



## **PROGRAMME SPECIFICATIONS**

### **MSc Building Services Engineering**

SESSION 2019/2020

# GLASGOW CALEDONIAN UNIVERSITY

## Programme Specification Pro-Forma

### 1. GENERAL INFORMATION

1. Programme Title:	MSc Building Services Engineering
2. Final Award:	MSc Building Services Engineering
3. Exit Awards:	PgC; PgD Building Services Engineering
4. Awarding Body:	Glasgow Caledonian University
5. Approval Date:	March 2015
6. School:	Built and Natural Environment
7. Host Division/Dept:	Environment Design and Construction
8. UCAS Code:	N/A
9. PSB Involvement:	CIBSE
10. Place of Delivery:	Glasgow Caledonian University
11. Subject Benchmark Statement:	N/A
12. Dates of PSP preparation/revision:	June 2019

### 2. EDUCATIONAL AIMS OF THE PROGRAMME

The general educational aims of the programme include the following:

- Provide the students with the knowledge and skills to equip them for a career as a chartered engineer within the building services engineering profession
- Develop the students' competence in a range of appropriate specialist areas
- Develop the critical and analytical powers of the student in relation to the analysis of differing views on emerging concepts and to enable them to evaluate these against a background of a constantly changing industry
- Provide the student with the skills to adapt and respond positively to change
- Develop critical, analytical problem-based learning skills and the transferable skills to prepare the student for employment as a building services engineer
- Enhance the development of the students' communication skills
- Provide the student with opportunities for shared multidisciplinary learning with fellow students who come from a range of professions within the construction industries.
- Assist the student to develop the skills required for his/her employment
- Prepare students for further study in the context of his/her continuing professional development

#### Academic Rationale

The PgD/MSc programme in Building Services Engineering is primarily designed to form a 'Matching Section' for the BEng (Hons) in Building Services Engineering taught at GCU. The two programmes in combination will provide an accredited route to membership of the Chartered Institution of Building Services Engineers (CIBSE) and to Chartered Engineering status (CEng).

Current regulations indicate that the taught PgD component of the MSc would be sufficient to form the 'Matching Section' but these regulations are expected to change in the near future such that the complete MSc would become the minimum requirement. The educational aims for the PgD and MSc are therefore essentially the same. The MSc in addition, however, gives the student the opportunity to develop a range of research skills within the discipline of Building Services Engineering through completion of the project module.

The PgD/MSc effectively forms the link between the BEng (Hons) degree, which is heavily based on the theory and application of engineering principles to the industry, and the more diversified skills base which is expected of

a practicing engineer, operating within the industry.

In addition to the above primary function, the degree forms a valuable and relevant programme for students with a wide range of backgrounds wishing to complete postgraduate study within the discipline of building services engineering.

### **Programme Content**

CIBSE has published several fact sheets to specify the requirements for Membership of the Institution (MCIBSE) and for Chartered Engineer status (CEng). Fact sheet M6 states that the scope of building services engineering applications is recognized to be heating, lighting, refrigeration, acoustics, ventilation, water, plumbing, power systems, vertical transport, control systems, fire and security, alarm systems, facade engineering, public health, integrated systems and intelligent buildings, including environmental and sustainability aspects. It may include roles in facilities management, project management, construction management, research, development and education.

Most of the above extensive list is based on the theory and application of engineering principles. The BEng (Hons) degree in Building Services Engineering taught at GCU is considered to be strong in these aspects, including both mechanical and electrical aspects (M & E). The related areas of management, health and safety, environment and sustainability are taught, but to a lesser depth.

The taught component in the PgD/MSc in Building Services Engineering will build on the knowledge gained on the BEng (Hons) to complete the academic formation required for a prospective Chartered Engineer. In addition to this, the structure and content will support the students' progress towards achieving the CIBSE Professional Objectives. With a view to meeting these requirements, the PgD/MSc will incorporate multi-disciplinary group work, increased technical breadth and depth, increased non-technical breadth and an industrial dimension.

The educational aims of the Postgraduate Certificate are to give students an opportunity to broaden their knowledge into a range of management and related areas to complement the more technical education of an undergraduate building services engineering programme.

### **3. PROGRAMME STRUCTURES AND REQUIREMENTS, LEVELS, MODULES, CREDITS AND AWARDS**

The structure of this MSc programme is consistent with other equivalent postgraduate degrees offered at GCU. The first part of the programme comprises taught modules set at Masters level (SHEM) and allocated 15 credit points each; the latter part of the programme comprises a Masters Project worth 60 credit points.

