



Programme Specification

Façade Engineering [Frenchay]

Version: 2022-23, v0,

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Section 1: Key Programme Details

Part A: Programme Information

Programme title: Façade Engineering [Frenchay]

Highest award: MSc Facade Engineering

Interim award: PGCert Facade Engineering

Interim award: PGDip Facade Engineering

Awarding institution: UWE Bristol

Affiliated institutions: Not applicable

Teaching institutions: UWE Bristol

Study abroad: No

Year abroad: No

Sandwich year: No

Credit recognition: No

Department responsible for the programme: FET Dept of Architecture & Built Environ, Faculty of Environment & Technology

Contributing departments: Not applicable

Professional, statutory or regulatory bodies: Not applicable

Apprenticeship: Not applicable

Mode of delivery: Full-time, Part-time

Entry requirements: For the current entry requirements see the UWE public website

For implementation from: 01 September 2018

Programme code: K90D12

Section 2: Programme Overview, Aims and Learning Outcomes

Part A: Programme Overview, Aims and Learning Outcomes

Overview: This Masters programme provides a route for graduates, practice professionals or those in specialist manufacturing and installation industries to gain academic qualifications in Façade Engineering. Graduate subjects may range from Architecture and Structural Engineering to Building Services Engineering and Energy Management.

The technology of building envelopes applied to non-traditional commercial building facades has changed rapidly in the closing decades of the twentieth century. Today the technology of advanced building envelopes is more complex than that of simpler traditional construction. This technology is, furthermore, applied to an ever-greater proportion of buildings. However, the training of building professionals has not kept pace with these changes. The various aspects of façade performance may be considered to fall within the domain of specialists such as the structural engineer (structures), building services engineer (physics) and architect (materials). However, not all issues of facade performance can be easily allocated in this way.

Furthermore, the structural engineer and building services engineer on a project may not play an active role in the façade design. Whilst the design of facades used to rely heavily on precedent and current practice interpreted by generalist building designers this is no longer a viable design or assessment process for many buildings. The move to the use of engineered walls has created a need for specialist façade engineers, designers and analysts, who can understand the new technical complexities of wall design and performance. Until recently specialist façade contractors played a very small role in the design of facades. Their principal responsibility was the manufacture of components to standard detail drawings and contract management. Today, specialist subcontractors are expected to undertake structural and thermal calculations, select materials and take responsibility for things such as glass performance and safety. Much of the detailed design of a facade is undertaken by these companies who have had in the course of some ten years to develop competence widely across a company where non previously existed.

Educational Aims: The course aims to provide a broad view of façade engineering and create individuals with an appreciation of all aspects of façades and the relevant processes of procurement, design and construction. Some will have a greater depth in some particular aspect of facades, normally by virtue of their earlier training. The Façade Engineering Masters is run in collaboration with the Centre for Window and Cladding Technology (CWCT) and associated UK companies. Its formation back in 1995 was part of an integrated response to the needs of the industry as identified by Sylvester Bone Defects in Buildings in 1989. The course recognises the recent history of the cladding industry, which includes a rapid change in technology and only a recent change to graduate level recruitment into the industry. It also recognises that individuals on the course may come from many different backgrounds. Recruitment onto any Master's Degree course is normally restricted to those with a good first degree. However, the modules of this course may be taken as CPD. Individuals who show ability on the CPD courses may transfer to the Diploma or Masters course. This along with the ability to study for the MSc in part-time mode makes the course accessible to mature students who have between five and twenty years' experience in the industry. These are the individuals who are in need of more underpinning knowledge so that they can keep abreast of technological and business change within the cladding industry. Although organised on a modular basis the aim of the course is to teach a holistic approach to all aspects of building envelope design and construction. The teaching together of people from diverse backgrounds aids this aim so that students gain not only a knowledge of design conflicts and design synergies but also understand the roles and aspirations of the many parties involved in cladding procurement. The outcome is individuals with a broad understanding of cladding who are able to fully participate in design teams considering the initial wall design and who understand the consequences of early decision-making for later design detailing, manufacture and construction.

Programme Learning Outcomes:

On successful completion of this programme graduates will achieve the following learning outcomes.

Knowledge and Understanding

- A1. General: have the ability to work with a range of techniques and research methods
- A2. General: have the ability to make clear decisions based on relevant and appropriate information
- A3. General: have an in depth knowledge of this and related disciplines informed by current research backed up by a competent evaluation of current practice.
- A4. General: continue to learn independently and to develop professionally, including the ability to pursue further research where appropriate
- A5. General: develop the necessary written skills to work within in a multi-disciplinary group environment
- A6. Specific: be able to identify and deliver the complex requirements of a façade in terms of weather-tightness, structural integrity, environmental performance, quality and appearance
- A7. Specific: be able to describe the role of different professionals in the design and construction process and in particular have the ability to communicate the design, performance and construction requirements for a façade to those professionals and specialist sub-contractors, manufacturers and fabricators

Intellectual Skills

- B1. Develop the necessary oral communication skills to work within in a multi-disciplinary group environment
- B2. Have the ability to solve problems in an analytical and innovative way
- B3. Be able to communicate in an appropriate and learned way with other professionals, consultants, specialists, contractors and fabricators
- B4. Develop the necessary written skills to work within in a multi-disciplinary group environment
- B5. Have the ability to communicate design intent and project objectives

