

Programme Specification for Programme Leading to: MSc Advanced Electronic and Electrical Engineering



Applicable for all postgraduate students starting on or after 1st September 2020

Version No.	Date	Notes – QA USE ONLY	QAM/O
2020-21 v1	28 November 2019	Minor modification to programme for 2020/21 entrants, compulsory block EE5566 Advanced Analogue Electronics and Photonics replaces EE5651 Integrated Circuit Design.	JP
2020-21 v2	18 June 2020	Modification to programme. Update to learning outcomes. Compulsory block EE5620 Project Control and Management replaced by EE5629 Innovation, Business and Enterprise for Engineers. Compulsory blocks EE5617 Applied Sensors, Instrumentation and Control (20 credits) replaced by EE5624 Applied Sensors, Instrumentation and Control (15 credits) and EE5618 AEEE Group Project (10 credits) replaced by EE5626 AEEE Group Project (15 credits). Optional blocks EE5571 Embedded Systems Engineering replaced by EE5628 Advanced Embedded Systems Design. Optional blocks EE5503 Computer Networks and EE5615 Intelligent Systems removed and EE5627 Artificial Intelligence System Techniques added.	JP
2020-21 v3	20 July 2020	Confirmation of block codes.	JP
2020-21 v4	19 August 2020	Programme content confirmed for a September 2020 start. January 2021 start added.	JP
2020-21 v5	6 October 2020	On 23 September Senate approved that a PGDip may be awarded by substitution of the dissertation (EE5500) for up to 30 credits of modular/assessment blocks in the taught part of the programme, provided the learning outcomes have been met.	JP
2020-21 v6	20 November 2020	Confirmation of mapping of blocks to programme level learning outcomes.	JP

Masters 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 Electronic and Electrical Engineering
4. Contributing college/department/division /associated institution	None
5. Programme accredited by	Institution of Engineering Technology
6. Final award(s) and FHEQ Level of Award	MSc Advanced Electronic and Electrical Engineering FHEQ Level 7
7. Programme title	MSc Advanced Electronic and Electrical Engineering
8. N/A	
9. Normal length of programme (in months) for each mode of study	12 Months
10. Maximum period of registration for each mode of study	Normal or standard duration plus 2 years (up to a maximum of five years)
11. Variation(s) to September start	January from 2021
12. Modes of study	Full Time
13. Modes of delivery	Standard
14. Intermediate awards, titles and FHEQ Level of Award	Postgraduate Certificate in Advanced Electronic and Electrical Engineering - FHEQ Level 7 Postgraduate Diploma in Advanced Electronic and Electrical Engineering - FHEQ Level 7
15. UCAS Code	N/A
16. JACS / HECoS Code	H610 /100165
17. Route Code	H610PADVEENG
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 University London 2030 Brunel Placement Learning Policy, as published under the 'Placements' section of the ' Managing Higher Education Provision with Others ' page.

19. Admission Requirements	Details of PGT 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 the College website.	MSc Advanced Electronic and Electrical Engineering

23. EDUCATIONAL AIMS OF THE PROGRAMME

The primary aim of this programme is to produce MSc graduates with advanced and broad knowledge and skills relevant to a demanding and dynamic electronic and electrical engineering sector i.e., sensors and instrumentation, control systems, photonics, power electronics with applications to sustainable power systems, telecommunications, intelligent systems, medical systems, integrated circuits and embedded systems.

Specific aims are as follows:

- 1) To develop in-depth knowledge in electrical and electronics engineering issues that will help to deal with new, complex and unusual challenges across a range of electrical and electronics issues..
- 2) To develop imagination, initiative and creativity to enable graduates for problem solving.

