

# Programme Specification for Postgraduate Programme

## Leading to:

# MSc in Sustainable Energy Technologies and Management

Applicable for all postgraduate students starting in 2021

Version No.	Date	Notes – QA USE ONLY	QA
2021-22 v1	29 April 2021	Programme updated for 2021 entrants. ME5572 replaced by ME5641. The Institution of Mechanical Engineers (IMechE) confirm that students completing this programme will meet, in part, the exemplifying academic benchmark requirements for registration as a Chartered Engineer. Accredited MSc graduates who also have a BEng (Hons) accredited for CEng will be able to show that they have satisfied the educational base for CEng registration. It should be noted that graduates from an accredited MSc programme that do not also have an appropriately accredited Honours degree, will not be regarded as having the exemplifying qualifications for professional registration as a Chartered Engineer with the Engineering Council; and will need to have their qualifications individually assessed through the Individual Case Procedure if they wish to progress to CEng.	JP
2021-22 v2	28 June 2021	Programme Specification updated for 2021/22 entrants. This includes clarifying when blocks will be taught.	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	College of Health and Life Sciences/Dept of Life Sciences/Environmental Sciences
5. Programme accredited by	Institution of Mechanical Engineers (IMechE)
6. Final award(s) and FHEQ Level of Award	MSc Sustainable Energy: Technologies and Management FHEQ Level 7
7. Programme title	MSc Sustainable Energy: Technologies and Management
8. Programme type (Single honours/joint)	N/A
9. Normal length of programme (in months) for each mode of study	FT 12 months
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	N/A
12. Modes of study	Full-time
13. Modes of delivery	On-campus, standard
14. Intermediate awards, titles and FHEQ level of award	PGDip in Sustainable Energy Technologies and Management FHEQ Level 7 PGCert in Sustainable Energy Technologies and Management FHEQ Level 7
15. UCAS Code	N/A
16. JACS / HECoS Code	H300 / TBC
17. Route Code	H300PSSUTETM
18. Relevant subject benchmark statements and other external and internal reference points used to inform programme design	<a href="#">UK Quality Code for Higher Education</a> <a href="#">QAA Subject Benchmark Statement</a> (Engineering) <a href="#">Brunel 2030</a> Brunel Placement Learning Policy, as published under the 'Placements' section of the ' <a href="#">Managing Higher Education Provision with Others</a> ' page. <a href="#">Engineering Council, UK-SPEC document "Chartered Engineer and Incorporated Engineer Standard"</a>
19. Admission Requirements	Details of <a href="#">entry requirements</a> are provided on the University's and College website. Levels of English for non-native speakers are outlined on Brunel International's <a href="#">language requirements</a> 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

The primary focus of this programme is to create Master's Level graduates who can develop and manage effective, appropriate and sustainable energy implementation actions in an industrial, business or government environment, and to develop the academic knowledge and cross disciplinary links required for working in energy management, the energy technology industry and research. A significant feature of this programme is the depth and breadth of covered material.

### 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 principles of sustainable development and strategic management.		ES5805	ES5701	ME5564 ME5571 ME5572 ME5522 ME5506 ME5520 ME5521
	K	2. Knowledge and understanding of: The demands of environmental legislation, codes of practice and ethics in the practice of energy management.		ES5805	ES5701	ME5506 ME5520 ME5521 ME5522 ME5564 ME5571
	K	3. Knowledge and understanding of: The overall theoretical basis for the study of a range of sustainable energy technologies.				ME5506 ME5520 ME5521 ME5564 ME5571
	K	4. Knowledge and understanding of: The theoretical basis and practical implementation of environmental impact assessment methods.		ES5805	ES5701	ME5506 ME5520 ME5521 ME5522 ME5564
	K	5. Knowledge and understanding of: The principles of renewable energy technology				ME5521 ME5564 ME5506
	K	6. Knowledge and understanding of: The theoretical basis for the study of the built environment energy use and human comfort.				ME5520 ME5521 ME5506 ME5522 ME5564
	K	7. Knowledge and understanding of: The theoretical basis for the study of process, transport and industrial energy use in a sustainable method.				ME5564 ME5506 ME5521 ME5571
	K	8. Knowledge and understanding of: The principles and practice of energy and environmental appraisals and auditing.		ES5805	ES5701	ME5522 ME5506 ME5521 ME5564
	K	9. Knowledge and understanding of:				ME5506 ME5521 ME5564

