Programme Specification for Postgraduate Programme Leading to: MSc Computer Communication Networks

Applicable for all postgraduate students starting on or after 1st September 2018

Version No.	Date	Notes – QA USE ONLY	QAM/O
2018/19 v1	*24 August 2018*	*Programme specification for 2018 entrants.*	*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 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 Computer Communication Networks FHEQ Level 7
7. Programme title	MSc Computer Communication Networks
8. Programme types (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	FT: Normal or standard duration plus 2 years (up to a maximum of five years)
11. Variation(s) to September start	N/A
12. Modes of study	FT
13. Modes of delivery	Standard
14. Intermediate awards, titles and FHEQ Level of Award	Postgraduate Diploma in Computer Communication Networks - FHEQ Level 7 Postgraduate Certificate in Computer Communication Networks - FHEQ Level 7
15. UCAS Code	N/A
16. JACS Code	H600
17. Route Code	H640PCOMNET
18. Relevant subject benchmark statements and other external and internal reference points used to inform programme design	QAA UK Quality Code for Higher Education which includes the English Framework for Higher Education Qualifications within Part A on Setting and Maintaining Academic Standards 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.
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 Computer Communication Networks

23. EDUCATIONAL AIMS OF THE PROGRAMME

This MSc programme is for graduates of computer science, computer engineering, electronic engineering, physics and mathematics who wish to develop specialist computer communication networks, including local area networks, wide area networks, communication systems and associated infrastructure. The programme has a particular emphasis on network security as well as network design and management.

The programme provides students with not only technical skills and knowledge at an advanced level in computer communication networks, but also professional, analytical and management skills. In particular, the programme is equipped with a major research project which enables students to develop the specific subject specialism including a thorough understanding of the concepts and methodologies of research as well as practical transferable skills.

The aims of the programme are:

- To provide students with an advanced base of knowledge in computer communication networks necessary to support a career at a professional level.
- To gain an extensive insight into industrial applications and requirements of computer networks and communication systems.
- To develop a critical insight into management issues relating to computer network design and security.

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	Knowledge and Understanding of the terminology and concepts of state of the art computer communication network systems				EE5511 EE5505 EE5611 EE5614 EE5527 EE5612 EE5503
	K	Knowledge in advanced digital communication and transmission techniques.				EE5511 EE5550 EE5503
	K	Knowledge in network structures and techniques, including layered network architectures, protocols, process interconnection, routing and intelligent data analytics.				EE5614 EE5527 EE5503
	K	Current and emerging technologies for Radio and optical communications				EE5550 EE5511

	K	Advanced knowledge on communication network security and encryption algorithms				EE5612 EE5503
	K	State of the art of the network techniques and intelligent systems				EE5614 EE5503 EE5527
	K	Project management techniques and management of change				EE5620 EE5500
	C	Able to recognise solutions appropriate for computer communication systems				EE5511 EE5550 EE5611 EE5614 EE5527 EE5612
	C	Able to critically assess new developments in computer network and communication systems				EE5505 EE5503 EE5614 EE5527 EE5552 EE5500
	C	Able to critically assess developments in computer networks in respect of their suitability for IT applications				EE5611 EE5614 EE5527 EE5612
	C	Able to demonstrate sound judgement in the selection of complex mathematical techniques for data compression and encryption				EE5511 EE5612
	C	Able to review and draw conclusions from current literature in a technically complex area	√			EE5500 EE5611
	C	Plan, execute and evaluate a significant investigation into a current problem area related to computer communication systems				EE5611 EE5500
	S	Able to work effectively in a				EE5611 EE5620

		team.				
	S	Able to present complex issues and arguments in both written and oral forms				EE5611 EE5500
	S	Able to employ state of the art simulation software to investigate and evaluate design solutions.				EE5611 EE5500
	S	Able to write up a research investigation in a concise an coherent document, conveying the information to specialist and non-specialist audience	√			EE5500 EE5611
	K	Gain knowledge and understanding of strategic context and importance of project control and management, and the appropriateness of management techniques				EE5620
	C	Analyse and employ appropriate means and techniques of personal, resource and cost of project control and management				EE5620 EE5618 EE5617

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

- 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. 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

- 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.

Assessment will allow students to demonstrate their abilities in a range of styles relevant to professional Electrical and Electronics Engineers. These will include:

- 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.

Deadlines will be distributed through the year, allowing time for constructive feedback.

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	
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**
Compulsory modular block codes, titles and credits All modules are 15 credits unless otherwise specified EE5503 Computer Networks EE5550 Radio and Optical Communication Systems EE5611 Research Methods and Professional Development EE5620 Project Control and Management EE5511 Advanced Digital Communications EE5614 Intelligent Systems EE5527 Network Design and Management EE5612 Communication Networks Security EE5500 Project and Dissertation (60 credits - Core)	**Optional modular block codes, titles and credits** **None**

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.