

Programme Specification for Postgraduate Programme Leading to: MSc in Building Services Engineering



Applicable for all postgraduate students starting in 2020

Version No.	Date	Notes – QA USE ONLY	AO
2020-21 v1	6 October 2020	Programme Specification updated for 2020/21 entrants. Senate approved that a PGDip may be awarded by substitution of the dissertation for up to 30 credits of modular/assessment blocks in the taught part of the programme, provided the learning outcomes have been met.	JP

Postgraduate Taught Programme	
1. Awarding institution	Brunel University London
2. Teaching institution(s)	Brunel University London
3. Home college/department/division	College of Engineering, Design and Physical Sciences/ Dept of Mechanical and Aerospace Engineering
4. Contributing college/department/division /associated institution	None
5. Programme accredited by	CIBSE, EI, IMechE
6. Final award(s) and FHEQ Level of Award	MSc Building Services Engineering FHEQ Level 7
7. Programme title	MSc Building Services Engineering
8. Programme type (Single honours/joint)	N/A
9. Normal length of programme (in months) for each mode of study	12 months full time, 36 months distance learning
10. Maximum period of registration for each mode of study	The normal length of programme plus two years up to a maximum of five years
11. Variation(s) to September start	January start (Distance Learning only)
12. Modes of study	Full time, Distance Learning
13. Modes of delivery	On-campus, standard; Distance Learning
14. Intermediate awards, titles and FHEQ Level of Award	Postgraduate Diploma in Building Services Engineering - FHEQ Level 7 Postgraduate Certificate in Building Services Engineering - FHEQ Level 7
15. UCAS Code	N/A
16. JACS / HECoS Code	H300 / TBC
17. Route Code	H300PSBLDSVE
18. Relevant subject benchmark statements and other external and internal reference points used to inform programme design	UK Quality Code for Higher Education QAA Subject Benchmark Statement (Engineering) Brunel 2030 Brunel Placement Learning Policy, as published under the 'Placements' section of the Managing Higher Education Provision with Others page. Engineering Council, UK-SPEC document "Chartered Engineer and Incorporated Engineer Standard" SARTOR specification for matching sections
19. Admission Requirements	Details of entry requirements are provided on the University's and College website.

	Levels of English for non-native speakers are outlined on Brunel International's language requirements pages
20. Other relevant information (e.g. study abroad, additional information on placements)	N/A
21. Programme regulations not specified in Senate Regulation 3. Any departure from regulations specified in Senate Regulation 3 must be stated here and approved by Senate.	N/A
22. Further information about the programme is available from:	Course webpage

23. EDUCATIONAL AIMS OF THE PROGRAMME

To develop the student's knowledge, understanding and skills in the range of engineering disciplines that underline the design and operation of building services. To produce graduates with expertise in the techniques and equipment employed, and an understanding of the underlying physical, physiological and economic factors.

24. PROGRAMME AND INTERMEDIATE LEARNING OUTCOMES

The programme provides opportunities for students to develop and demonstrate knowledge and understanding (K) cognitive (thinking) skills (C) and other skills and attributes (S) in the following areas:

Level	Category (K = knowledge and understanding, C = cognitive (thinking) skills, S = other skills and attributes)	Learning Outcome	Masters Only	Associated Assessment Blocks Code(s)	Associated Study Blocks Code(s)	Associated Modular Blocks Code(s)
7	K	1. Knowledge and understanding of the theory and practice of the design of building services in buildings, and the organisation of this process				ME5511 ME5507 ME5512 ME5509 ME5513
	K	2. Knowledge and understanding of the theoretical basis for the study of the internal environment and human comfort				ME5511 ME5507 ME5509

	K	3. Knowledge and understanding of the principles of energy conversion and appropriate thermodynamic machines.				ME5508 ME5512 ME5506
	K	4. Knowledge and understanding of the heat and mass transfer processes in the heating and cooling of buildings.				ME5508 ME5512 ME5506 ME5513
	K	5. Knowledge and understanding of Electrical power distribution and utilisation in buildings.				ME5507 ME5511 ME5513
	K	6. Knowledge and understanding of the theoretical basis of relevant control and communication systems.				ME5511 ME5507 ME5509
	K	7. Knowledge and understanding of how diverse building engineering systems interact and how they can be integrated				ME5513 ME5506 ME5511 ME5507 ME5509
	C	8. Evaluate the internal environment.				ME5511 ME5507 ME5508 ME5512 ME5509 ME5513
	C	9. Identify and analyse the design requirements for the built environment.				ME5511 ME5507 ME5512 ME5506 ME5509 ME5513
	C	10. Analyse and evaluate the performance of building services plant.				ME5511 ME5507 ME5506 ME5509 ME5513
	C	11. Evaluate the environmental effects of design solutions.				ME5506 ME5509 ME5513

	C	12. Apply general management principles to the building services industry.				ME5511 ME5513
	C	13. Plan personal projects	x			ME5500
	C	14. Identify and apply codified data and specifications	x			ME5500 ME5513
	C	15. Assemble and critically analyse relevant primary and secondary data.	x			ME5500
	C	16. Select and use appropriate investigative techniques	x			ME5500 ME5513
	C	17. Develop a thesis by following a coherent argument				ME5500
	S	18. Design and select building services equipment and systems.				ME5511 ME5507 ME5508 ME5512 ME5506 ME5509 ME5513
5	S	19. Plan and manage building services projects.	x			ME5500 ME5513
	S	20. Define and organise a substantial investigation.	x			ME5500
	S	21. Select and employ appropriate research methods	x			ME5500
	S	22. Organise technical information into a concise, coherent document	x			ME5500
	S	23. Employ conventional methods of technical communication	x			ME5500

Learning/teaching strategies and methods to enable learning outcomes to be achieved, including formative assessments

Knowledge-and-understanding learning outcomes

Full-time mode:

Skills 1-7 are taught in lectures, and acquired through a combination of assignments, examination and small group discussion; and for skills 1-4, fundamental technologies in building services engineering are introduced and issued regularly by lecturers; for skills 5, 6 and 7, through coursework assignments and design appraisal project work.

