D107-BSE Master of Science in Building Services Engineering

PROGRAMME DETAILS
Programme Code: D107-BSE
Department: Architectural Engineering
Main Award: MSC - Master of Science
Full Award Title: Master of Science in Building Services Engineering
Level: Postgraduate Taught

LOCATION OF STUDY
Edinburgh N Scottish Borders N Orkney N
Dubai N Malaysia N Approved Learning Partner N
Independent Distance Learners Y Collaborative Learning Partner N Other N

ASSOCIATED AWARDS
Programme Code Award Title
D107-BSE MSC MSc Building Services Eng
D108-BSE PGDIP Postgraduate Diploma in Building Services Engineering
D5J0-ZZZ PGCERT Postgraduate Certificate in the Built Environment

ACCREDITATION
CIBSE, EI

LEARNING OUTCOMES – SUBJECT MASTERY
Understanding, Knowledge and Cognitive Skills

- Fundamentals of the main Building Services and Architectural Engineering specialisms;
  - Building Services Engineering theory, design and practice.
  - Energy Efficient Construction, Sustainable Development and Environmental friendly design.
  - Behavioural responses of people to their environments.
  - Fluid mechanics
  - Water Conservation
  - Aural, Visual and Thermal Environmental Assessment
  - Construction Technology and Principles of Structures.
  - Health and Safety regulations.
  - Principles of Management related to built environment professionals (Contracts & Procurement and Value & Risk management).
  - Sustainable building design
  - Carbon management.
- Management and business practices which form the basis of modern Architectural Engineering management.
- Fundamentals of Mathematics and Applied Physics as applicable in the context of sustainable building design and Architectural Engineering.
- Comprehensive understanding and knowledge of the concepts, principles and theories of specialist technical issues, as selected by the student to meet their professional aspirations.
- Transfer problem-solving skills to a variety of contexts
- Apply numerical, scientific and management skills
- Integrate theory and practice

Scholarship, Enquiry and Research (Research Informed Learning)

- Conduct and analyse results from laboratory exercises relevant to the science of engineering
D107-BSE Master of Science in Building Services Engineering

- Ability to plan, execute and report a self-directed research project
- Transfer problem-solving skills to a variety of contexts
- Apply numerical skills and engineering knowledge in the analysis of a novel problem.
- Apply theory to sustainable building design in collaboration with colleagues and industrial partners.
- Integrate theory and practice

### LEARNING OUTCOMES – PERSONAL ABILITIES

#### Industrial, Commercial and Professional Practice

- Appreciate the roles of the Building Services Engineer and Architectural Engineer
- Appreciate the roles of other Built Environment professionals.
- Use British and International Standards and codes of practice in project and design tasks.
- Management and business practices which form the basis of modern Building Services Engineering management.
- The ethics and standards relevant to professional engineering practice.
- Framework and practice with regard to health and safety

#### Autonomy, Accountability and Working With Others

- Work effectively within a small team and as an individual.
- Appreciate the social and environmental impact of Building Services and Architectural Engineering.
- Appreciate the interdisciplinary aspect of built environment activities in the field of architectural engineering

#### Communication, Numeracy & Information and Communications Technology

- Clearly and concisely report results from desk study investigations relevant to the science of engineering
- Apply IT and specialist software to the analysis of sustainable building design.
- Present and defend outcomes from a self-directed research project.
- Present and defend outcomes from design activities.

### APPROACHES TO TEACHING AND LEARNING

The postgraduate Building Services Engineering programme provides a flexible, student-centred, and resource-based learning and teaching environment, which actively promotes a deep approach to learning. Learning and teaching resources include lectures, tutorials, seminars and task-based activities. The programme includes group based lectures and tutorials, and students are encouraged to take responsibility for their own learning. The techniques adopted include library and computer-based facilities and design based activities focussed on individual programme courses designed to integrate the knowledge covered in the programme as a whole and develop transferable skills through dissertation, coursework and problem-solving elements.

Approaches to learning and teaching are reviewed and assessed by the course Leader and Director of Studies on an annual basis. The review and redesign of techniques and methods adopted are obtained from the Industrial Advisory Panel, student questionnaires, comments from the Student-Staff Committee, pass rates and external examiners' reports.
Specific details about learning and teaching methods are provided in the appropriate course descriptors.

EDUCATIONAL AIMS OF THE PROGRAMME

The programme aims to:

- Provide a conversion route for students from related cognate disciplines to enter the field of Architectural Engineering
- Provide students with a broad understanding of a wide range of aspects of the built environment
- Provide appropriate depth of technical knowledge and understanding of the key engineering topics within architectural engineering
- Equip students with a sound basis in fundamental engineering principles and their application in the context of sustainable building design and analysis.
- Match a professional and technical education to the needs and aspirations of individuals.
- Produce high quality graduates with the understanding, knowledge, skills and personal qualities required to undertake a wide range of careers across the construction industry in building, general contracting, consultancy or advanced research.
- Develop problem-solving and conceptual skills and the ability to apply such skills to solve real design and decision problems.
- Enable students to undertake complex engineering projects of a multidisciplinary nature and of direct relevance to industry.
- Encourage awareness of the engineering industry and the development of professional competencies through the Professional Development Programme.
- Ensure students have an awareness of the importance of safety in construction, the methodologies for addressing it and the legislative framework for its enforcement.
- Provide a thorough grounding in principles of sustainable Building Design, an understanding of approaches to minimise environmental impact, and the means of estimating such impacts.
- Offer an educational environment which satisfies academic requirements for Chartered Engineer status and Membership of The Chartered Institution of Building Services Engineers (CIBSE) and the Energy Institute (EI).
- provide an awareness of managerial issues within the Built Environment
- Establish the framework in which architectural engineers function, in collaboration with industrial partners.

