Module Code: CE7C04

Module Name: C4: Façade Engineering

ECTS Weighting: 5 ECTS

Semester taught: Semester 1

Module Coordinator/s:
- Module Co-ordinator: Adj. Prof. Patrick Shiel (shielp@tcd.ie)
- Lecturer(s):
  - Prof. Patrick Shiel
  - Prof. Roger West
  - Prof. Brian Broderick
  - Prof. Barry McAuley
  - Mr. Anthony McAuley, ARUP
  - Mr. Kevin Furlong, TUD

Module Learning Outcomes with reference to the Graduate Attributes and how they are developed in discipline:

On successful completion of this module, students will be able to analyse, design and/or synthesise in the following topics:

LO1. Thermal performance of buildings
LO2. Designing buildings for the occupants - Regulatory Requirements
LO3. Historical and present day building facades
LO4. Façade design and retrofitting of facades for improved performance
LO5. Façade structures, systems and construction
LO6. Designing A-Rated or Nearly Zero Energy Buildings (NZEB)
LO7. Façade/envelope design using Revit, and analysis using building energy software

Graduate Attributes: levels of attainment

To act responsibly – knows how to deal with ambiguity
To think independently – thinks critically and appreciates knowledge beyond their chosen field
To develop continuously – is a problem solver and easily adapts to change
To communicate effectively – can become expert in the communications tools of the engineering discipline
Module Content

The module is focused on building façade engineering including design, construction and analysis of the building envelope, including façade thermal characteristics and building physics. The façade/building envelope project will be developed using Revit, and the chosen envelope analysed using suitable building energy simulation software, such as Sustainable Energy Authority of Ireland’s (SEAI) Simplified Building Energy Model system (SBEM).

Teaching and Learning Methods

Lectures, tutorials and project work. Including lectures given by industry partners such as IES, ARUP, Architects and training on Autodesk’s Revit and SEAI’s SBEM are all included.

Assessment Details

Please include the following:
- Assessment Component
- Assessment description
- Learning Outcome(s) addressed
- % of total
- Assessment due date

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<thead>
<tr>
<th>Assessment Component</th>
<th>Assessment Description</th>
<th>LO Addressed</th>
<th>% of total</th>
<th>Week due</th>
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<tbody>
<tr>
<td>Written examination [3 hours]</td>
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<td>50%</td>
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<tr>
<td>Interim report</td>
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<tr>
<td>Final Project Report</td>
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<td>Final Presentations</td>
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Reassessment Requirements

Examination [3 hours] – 100%

Contact Hours and Indicative Student Workload

Contact hours: 3 hours lectures per week

Independent Study (preparation for course and review of materials):

Independent Study (preparation for assessment, incl. completion of assessment):
**Recommended Reading List**

Reading content will be posted to the class Blackboard Area. These will include relevant papers, user guides and background literature and documentation. The following textbooks are recommended:


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<th>Module Pre-requisite</th>
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<tr>
<td>Module Co-requisite</td>
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<td>Module Website</td>
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**Are other Schools/Departments involved in the delivery of this module?**
If yes, please provide details.

No

**Module Approval Date**

Approved by

**Academic Start Year**  
28th September 2021

**Academic Year of Date**  
2021/2022