

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

Applicable for all postgraduate students starting on or after 1<sup>st</sup> September 2018

Version No.	Date	Notes – QA USE ONLY	QAM/O
2018/19 v1	24 August 2018	Programme specification for 2018 entrants.	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 Computer Engineering / Electronic and Computer Engineering/
4. Contributing college/department/division /associated institution	None
5. Programme accredited by	IET
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	None
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 Code	H610
17. Route Code	H610PADVEENG
18. Relevant subject benchmark statements and other external and internal reference points used to inform programme design	<a href="#">QAA UK Quality Code for Higher Education</a> which includes the English Framework for Higher Education Qualifications within Part A on Setting and Maintaining Academic Standards <a href="#">QAA Subject Benchmark Statement (Engineering)</a> <a href="#">Brunel University London 2030</a> Brunel Placement Learning Policy, as published under the 'Placements' section of the ' <a href="#">Managing Higher Education Provision with Others</a> ' page.

19. Admission Requirements	Details of <a href="#">PGT 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 the College website.	<a href="#">MSc Advanced Electronic and Electrical Engineering</a>

### 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)
5	K	Gain knowledge and understanding of principles, concepts and theories of electronic and electrical engineering systems such as sensors and instrumentation, control, photonics, sustainable power systems, telecommunications, intelligent systems, medical systems,				EE5566 EE5618 EE5617 EE5503 EE5614 EE5550 EE5571 EE5555 EE5609

		integrated circuits and embedded systems				
	K	The application of advanced electronic and electrical systems and concepts in practical systems and critical awareness of their suitability to solve specific problems				EE5566 EE5618 EE5617 EE5571 EE5503 EE5614 EE5555
	K	Comprehensive understanding of methods and techniques for design, modelling, optimisation and implementation of electronic and electrical systems				EE5566 EE5618 EE5617 EE5609 EE5571 EE5503 EE5614 EE5550 EE5555
	K	Gain knowledge and understanding of strategic context and importance of project control and management, and the appropriateness of management techniques				EE5620 EE5500
	C	Critically evaluate advanced techniques and current research in a specific electronic and electrical engineering area				EE5500 EE5566 EE5571 EE5550
	C	Identify, use and evaluate appropriate investigative techniques	√			EE5500
	C	Synthesize, analyse, design and provide critical evaluation of how key technologies and architectures can be best exploited in a given application				EE5500 EE5566 EE5618 EE5617 EE5609 EE5571 EE5503 EE5550 EE5555
	C	Assemble and critically analyse relevant data				EE5500
	C	Analyse and employ appropriate means and techniques of personal, resource and cost of project control and management				EE5620 EE5618 EE5617
	S	Develop design skills in specific areas of				EE5566 EE5571

		electronics and electrical engineering				EE5614 EE5555
	S	Communicate effectively in writing and/or by oral presentation				EE5500 EE5566 EE5618 EE5617
	S	Manage time and resources for effective learning				EE5620
	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				EE5618 EE5617 EE5571

	<b>Learning/teaching strategies and methods</b> to enable learning outcomes to be achieved, including formative assessments
	<ul style="list-style-type: none"> <li>• 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.</li> <li>• 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</li> </ul>
	<b>Summative assessment strategies and methods</b> 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"> <li>• Essays and reports – demonstration of depth and breadth of knowledge and written communication skills</li> <li>• Technical analytical reports – ability to collect, analyse and interpret a range of evidence, including in the laboratory</li> <li>• Group report – contribution as a team member to a collaborative challenge</li> <li>• Formal examinations – ability to quickly formulate arguments and solve problems</li> <li>• 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.</li> </ul> <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.

Level 5	
<b>Compulsory assessment block codes, titles and credit</b>	<b>Optional assessment block codes, titles and credits</b>
<b>Compulsory study block codes, titles and credit volume</b>	<b>Optional Study block codes, titles and credit volume</b>
<b>Compulsory modular block codes, titles and credits</b>  EE5620 Project Control and Management (15 Credits)  EE5566 Advanced Analogue Electronics & Photonics (15 Credits)  EE5617 Applied sensors, instrumentation and control (20 Credits)  EE5618 AEEE Group Project (10 credits)  EE5519 Power Electronics and FACTS (15 Credits)  EE5500 Project and Dissertation (60 credits – Core Block)	<b>Optional modular block codes, titles and credits</b>  <b>Choose 3 modules with at least one on digital electronics</b> (EE5609, EE5571, EE5555 or EE5614)  In term 2, only a maximum of 45 credits of optional modules are allowed  EE5609 Analogue Integrated Circuit Design (15 Credits)  EE5571 Embedded Systems Engineering (15 Credits)  EE5503 Computer Networks (15 Credits)  EE5614 Intelligent Systems (15 Credits)  EE5555 DSP for Communications (15 Credits)  EE5550 RF & Optical Communication Systems (15 Credits)

### Level 5 Progression and Award Requirements

[As per Senate Regulation 3](#)

**PGDip may not be awarded by substitution of the dissertation (EE5500) for modular/assessment blocks in the taught part of the programme.**

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.

