

# Programme Specification for Programme Leading to: MSc Wireless Communication Systems

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 Wireless Communication Systems FHEQ Level 7
7. Programme title	MSc Wireless Communication Systems
8. N/A	
9. Normal length of programme (in months) for each mode of study	FT: 12 Months. FTN: 18 Months (Taught Element F/T and Dissertation P/T)
10. Maximum period of registration for each mode of study	FT: Normal period of study plus two years up to a maximum of five years FTN: Normal period of study plus two years up to a maximum of five years
11. Variation(s) to September start	N/A
12. Modes of study	FT, FTN
13. Modes of delivery	Standard; Off Campus
14. Intermediate awards, titles and FHEQ Level of Award	Postgraduate Diploma in Wireless Communication Systems FHEQ Level 7 Postgraduate Certificate in Wireless Communication Systems FHEQ Level 7
15. UCAS Code	N/A
16. JACS Code	H640
17. Route Code	H640PSWRCOSY

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 College website:	<a href="#">MSc Wireless Communication Systems</a>

### 23. EDUCATIONAL AIMS OF THE PROGRAMME

The aims of the programme are to produce graduates who:

- 1) due to their advanced skills and competences acquired during their study, are highly employable, particularly in industries associated with the development of wireless and communication systems.
- 2) can demonstrate a deep theoretical understanding of wireless communication systems as well as an ability to analyse complex problems associated with such systems.
- 3) have thorough technical knowledge and hands-on experience to implement practical systems that are needed in wireless communications industry.
- 4) have experience of assessing, analysing, and solving complex industrial problems in wireless communications.
- 5) have a wide range of transferable skills and competences that are needed in technological industries:
  - a. Ability to communicate, verbally and in writing, technically complex issues to audiences with or without a technical background;
  - b. Ability to work independently or within a team towards dealing with contemporary challenges in the technological sector;
  - c. Ability to undertake advanced professional training or to pursue higher academic study.

### 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:

<b>Level</b>	<b>Category</b> (K = knowledge and understanding, C = cognitive (thinking) skills, S = other skills and attributes)	<b>Learning Outcome</b>	<b>Masters Only</b>	<b>Associated Assessment Blocks Code(s)</b>	<b>Associated Study Blocks Code(s)</b>	<b>Associated Modular Blocks Code(s)</b>
5	<b>K</b>	Knowledge and Understanding of the terminology and concepts of wireless systems.				EE5511, EE5515, EE5612, EE5611, EE5550, EE5527 EE5555, EE5500
	<b>K</b>	Knowledge and Understanding of current and emerging technologies for wireless communications.				EE5550, EE5515, EE5612, EE5555, EE5527 EE5550,
	<b>K</b>	Knowledge and Understanding of project management techniques and management of change.				EE5620, EE5500
	<b>C</b>	Able to recognise solutions appropriate for wireless communication systems.				EE5511 EE5515, EE5612, EE5611, EE5550, EE5555, EE5500
	<b>C</b>	Able to critically assess new developments in wireless communication systems.				EE5515, EE5527, EE5612, EE5550, EE5555, EE5500

	<b>C</b>	Able to critically assess developments in wireless network technologies with respect of their suitability for wireless communication applications.				EE5515, EE5500
	<b>C</b>	Able to review and draw conclusions from current literature in a technically complex area.	√			EE5500
	<b>C</b>	Able to plan, execute and evaluate a significant investigation into a current problem area related to wireless communication systems.				EE5611, EE5500
	<b>S</b>	Able to work effectively in a team.				EE5611, EE5555
	<b>S</b>	Able to present complex issues and arguments in both written and oral forms.				EE5620, EE5611, EE5612, EE5555, EE5500
	<b>S</b>	Able to employ state of the art simulation software to investigate and evaluate design solutions.				EE5612, EE5555, EE5500
	<b>S</b>	Able to write up a research investigation in a concise and coherent document, conveying the main conclusions to a non-specialist audience.	√			EE5500

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

Knowledge and understanding in the areas indicated and the cognitive skills 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.

The dissertation project plays a more significant role in supporting literature review in a technically complex area and to plan, execute and evaluate a significant investigation into a current problem area related to wireless communication systems.

Other skills and attributes 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.

A variety of assessment methods are used. A final unseen examination features heavily in the more theoretical modules, and is a major component in the assessment of most knowledge and understanding and cognitive skills. Written assignments are also used to assess some learning outcomes.

Literature review and planning, executing and evaluating a significant investigation into a current problem area related to wireless communication systems is assessed particularly in the dissertation.

Team work, presentation in written and oral forms and employment of state of the art simulation software to investigate and evaluate design solutions are assessed in the labs in the form of assignments. The EE5555 module has a group project component which is assessed by written reports.

## 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)  EE5511 Advanced Digital Communications (15 Credits) EE5527 Network Design and Management (15 Credits) EE5515 Wireless Network Technologies (15 Credits) EE5612 Communication Networks Security (15 Credits) EE5611 Research Methods and Professional Development (15 Credits)  EE5550 Radio and Optical Communication Systems (15 Credits) EE5555 DSP for Communications (15 Credits) EE5500 Project and Dissertation (60 credits - Core)	<b>Optional modular block codes, titles and credits</b>
<b>Level 5 Progression and Award Requirements.</b> <a href="#">As per Senate Regulation 3</a> <b>PGDip may not be awarded by substitution of the dissertation (EE5500) for modular/assessment blocks in the taught part of the programme.</b>	
<small>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.</small>	