To provide a pathway that will prepare graduates for successful careers with national and international organisations including, where appropriate, 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	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	Comprehensive knowledge and understanding of the scientific principles of electronic and electrical engineering				EE5566 EE5626 EE5624 EE5627 EE5550 EE5630 EE5622 EE5628 EE5519 EE5500
	K	A critical awareness of current problems and/or new insights in electronic and electrical engineering				EE5566 EE5626 EE5624 EE5630 EE5627

						EE5622 EE5628 EE5519 EE5500
	K	Awareness of professional and ethical responsibility related their field to effectively perform their engineering activities				EE5627 EE5550 EE5625 EE5629 EE5630 EE5500
	C	Ability to apply appropriate engineering analysis methods for solving complex problems and to critically assess new and emerging developments in electronic and electrical engineering				EE5500 EE5566 EE5630 EE5550 EE5622 EE5519 EE5622 EE5628
	C	Identify, use and evaluate appropriate investigative techniques				EE5500
	K,C, S	Knowledge and , comprehensive understanding of design processes and methodologies associated with electronic and electrical engineering and the ability to apply them				EE5500 EE5566 EE5626 EE5624 EE5571 EE5550 EE5622 EE5628
	S	Communicate effectively in writing and/or by oral presentation				EE5500 EE5566 EE5626 EE5624 EE5622 EE5630 EE5628
	S	Define and successfully carry out independent investigations to determine the state of knowledge and research in a specific subject area				EE5500
	S	Work effectively as a member of a team				EE5626 EE5624 EE5630 EE5622 EE5628

	Learning/teaching strategies and methods to enable learning outcomes to be achieved, including formative assessments
	<ul style="list-style-type: none"> • Knowledge and understanding in the areas indicated are acquired through a mix of lectures, workshops, seminars, self-study, and individual and group project work. In lectures key concepts and ideas are introduced, definitions are stated, techniques are explained, and immediate student queries discussed. Seminars provide the students with the opportunity to discuss at greater length issues arising from lectures. Workshops sessions are used to foster practical engagement with the taught material. • Team work, effective communication, critical review and research skills are developed primarily through completion of carefully designed lab exercises, completion of group assignments, and through the dissertation project
	Summative assessment strategies and methods to enable learning outcomes to be demonstrated.
	<p>Assessment will allow students to demonstrate their abilities in a range of styles relevant to professional Electrical and Electronics Engineers. These will include:</p> <ul style="list-style-type: none"> • Essays and reports – demonstration of depth and breadth of knowledge and written communication skills • Technical analytical reports – ability to collect, analyse and interpret a range of evidence, including in the laboratory • Group report – contribution as a team member to a collaborative challenge • Formal examinations – ability to quickly formulate arguments and solve problems • Dissertation – ability to plan, critically review, execute and communicate an advanced piece of research – EE5500, the Dissertation specification, requires students to undertake research relevant to their specific programme. <p>Deadlines will be distributed through the year, allowing time for constructive feedback.</p>

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>EE5629 Innovation, Business and Enterprise for Engineers (15 credits)</p> <p>EE5566 Advanced Analogue Electronics & Photonics (15 Credits)</p> <p>EE5624 Applied sensors, instrumentation and control (15 Credits)</p> <p>EE5626 AEEE Group Project (15 credits)</p> <p>EE5519 Power Electronics and FACTS (15 Credits)</p> <p>EE5625 Engineering Ethics and Sustainability (15 Credits)</p> <p>EE5500 Project and Dissertation (60 credits – Core Block)</p>	<p>Optional modular block codes, titles and credits</p> <p>Choose 2 modules with at least one on digital electronics (EE5627, EE5628 or EE5630)</p> <p>In term 2, only a maximum of 30 credits of optional modules are allowed</p> <p>EE5630 Advanced Embedded Systems Design (15 Credits)</p> <p>EE5627 Artificial Intelligence System Techniques (15 Credits)</p> <p>EE5628 Embedded DSP for Communications (15 Credits)</p> <p>EE5550 RF & Optical Communication Systems (15 Credits)</p> <p>EE5622 Communication Network Technologies (15 Credits)</p>

FHEQ Level 7 Progression and Award Requirements

[As per Senate Regulation 3](#)

A PGDip may be awarded by substitution of the dissertation (EE5500) for up to 30 credits of 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 module outlines and other programme and module information. The accuracy of the information contained in this document is reviewed by the University from time to time and whenever a major modification occurs, and may be checked by the Quality Assurance Agency for Higher Education.