Awards may be made as follows:

- Postgraduate Certificate (PgC) – minimum of 4 taught modules – 60 SHEM credits
- Postgraduate Diploma (PgD) – minimum of 8 taught modules – 120 SHEM credits
- Masters Degree (MSc) – minimum of 8 taught modules and Project – 180 SHEM credits

#### **Selection of Taught Modules**

When students first register and attend the University the Programme Leader will provide advice and guidance to help them select modules appropriate to their existing experience, their interests and future career aspirations; the aim is to match, as far as is practicable, the learning requirements specific to the student with the portfolio of modules on offer.

#### **Requirements for the MSc in Building Services Engineering degree**

Since session 2010/2011 there are two main study routes to the MSc programme as presented in Figure 4.1.

### **Requirement 1- Passes in 8 taught modules**

As part of the requirement for the award of MSc in Building Services Engineering, a student must achieve passes in 8 taught modules. The 8 taught modules must be selected from the modules listed in Figure 4.1. Selection of modules is dictated by the previous study. As can be seen from Fig. 4.1, there are two main options:

#### **Option 1 – Home students and students who completed BEng degree in BSE or have sufficient experience and knowledge in BSE area**

Modules according to the following selection criteria:

- the 2 core building services engineering modules must be selected
- the 6 optional modules must be selected

#### **Option 2 – International Route or Non-cognate group of students**

Modules according to the following selection criteria:

- the 4 core building services engineering modules must be selected
- the 4 optional modules must be selected

When a student registers onto the programme, the student will, with the assistance of the Programme Organiser, construct a study path through the programme, including within this the agreed study pattern for each module. It is the normal expectation that part-time students would only study 2 modules per semester. The basic format for the study path is shown in Figures 4.2 to 4.5 (see the end of this section).

### **Requirement 2 - Completion of a Group Project**

It is important that the student demonstrates that he/she has met the requirement to complete multi-disciplinary group work to meet professional criteria for Chartered status.

Students will be expected to draw on knowledge gained across a range of modules to complete group based courseworks of commercial and industrial significance. The core module 'Building Management System' will, in particular, be used as a vehicle to deliver this aspect of the learning experience, as this module incorporates a broad-based design exercise set within the context of a real industrial application. This requirement dictates that this particular module must be studied as one of the last of the taught modules. Module Leaders will liaise closely with the Programme Organiser and the student group to set the project tasks and the expected scope of the submissions.

### **Requirement 3 - The Masters Project**

All students are required to complete the 60 credit Masters Project module. This module is common to all Masters Degrees offered by BNE and involves students working on a significant research project. The subject of the research is an area of special interest to the student and is based on a proposal written by the student and submitted to the project supervisor. The area of research chosen should be of the required technical depth and should provide a suitable match with previous study. This may require increased technical depth or greater breadth of subject matter relative to previous projects, case studies or dissertations undertaken by the student.