ASSESSMENT POLICIES

The assessment policy for courses on the Building Services Engineering Programme is to tailor the methods of assessment to the subject being taught and the nature of the classes so that understanding, knowledge and subject-specific skills are assessed using a variety of approaches. These include written examinations, summative and formative coursework, practical exercises, presentations, individual projects and the dissertation. What is best for each programme is moderated by seeking a balance of modes which, as a whole, most effectively and efficiently test the learning outcomes of the Programme as a whole.

Formal assessment in courses teaching subject specific understanding, knowledge and skills is by either coursework or
unseen written examinations but there are some courses which are assessed by both. The examinations are summative
while coursework may be used to assess understanding and subject specific skills on a formative or summative basis.
Continuous assessment is more common in courses explicitly designed to develop cognitive and core skills, and
professional awareness. This approach to assessment enables staff and students to monitor the establishment and honing
of transferable skills in practical exercises that are directly applicable to the built environment.

The methods of assessment adopted are continually reviewed. Specific details about assessment methods are provided in
the appropriate course descriptor.

PROGRAMME STRUCTURE

Mandatory Courses

<table>
<thead>
<tr>
<th>Edinburgh</th>
<th>SBC</th>
<th>Orkney</th>
<th>Dubai</th>
<th>HWUM</th>
<th>IDL</th>
<th>Coll. Partner</th>
<th>ALP</th>
<th>Other</th>
<th>Stage</th>
<th>Semester</th>
<th>Phase</th>
<th>Course Code</th>
<th>Course Title</th>
<th>SCQF Cr</th>
<th>SCQF Lvl</th>
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<td>D11DC</td>
<td>Design of Low Carbon Buildings</td>
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<td>D11ZZ</td>
<td>Dissertation (Architectural Engineering Discipline)</td>
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Optional Courses

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<td>B51ET</td>
<td>Foundations of Energy</td>
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<td>D21WW</td>
<td>Water and Wastewater Treatment</td>
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</tbody>
</table>
8 taught courses - 1 mandatory course + 7 optional courses - (plus Dissertation for MSc)

Recruitment to this programme for Edinburgh campus has been suspended. Recruitment remains open for Independent Distance Learning students. Existing students may continue on the programme.

Mandatory Credits 15
Optional Credits 105
Elective Credits 0
Dissertation Credits 60
Total 180

AWARDS, CREDITS AND CRITERIA(PG)

<table>
<thead>
<tr>
<th>Awards, Credits and Levels</th>
<th>Overall Credits</th>
<th>Specific Requirements</th>
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<tbody>
<tr>
<td>Masters Degree</td>
<td>180</td>
<td>180 SCQF credits including a minimum of 150 credit at Level 11</td>
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<tr>
<td>Postgraduate Diploma</td>
<td>120</td>
<td>120 SCQF credits including a minimum of 90 credit at Level 11</td>
</tr>
<tr>
<td>Postgraduate Certificate</td>
<td>60</td>
<td>60 SCQF credits including a minimum of 40 credit at Level 11</td>
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Award Requirements

<table>
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<tr>
<th></th>
<th>Total Course Passes</th>
<th>Overall Mark</th>
<th>Overall Grade</th>
<th>Basis of Overall Mark/Grade</th>
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<tbody>
<tr>
<td>Master (Distinction)</td>
<td>8+Dissertation</td>
<td>70</td>
<td>A</td>
<td>Credit Weighted Average greater than or equal 70% over 8 courses at grades A-C plus a Dissertation at grade A.</td>
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<tr>
<td>Master</td>
<td>8+Dissertation</td>
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<td>C</td>
<td>Credit Weighted Average greater than or equal 50% over 8 courses at grades A-D plus a Dissertation at minimum grade C.</td>
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<tr>
<td>Diploma (Distinction)</td>
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<td>Credit Weighted Average greater than or equal 70% over 8 courses at grades A-C</td>
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<td>Diploma</td>
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<td>D</td>
<td>Credit Weighted Average greater than or equal 40% over 8 courses at grades A-E</td>
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<tr>
<td>Certificate</td>
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<td>40</td>
<td>D</td>
<td>Credit Weighted Average greater than or equal 40% over 4 courses at grades A-E</td>
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DURATION OF STUDY

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<tr>
<th>IN MONTHS</th>
<th>Full-time</th>
<th>Part-time</th>
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<tr>
<td>Masters</td>
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<td>24</td>
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<tr>
<td>Diploma</td>
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<td>15</td>
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<tr>
<td>Certificate</td>
<td>6</td>
<td>12</td>
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RE-ASSESSMENT (PG)

1. A student who has been awarded a Grade E or F in a course may be re-assessed in that course. A student who has been awarded a Grade D in a course may be re-assessed in that course in order to proceed to or be eligible to receive the award of Masters.

2. A student shall be permitted only one re-assessment opportunity in a maximum of three taught courses. The opportunity for re-assessment in four or more taught courses shall be at the discretion of the Progression Board.
3. Any further re-assessment opportunities in a course will require the approval of the Postgraduate Studies Committee.
4. A student may be permitted, at the discretion of the Progression Board, to be re-assessed in the dissertation, project or other supervised research component of the course of study.

**PROGRESSION TO DISSERTATION/PROJECT**

Average >=50% over 8 courses at grades A – D