Skill 7 is acquired through small group discussion and further development of an individual dissertation.

Distance-learning mode:

Skills 1-6 are acquired through examples and self-assessment questions in self-study course material. Additionally, and for skills 1-4, fundamental technologies in building services engineering are introduced and issued regularly by lecturers; for skills 5, 6 and 7, through coursework assignments and design appraisal project work.

Skill 7 is acquired through the development of milestone submissions for the coursework assignments

Cognitive skills

Full-time mode:

Skills 8-16 are taught in lectures, and acquired through a combination of small group discussion and: for skills 9,10 and 14, group design projects and examples papers issued regularly by lecturers; for skills 10, 12, 13 and 14, coursework assignments; and, for skill 8, through design appraisal project work.

Skill 17 is acquired through the development of an individual dissertation.

Distance-learning mode:

Skills 8-14 are acquired through examples and self-assessment questions in self-study course material. Additionally, skill 8 is developed through design appraisal project work, and skills 9, 10 and 14 are developed through coursework assignments drawing on the student's professional experience.

Skills 15-17 are acquired through the development of milestone submissions for the dissertation project as well as the dissertation itself.

Other skills and attributes

Full-time mode:

Skills 18, 22 and 23 are acquired through the undertaking and the presentation of coursework assignments. Many of the skills are acquired through the dissertation project. Namely, skills 21 and 22 through the literature search and review, skills 20-23 through the preparation of the dissertation.

Skill 2 is acquired through design project work.

Distance-learning mode:

The same methods are used in the distance-learning mode and the full-time mode.

Summative assessment strategies and methods to enable learning outcomes to be demonstrated.

Knowledge-and-understanding learning outcomes

Skills 1, 3-6 are assessed using written coursework in addition to: project reports for skills 2 and 6, with oral presentations for the full-time mode; and unseen written examinations including problem solving tasks for skills 2, 3 and 6.

Skills 6, 8-10 are assessed through the dissertation project.

Cognitive skills

Skills 1, 3-7 are assessed using written coursework in addition to: project reports for skills 2 and 7, with oral presentations for the full-time mode; and unseen written examinations including problem solving tasks for skills 2, 3 and 7.

Skills 6, 8-10 are assessed through the dissertation project.

Other skills and attributes

All of the skills are assessed using written coursework including technical project reports. Additionally, skills 3-6 are assessed through the dissertation and skill 1 is assessed using unseen written examinations.

25. Programme Structure, progression and award requirements

Programme structures and features: levels, assessment blocks, credit and progression and award requirements

- **Compulsory block:** one which all students registered for the award are required to take as part of their programme of study. These will be listed in the left hand column;
- **Optional block:** one which students choose from an 'option range'. These will be listed in the right hand column;
- A **core assessment** is an assessment identified within an assessment block or modular block (either compulsory or optional) which must be passed (at grade C- or better) in order to be eligible to progress and to be eligible for the final award. All core assessments must be specified on the programme specification next to the appropriate assessment or modular block:
Where students are expected to pass the block at C- or better, but not necessarily all elements, then the block itself is core.
e.g. AB5500 Project (40)
Core: Block

Where only some elements of assessments are required to be passed at C- or better, these will be identified by listing each element that is core

e.g. ABXXX1 Title (XX credits)
Core: 1 & 4

Where students are expected to pass all assessments in a block then this will be identified. By setting the assessment this way, students are also required to pass the block by default. This will be identified thus:

e.g. ABXXXX Title (XX credits)
Core: All, Block

- A **non-core assessment** does not have to be passed at grade C- or better, but must D- or better in order to be eligible for the final award.

FHEQ Level 7

Compulsory assessment block codes, titles and credit

Optional assessment block codes, titles and credits

Compulsory study block codes, titles and credit volume

Optional Study block codes, titles and credit volume

Compulsory modular block codes, titles and credits	Optional modular block codes, titles and credits
<p>ME5506 Energy Conversion Technologies (15 credits)</p> <p>ME5507 Electrical Services and Lighting Design (15 credits)</p> <p>ME5508 Building Heat Transfer and Air Conditioning (15 credits)</p> <p>ME5509 Acoustics, Fire, Lifts and Drainage (15 credits)</p> <p>ME5511 Building Management and Control Systems (15 credits)</p> <p>ME5512 Design of Fluid Services and Heat Transfer Equipment (15 credits)</p> <p>ME5513 Building Services Design and Management (30 credits)</p> <p>ME5500 Dissertation (60 credits) Core: Block</p> <p><u>January start – Year 1 modules (DL only)</u></p> <p>ME5506 Energy Conversion Technologies (15 credits)</p> <p>ME5507 Electrical Services and Lighting Design (15 credits)</p> <p>ME5509 Acoustics , Fire, Lifts and Drainage (15 credits)</p> <p>ME5511 Building Management and Control Systems (15 credits)</p>	<p>None</p>

FHEQ Level 7 Progression and Award Requirements

[As per Senate Regulation 3](#)

PGDip may be awarded by substitution of the dissertation (ME5500) for modular/assessment blocks in the taught part of the programme, provided the learning outcomes have been met.

Please note: this specification provides a concise summary of the main features of the programme and the learning outcomes that a student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods can be found in the modular block, assessment and study block outlines and other programme and block information. The accuracy of the information contained in this document is reviewed by the University from time to time and whenever a modification occurs.