

Programme Specification for Postgraduate Programme Leading to: MSc Renewable Energy Engineering



Applicable for all postgraduate students starting on or after 1st September 2021

Version No.	Date	Notes – QA USE ONLY	QA
2021-22 v1	28 June 2021	Programme Specification updated for 2021/22 entrants. This includes clarifying when blocks will be taught for September and January cohorts.	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, Aerospace and Civil Engineering / Mechanical Engineering/
4. Contributing college/department/division /associated institution	None
5. Programme accredited by	EI, IMechE
6. Final award(s) and FHEQ Level of Award	MSc Renewable Energy Engineering FHEQ Level 7
7. Programme title	MSc Renewable Energy Engineering
8. Programme type (Single honours/joint)	N/A
9. Normal length of programme (in months) for each mode of study	12m full time and 36m 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 Renewable Energy Engineering - FHEQ Level 7 Postgraduate Certificate in Renewable Energy Engineering - FHEQ Level 7
15. UCAS Code	N/A
16. JACS / HECoS Code	H221(70%), H300(30%) /TBC
17. Route Code	H221PRENEWEN
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: UK Standard for Professional Engineering Competence: UK SPEC
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.	None
22. Further information about the programme is available from:	Course webpage

23. EDUCATIONAL AIMS OF THE PROGRAMME

The programme will develop advanced knowledge, understanding and skills in the engineering disciplines that underpin the study of renewable energy engineering. It will develop independent learning ability and the versatility and depth to deal with new and complex challenges across a range of Renewable Energy issues. The programme will encourage imaginative solutions to engineering problems, develop initiative and creativity and deliver experienced graduates suitable for following successful engineering careers at the highest level both nationally and internationally. The programme will also provide a pathway for progression to Chartered Engineer status.

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 7	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)
	K	1. A comprehensive understanding of advanced theories and concepts underpinning the provision of renewable energies				ALL
	K	2. A critical awareness of the engineering technology and energy conversion methodologies used in renewable energy systems				ALL
	K	3. A critical awareness of economic factors that determine the design and use of renewable energy systems.				ME5567 ME5568 ME5569 ME5627 ME5620 ME5522 ME5500
	K	4. A comprehensive understanding the design process for renewable energy systems and their integration in buildings and industrial operations.				ME5567 ME5568 ME5569 ME5627 ME5620
	K	5. A comprehensive understanding of the regulatory and operational issues associated with the deployment of renewable energy systems.				ME5567 ME5568 ME5569 ME5522
	K	6. A critical awareness of environmental review, audit and management when applied to renewable energy systems.				ME5522 ME5500
	C	7. Evaluation and critical analysis of technologies currently used in renewable energy systems				ALL
	C	8. Ability to identify and apply appropriate analytic methodologies in the solution of complex problems in renewable energy engineering				ME5567 ME5568 ME5569 ME5627 ME5620 ME5506 ME5629 ME5500
	C	9. Application of appropriate design processes and methodologies in the analysis of renewable energy systems, and the ability to adapt in unfamiliar situations				ME5500 ME5567 ME5568 ME5569 ME5620

C	10. Deal with complex issues both systematically and creatively, make sound judgements in the absence of complete data, and communicate their conclusions clearly to specialist and non-specialist audiences.				ME5500 ME5627 ME5567 ME5568 ME5569 ME5620
C	11. Demonstrate self-direction, originality and innovative thinking in tackling and solving problems, and act autonomously in planning and implementing tasks at a professional or equivalent level				ALL
C	12. The evaluation, analysis and optimisation of the effects of different design solutions on the performance of renewable energy systems.				ME5567 ME5568 ME5569 ME5620 ME5506 ME5500
C	13. The evaluation and application of appropriate environmental and commercial strategies for use in renewable energy systems				ME5500 ME5522
S	14. Perform confident decision-making in complex and unpredictable situations common to cross-disciplinary engineering projects.	x			ME5500
S	15. Employ principles of good research practice and undertake a well-structured piece of independent investigation and original research.	x			ME5500
S	16. Communicate scientific ideas and findings effectively and appropriately through written reports to specialist and non-specialist audiences.				ALL
S	17. Ability to carry out extensive literature research and review and present results in a structured written report	x			ME5522 ME5500
S	18. Conduct independent learning ability required for continuing professional development.				ALL
S	19. Develop, apply and critically review project management techniques used in the delivery of an extended individual report.	x			ME5500

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

Knowledge-and-understanding learning outcomes

For full-time mode, all of the learning outcomes are taught through small group classes with lectures and supporting seminars. In addition, laboratory experiments are used to support learning outcomes for skills 1, 2, 7 and 10. Learning outcomes are re-enforced through periodic, formative, coursework.

For distance-learning mode, coursework and project work are used in the same way as for full-time mode but in place of the lecture classes, self-study course material including self-assessment questions are used.

Cognitive skills

For both full-time and distance-learning modes, skills 7-13 are developed concurrently through the combination of lectures, seminars, tutorials, course material, assignments and a dissertation project.

Other skills and attributes

For both full-time and distance-learning modes, skills 14-19 are developed concurrently through the combination of lectures, seminars, tutorials, course material, assignments and a dissertation project.

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 unseen written exams.

Cognitive skills

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

Other skills and attributes

All of the skills are assessed either through written coursework, including technical project reports, the dissertation or 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
<p>Compulsory modular block codes, titles and credits</p> <p>Term 1 ME5567 Renewable Energy Technologies I-Solar Thermal and electricity systems (15 credits) ME5568 Renewable Energy Technologies II-Wind, Tidal, Wave, Hydroelectricity (15 credits) ME5627 Power Generation from Renewable Energy (15 credits) ME5620 Renewable Energy Systems for the Built Environment (15 credits)</p> <p>Term 2 ME5506 Energy Conversion Technologies (15 credits) ME5522 Environmental Legislation: Energy and Environmental Review and Audit (15 credits) ME5569 Renewable Energy Technologies III-Geothermal, Biomass, Hydrogen (15 credits) ME5629 Principles in Heat and Mass Transfer (15 credits)</p> <p>ME5500 Dissertation (60 Credits) Core: Block</p> <p>Sequence of modules for Distance Learning (DL)</p> <p>Stage 1 (year one): September start ME5567, ME5568, ME5620, ME5627. January start - ME5567, ME5627, ME5506, ME5522 Stage 2 (year two): ME5569, ME5506, ME5522, ME5629 January start - ME5568, ME5569, ME5620, ME5529 Stage 3 (year three): ME5500</p>	<p>Optional modular block codes, titles and credits</p> <p>None</p>
<p>FHEQ Level 7 Progression and Award Requirements</p> <p>As per Senate Regulation 3</p> <p>PG Dip 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.</p>	

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.