# Programme Specification for Postgraduate Programme Leading to: MSc Wireless and Computer Communication Networks

*Applicable for all postgraduate students starting in September 2021*

| Version No. | Date | Notes – QUALITY ASSURANCE USE ONLY | QA |
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| *2021-22 v1.0* | *30 June 2021* | *Minor modification to programme. Addition of a permanent January start from 2022 which will be 14 months in duration. Approved on behalf of College Education Committee and the College Management Board on 28 June 2021.* | *JP* |

| **Postgraduate Taught Programme** | |
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| 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 | For MSc Wireless and Computer Communication Networks (Off campus – Ahlia): Dept. of Telecommunication Engineering/ College of Engineering- Ahlia University, Bahrain |
| 5. Programme accredited by | Institution of Engineering Technology |
| 6. Final award(s) and FHEQ Level of Award | MSc Wireless and Computer Communication Networks<br>FHEQ Level 7 |
| 7. Programme title | MSc Wireless and Computer Communication Networks |
| 8. Programme type (single honours/joint) | N/A |
| 9. Normal length of programme (in months) for each mode of study | FT: 12 Months (September intake)<br>FT: 14 Months (January intake)<br>FTN: 12 Months (Commencing September 2022) |
| 10. Maximum period of registration for each mode of study | Normal or standard duration plus 2 years up to a maximum of 5 years. |
| 11. Variation(s) to September start | January 2022 subject to review thereafter. |
| 12. Modes of study | FT<br>FTN at Ahlia University, Bahrain |
| 13. Modes of delivery | MSc Wireless and Computer Communication Networks: Standard;<br>MSc Wireless and Computer Communication Networks (Off campus – Ahlia): Block mode |
| 14. Intermediate awards and titles and FHEQ Level of Award | Postgraduate Diploma in Wireless and Computer Communication Networks: FHEQ Level 7<br>Postgraduate Certificate in Wireless and Computer Communication Networks: FHEQ Level 7 |
| 15. UCAS Code | N/A |
| 16. HECoS Code | 100159 |
| 17. Route Code | 86FEPWIRCOCO for FT |
| 18. Relevant subject benchmark statements and other external and internal reference points used to inform programme design | UK Quality Code for Higher Education<br>QAA Subject Benchmark Statement (Subject area)<br>Brunel 2030<br>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. |

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| | 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. | Link to programme information on the College website |

## 23. EDUCATIONAL AIMS OF THE PROGRAMME

The aims of the programme are to produce graduates who:

1) are highly employable, particularly in industries associated with the development of Wireless and Computer Communication systems.

2) can demonstrate a deep theoretical understanding of wireless and computer 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 and computer communications industry.

4) have experience of assessing, analysing, and solving complex industrial problems in wireless and computer 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:

| **Masters FHEQ Level 7** | Category (K = knowledge and understanding, C = cognitive (thinking) skills, S = other skills and attributes) | **Learning Outcome** | **Masters Award Only** | **Associated Assessment Blocks Code(s)** | **Associated Study Blocks Code(s)** | **Associated Modular Blocks Code(s)** |
|---|---|---|---|---|---|---|
| **Masters and FHEQ level 7** | | | | | | |
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| | **K** | Comprehensive knowledge and understanding of the scientific principles of wireless and computer networks. | | | | EE5623, EE5622, EE5612, EE5550, EE5628, EE5500 |

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| | **K** | A critical awareness of current problems and/or new insights in wireless and computer networks. | | | | EE5500, EE5623, EE5622, EE5612, EE5627, EE5628, EE5550, |
| | **K** | Critical awareness of professional and ethical responsibilities related to their field to effectively perform their engineering activities | | | | EE5627, EE5550, EE5625, EE5629, EE5500 |
| | **C** | Ability to apply appropriate engineering analysis methods for solving complex problems and to critically assess new and emerging developments in wireless and computer communication systems | | | | EE5623, EE5622, EE5612, EE5627, EE5550, EE5628, EE5500 |
| | **K, C, S** | Knowledge and comprehensive understanding of design processes and methodologies associated with wireless and computer communication networks and the ability to apply them | | | | EE5623, EE5622, EE5628, EE5627, EE5550, EE5500 |
| | **C, S** | Able to critically review and draw conclusions from current literature in a technically complex area. | | | | EE5500 |
| | **C** | Able to plan, execute and evaluate a significant investigation into a current problem area related to wireless and computer communication systems. | | | | EE5500 |
| | **S** | Able to work effectively in a team. | | | | EE5622, EE5628 |
| | **S** | Able to present a research investigation in a concise and coherent document, conveying the main conclusions to a non-specialist audience. | | | | EE5500 |
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**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 and computer communication networks.

Other skills and attributes are developed primarily through completion of carefully designed lab exercises, completion of group assignments, and through the dissertation project.

The on-campus MSc Wireless and Computer Communication Networks is delivered in standard mode while the MSc Wireless and Computer Communication Networks (off-campus – Ahlia) in block mode. 50% of the taught credits for the off-campus mode are delivered by Ahlia staff (Brunel recognised lecturers) and the rest by Brunel staff. Dissertations supervision involve a supervisor from Brunel and a 2nd supervisor from Ahlia to support delivery.

**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 and computer communication networks 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 EE5xxx5 module has a group project component which is assessed by written reports.

All exams will be synchronised for both on-campus and off-campus delivery.

## 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.

| Full-Time Masters and FHEQ Level 7 – FOR FULL-TIME ROUTES ONLY | |
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| **Compulsory assessment block codes, titles and credit**<br><br>**September Start** (all blocks are 15 credits unless shown)<br><br>Autumn Term<br><br>EE5622 Communication Network Technologies<br>EE5623 Design for Internet of Things<br>EE5627 Artificial Intelligence System Techniques<br>EE5629 Innovation, Business and Enterprise for Engineers<br>EE5500 Project and Dissertation **(60 credits)**<br><br>Spring Term<br><br>EE5612 Communication Networks Security<br>EE5625 Engineering Ethics and Sustainability<br>EE5628 Embedded DSP for Communication Systems<br>EE5550 Radio and Optical Communication Systems<br>EE5500 Project and Dissertation **(60 credits)**<br><br>**January Start**<br><br>Spring Term<br><br>EE5612 Communication Networks Security<br>EE5625 Engineering Ethics and Sustainability<br>EE5628 Embedded DSP for Communication Systems<br>EE5550 Radio and Optical Communication Systems<br>EE5500 Project and Dissertation **(60 credits)**<br><br>Autumn Term of following academic year<br><br>EE5622 Communication Network Technologies<br>EE5623 Design for Internet of Things<br>EE5627 Artificial Intelligence System Techniques<br>EE5629 Innovation, Business and Enterprise for Engineers<br>EE5500 Project and Dissertation **(60 credits)** | **Optional assessment block codes, titles and credits**<br><br>N/A |

**Masters and FHEQ Level 7 Progression and Award Requirements**

**As per Senate Regulation 3**

PGDip may be awarded with the 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 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.