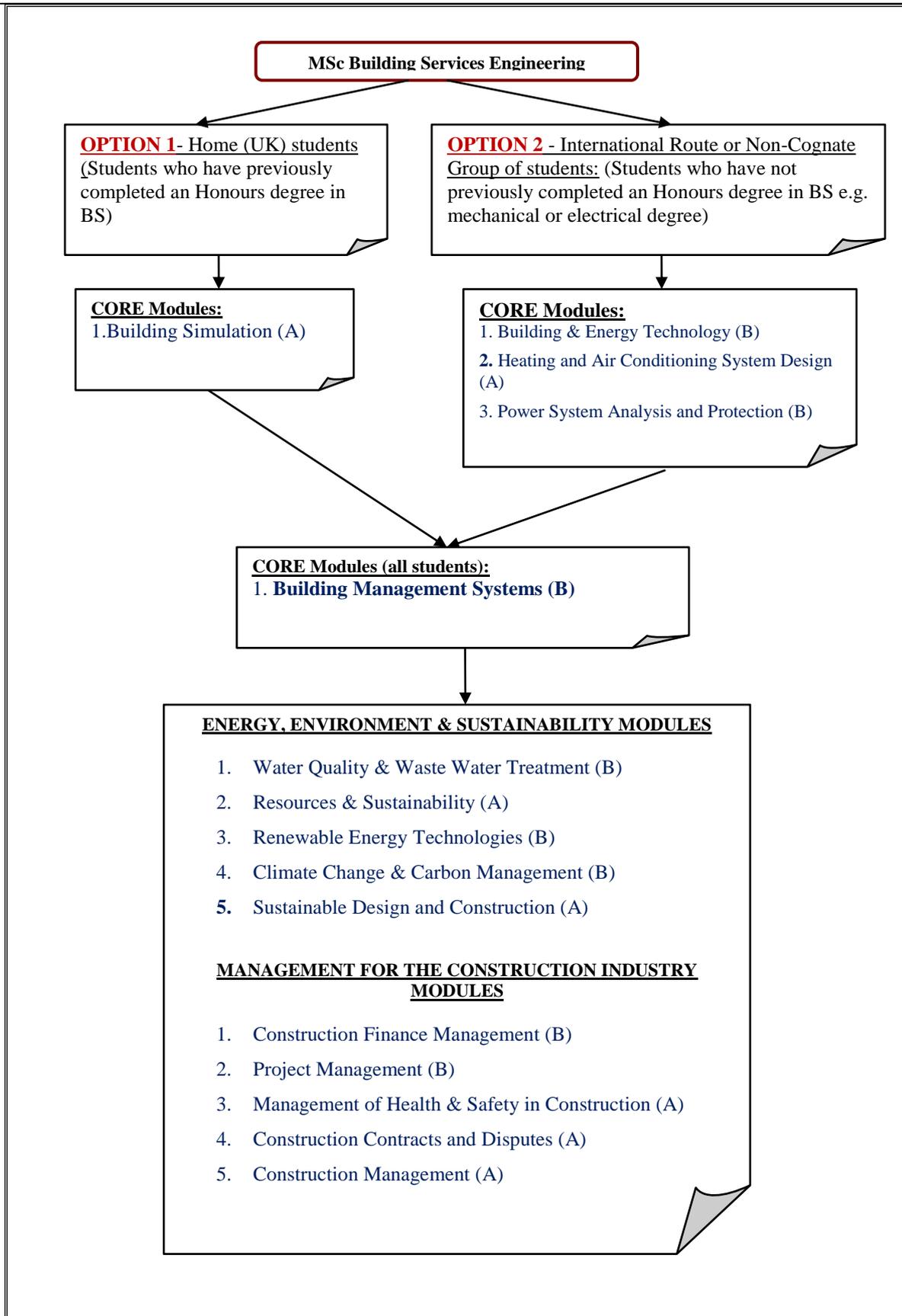
### **Requirement for Postgraduate Diploma in Building Services Engineering**

The requirements for the award of Postgraduate Diploma in Building Services Engineering are as for the MSc award but without the requirement for the Masters Project. Some students intending to complete the MSc degree on initial registration may opt to withdraw after the Postgraduate Diploma component for a variety of reasons. These students may have done some initial work on the Masters Project module which would not be submitted for assessment. However, early start on dissertation work is considered to be beneficial for most students as this is the

recommended approach for part-time students who need to spread their research effort over a longer period.

### **Requirement for University Postgraduate Certificate**

The requirement for the award of University Postgraduate Certificate is to achieve a pass in any 4 of the taught modules at MSc Level.



**Figure 4.1: Programme structure showing two routes – Option 1 and Option 2**

**STUDY PATH FOR FULL-TIME HOME STUDENTS**

Year	Semester	Module	Comments
1	A	Building Simulation	
		Option	
		Option	
		Option	
1	B	Building Management Systems	
		Option	
		Option	
		Option	
	Summer Period	Masters Project	

**Figure 4.2: Study path for full time students – Option 1**

**STUDY PATH FOR PART-TIME HOME STUDENTS**

Year	Semester	Module	Comments
1	A	Building Simulation	
		Option	
1	B	Option	
		Option	
	Summer Period	Start Masters Project	
2	A	Option	
		Option	
2	B	Building Management Systems	Submit Group Project
		Option	
	Summer Period	Complete Masters Project	

**Figure 2.3: Study path for part time students – Option 1**

**STUDY PATH FOR FULL-TIME INTERNATIONAL ROUTE OR NON-COGNATE GROUP OF STUDENTS**

Year	Semester	Module	Comments
1	A	Building and Energy Technology	
		Heating and Air Conditioning Systems Design	
		Power System Analysis and Protection (new) or Option	
		Option	
1	B	Building Management Systems	Submit Group Project
		Option	
		Option	
		Option	
	Summer Period	Masters Project	