Subject/Professional Practice Skills

- C1. Specify the performance and detail of façades in terms of weather-tightness, structural integrity, environmental performance, quality and appearance
- C2. Resolve design conflicts with other members of the professional team

- C3. Evaluate the structural performance of a facade
- C4. Critically assess different methods of sealing the building envelope
- C5. Critically assess the effects brought about by the use of different procurement routes
- C6. Specify weather-tightness criteria and appropriate testing and analyse the movement of moisture within walls - assess condensation risk and its effects on building envelope performance
- C7. Have an in-depth knowledge and understanding of the façade engineering discipline informed by current scholarship and research, including a critical awareness of current issues and developments in the subject
- C8. Ability to complete a research project in the subject, including a critical review of existing literature or other scholarly outputs.

Part B: Programme Structure

Year 1

Full-time students must take 180 credits from the modules in Year 1.

Part-time students must take 60 credits from the modules in Year 1.

Year 1 Compulsory Modules (Full-time)

Full-time students must take 180 credits from the modules in Compulsory Modules (Full-time).

Module Code	Module Title	Credit
UBLMJP-15-M	Advanced Facades 2022-23	15
UBLLY7-60-M	Dissertation 2022-23	60
UBLMFK-15-M	Facade Materials and Components 2022-23	15
UBLMG6-15-M	Glass and Glazing 2022-23	15
UBLLYS-15-M	Introduction to Facade Systems 2022-23	15
UBLMHL-15-M	Procurement 2022-23	15
UBLMGL-15-M	Structural Integrity 2022-23	15

UBLMJ8-15-M	Thermal Performance 2022-23	15
UBLMH5-15-M	Weathertightness 2022-23	15

Year 1 Compulsory Modules (Part-time)

Part-time students must take 60 credits from the modules in Compulsory Modules (Part-time).

All Part time students must take UBLLYS-15-M Introduction to Facade Systems in Year 1.

Module Code	Module Title	Credit
UBLLYS-15-M	Introduction to Facade Systems 2022-23	15
UBLMJP-15-M	Advanced Facades 2022-23	15
UBLMFK-15-M	Facade Materials and Components 2022-23	15
UBLMG6-15-M	Glass and Glazing 2022-23	15
UBLMHL-15-M	Procurement 2022-23	15
UBLMGL-15-M	Structural Integrity 2022-23	15
UBLMJ8-15-M	Thermal Performance 2022-23	15
UBLMH5-15-M	Weathertightness 2022-23	15

Year 2

Part-time students must take the remaining 120 credits from the modules in Year 2.

Year 2 Compulsory Modules (Part-time)

Students take all the remaining modules not taken in Year 1 and UBLLY-7-60-M Dissertation.

Module Code	Module Title	Credit
UBLLY7-60-M	Dissertation 2023-24	60
UBLMJP-15-M	Advanced Facades 2023-24	15

UBLMFK-15-M	Facade Materials and Components 2023-24	15
UBLMG6-15-M	Glass and Glazing 2023-24	15
UBLMHL-15-M	Procurement 2023-24	15
UBLMGL-15-M	Structural Integrity 2023-24	15
UBLMJ8-15-M	Thermal Performance 2023-24	15
UBLMH5-15-M	Weathertightness 2023-24	15

Part C: Higher Education Achievement Record (HEAR) Synopsis

The programme aims to allow graduates with either proven architectural and engineering skills or equivalent industry based experience to align themselves with the needs of a profession that seeks to resolve the issues inherent in the design, development and construction of the modern building envelope. Students completing the course will understand their role as built environment professionals; be able to design facades, conceptualizing their proposals in relation to structure and other associated performance criteria and refine their designs in technical detail. Success in this programme requires students to develop practical and theoretical skills, verbal communication and literacy in report writing.

Part D: External Reference Points and Benchmarks

Description of how the following reference points and benchmarks have been used in the design of the programme: The curriculum, learning methods, aims and learning outcomes of this award respond to the following: QAA publications subject benchmark statements:

QAA Engineering benchmark statement 09/2010 QAA Construction, property and surveying benchmark statement 2008

We also have looked at:

UWE Employability Strategy

QAA code of practice: section 8 Career Education, information, advice and guidance

UWE Widening Participation Strategy

UWE Sustainability Strategy

UWE Teaching and Learning Strategy

The programme design team has taken full account of the UWE Bristol Strategy 2020, specifically the themes “Ready and able graduates”, “Outstanding learning and Strategic partnerships” and “Connections and networks” (the 4th theme of “Research with Impact” has also been considered in terms of research-informed teaching, where students are exposed to ideas and techniques which form the research interests of teaching staff). The MSc programme is linked with employers, institutions and other bodies throughout the Centre for Window and Cladding Technology.

Staff research projects:

Staff who are likely to be teaching on the programme are engaging with research across a wide variety of fields, which are relevant and pertinent to Facade Engineering, including overheating, glass and glazing, structural integrity and weathertightness.

Part E: Regulations

Approved to University Regulations and Procedures.