> </tr> <tr> <td>Critically evaluate the impact of thermal bridges on façade thermal integrity and building envelope performance</td> <td>MO3</td> </tr> <tr> <td>Critically evaluate building envelopes with component and whole building environmental rating schemes</td> <td>MO4</td> </tr> <tr> <td>Assess condensation risk and its effects on building envelope performance</td> <td>MO5</td> </tr> </tbody> </table>	<b>Module Learning Outcomes</b>	<b>Reference</b>	Identify energy flows into and out of building envelopes and evaluate appropriate methods of calculation	MO1	Critically evaluate the benefits of controlled air leakage through building envelopes	MO2	Critically evaluate the impact of thermal bridges on façade thermal integrity and building envelope performance	MO3	Critically evaluate building envelopes with component and whole building environmental rating schemes	MO4	Assess condensation risk and its effects on building envelope performance	MO5				
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Reading List	<p><i>The reading list for this module can be accessed via the following link:</i></p> <p><a href="https://uwe.rl.talis.com/modules/ublmj8-15-m.html">https://uwe.rl.talis.com/modules/ublmj8-15-m.html</a></p>																

<b>Part 5: Contributes Towards</b>
<p>This module contributes towards the following programmes of study:</p> <p>Façade Engineering [Sep][PT][Frenchay][2yrs] MSc 2018-19</p> <p>Façade Engineering [Sep][FT][Frenchay][1yr] MSc 2018-19</p>