**Figure 2.4: Study path for full time students – Option 2**

**STUDY PATH FOR PART-TIME INTERNATIONAL ROUTE OR NON-COGNATE GROUP OF STUDENTS**

Year	Semester	Module	Comments
1	A	Building and Energy Technology	
		Heating and Air Conditioning Systems Design	
1	B	Option	
		Option	
	Summer Period	Start Masters Project	
2	A	Power System Analysis and Protection	
		Option	
2	B	Building Management Systems	Submit Group Project
		Option	
	Summer Period	Complete Masters Project	

**Figure 2.5: Study path for part time students – Option 2**

**The Module Table (SHE Level M) - Selection Criteria for PgD and MSc degrees**

<b>Module Code</b>	<b>Module Title</b>	<b>Semester/Credit</b>
<b>Core Modules for home students</b>		
MMK221903	Building Simulation	A/15
<b>MMK221235</b>	<b>Building Management Systems</b>	<b>B/15</b>
<b>Core Modules for International Route or Non-cognate group of students</b>		
MMK221232	Heating and Air Conditioning System Design	A/15
MMH225986	Building and Energy Technology	B/15
MHH623556	Power System Analysis and Protection (new)**	B/15
<b>MMK221235</b>	<b>Building Management Systems</b>	<b>B/15</b>
<b>Optional Modules</b>		
<b>Semester A</b>		
MMH221234	Resources and Sustainability	A/15
MMK225195	Sustainable Design and Construction	A/15
MMK221205	Management of Safety, Health & Env. Project Risk	A/15
MMK223964	Construction Contracts and Dispute	A/15
MMK221199	Construction Management	A/15
MMH221233	Climate Change and Carbon Management	A/15
<b>Semester B</b>		
MMJ921238	Renewable Energy Technologies	B/15
MMH124004	Water Quality and Waste Water Treatment	B/15
MMN325196	Construction Financial Management	B/15
MMN221207	Project Management	B/15
MMH106215	Project	ABC/15

3A

A1 **Exit Award – Post Graduate Certificate**  
A2

A3 **Exit Award – Post Graduate Diploma**  
A4

A5 **Exit Award – Master**

## 8. ASSESSMENT REGULATIONS

The Glasgow Caledonian University Assessment Regulations apply to this programme in all respects. The MSc Building Services Engineering does not have any programme specific regulations that deviate from the standard University Assessment Regulations. The programme's structure, progression and credit award framework is wholly consistent with the GCU Qualifications Framework.

### Awards

For the awards of Postgraduate Certificate (PgC), Postgraduate Diploma (PgD) and Masters degree:

- Minimum pass mark is 50% – for each taught module
- Minimum pass mark is 50% for the Masters Project module
- To qualify for an award of Postgraduate Certificate students must complete all the programme requirements and obtain a minimum of 60 SHEM credits
- To qualify for an award of Postgraduate Diploma students must complete all the programme requirements and obtain a minimum of 120 SHEM credits
- To qualify for an award of Masters degree, students must complete all the programme requirements and obtain a minimum of 180 SHEM credits

### Regulations for Distinction

The Programme complies with the University Assessment Regulations in respect of the award of Distinction. To be awarded a PgD with Distinction a student should obtain an overall average of 70% or more across the PgD stage modules with no individual modules below 55% at the first attempt.

To be awarded a Masters degree with Distinction a student should obtain a mark of 70% or more in the Dissertation/Project at the first attempt. Additionally, the student must have an overall average mark of 70% or more in the taught M level modules with no individual module mark below 55% at the first attempt.

### Role of External Examiner:

Senate appoints External Examiner to the Assessment Board (AB) on the basis of nominations from Schools and approval through the University QA and QE processes.

The duties of an External Assessor will include the following:

- To moderate the work of the internal assessors in respect of the assessments under his/her jurisdiction
- To attend Assessment Boards at which the results of final stage assessment will be determined
- To satisfy himself/herself that the work and decisions of the Assessment Board(s) are consistent with the policies and regulations of the University and best practice in higher education
- To ensure that students are assessed within the regulations approved by the University for the progression of students and to inform the University on any matter which, in his/her view, mitigates against the maintenance of proper academic standards
- To report annually to the Clerk to Senate on the standards attained by students on the programme and on other matters which may seem appropriate for their report.