		The principles of modelling energy systems, size components and synthesise solutions.				
	C	10. Evaluate systems for sustainable energy use in the built environment, transport and industrial processes.				ME5564 ME5506 ME5521 ME5500
	C	11. Evaluate the environmental impact of energy solutions.		ES5805	ES5701	ME5506 ME5521 ME5564 ME5522 ME5571 ME5500
	C	12. Analyse and evaluate the performance of energy systems.				ME5506 ME5521 ME5564 ME5500
	C	13. Identify and analyse the design requirements for sustainable energy generation and management systems.				ME5506 ME5521 ME5564 ME5571 ME5572 ME5500
	C	14. Propose design solutions to sustainable energy problems				ME5506 ME5521 ME5522 ME5564 ME5571 ME5500
	C	15. Identify relevant aspects of current energy and environmental legislation.				ME5522 ME5506 ME5521 ME5520 ME5564 ME5571 ME5500
	C	16. Plan and evaluate personal projects	x			MN5508 ME5506 ME5521 ME5564 ME5571 ME5500
	C	17. Assemble and critically analyse relevant primary and secondary data.	x	ES5805	ES5701	ME5522 ME5571 ME5506 ME5521 ME5564 NM5508 ME5500
	C	18. Select and use appropriate investigative techniques	x			ME5571 ME5572 ME5522 ME5500
	C	19. Select and use appropriate simplified and advanced simulation tools	x			ME5521 ME5506 ME5520 ME5522 ME5564 MN5508 ME5500
	S	20. Design and implement advanced energy engineering systems.				ME5506 ME5521 ME5564 ME5520 ME5500
	S	21. Define and organise a substantial investigation that is informed by the field of study through advanced study.	x			ME5500 ME5571 ME5522 ME5564

	S	22. Appraise and critically evaluate appropriate research methods.	x			ME5571 ME5500 ME5522 ME5564 ME5506 ME5521
	S	23. Systematically and creatively consolidate and present technical information into a concise, coherent document.				ME5500 ME5571 ME5506 ME5521 ME5522
	S	24. Employ complex and conventional methods of technical communication.				ME5500 ME5571 ME5522 ME5564

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

Knowledge-and-understanding learning outcomes

All of the learning outcomes are taught through small group classes with lectures. In addition: laboratory experiments support learning outcome 3; learning outcomes 2 and 4 are acquired through periodic formative coursework; and learning outcome 8 is acquired through hands-on audit and periodic formative coursework.

Material will be delivered to allow students to both broaden and deepen their knowledge of energy engineering in the context of sustainability. The core modules provide students with fundamental principles that cover the breadth of material of this programme needed for this award while the specialist options provide students with opportunities to develop advanced and specific knowledge of project management and economics.

Cognitive skills

Skills 10-15 are acquired through the undertaking and the presentation of coursework assignments. Many of the skills are acquired through the dissertation project.

Other skills and attributes

Skills 20, 23 and 24 are acquired through the undertaking and the presentation of coursework assignments. Many of the skills are acquired through the dissertation project. Namely, skills 22 and 23 through the literature search and review, skills 21-24 through the preparation of the dissertation. Again, self-study and research will underpin the teaching and learning objectives.

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

Knowledge-and-understanding learning outcomes

Each of the outcomes is assessed using written assignments, and in the case of outcomes 1, 3, 5 and 6 unseen written exams are also used.

Cognitive skills

All of the skills are assessed using written coursework including technical project reports and through the dissertation.

Other skills and attributes

All of the skills are assessed using written coursework including technical project reports. Additionally, skills 21-24 are assessed through the dissertation and skill 20 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	
<b>Compulsory assessment block codes, titles and credit</b> ES5805 Strategic Sustainable Development (15 credits)	<b>Optional assessment block codes, titles and credits</b>
<b>Compulsory study block codes, titles and credit volume</b> <b>Term 1</b> ES5701 Strategic Sustainable Development (15 credits)	<b>Optional Study block codes, titles and credit volume</b>
<b>Compulsory modular block codes, titles and credits</b> <b>Term 1</b> ME5571 Research Methods and sustainable Engineering (15 credits) ME5620 Renewable Energy Systems for the Built Environment (15 credits) <b>Term 2</b> ME5506 Energy Conversion Technologies (15 credits) ME5521 Renewable Energy Technologies (15 credits) ME5522 Environmental Legislation; Energy and Environmental Review and Auditing (15 credits) ME5564 Sustainable Energy Development (15 credits) ME5500 Dissertation (60 Credits) Core: Block	<b>Optional modular block codes, titles and credits</b> Students should choose one of the two modules below. <b>Term 1</b> MN5508 Project Management (15 credits) ME5641 Strategy and Business Planning (15 credits)
<b>FHEQ Level 7 Progression and Award Requirements</b> <a href="#">As per Senate Regulation 3</a> <b>PGDip may be awarded by substitution of the dissertation (ME5500) for modular/assessment blocks in the taught part of the programme, if learning outcomes have been met.</b>	

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.

