

Programme Specification for Undergraduate Programmes

Leading to:

BEng Electronic and Communications Engineering

(Delivered at Chongqing University of Posts and Telecommunications)

Applicable for all undergraduate students **starting at Year 1 (FHEQ level 4)** in 2021



Version No.	Date	Notes – QA USE ONLY	AO
2021.22 v1	17 August 2021	Programme specification for entrants in 2021.	JP

Undergraduate Programme	
1. Awarding institution	Brunel University London
2. Teaching institution(s)	Brunel University London, Chongqing University of Posts and Telecommunications
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	Chongqing University of Posts and Telecommunications, School of Communication and Information Engineering
5. Programme accredited by	(Accreditation to be sought from Institution of Engineering and Technology)
6. Final award(s) and FHEQ Level of Award	BEng (Honours) Electronic and Communications Engineering (FHEQ level 6)
7. Programme title	BEng Electronic and Communications Engineering
8. Programme type (Single honours/joint)	Single Honours
9. Normal length of programme (in months) for each mode of study	48 months FT
10. Maximum period of registration for each mode of study	Normal or standard duration (as defined above in 9) plus 3 years Maximum period 7 years
11. Variation(s) to September start	None for Standard Levels;
12. Modes of study	Full-time
13. Modes of delivery	Double degree programme, standard and block delivery
14. Intermediate awards. titles and FHEQ Level of Award	BEng (Ordinary) Electronic and Communications Engineering (FHEQ level 6) Dip HE Electronic and Communications Engineering (FHEQ level 5) Cert HE Electronic and Communications Engineering (FHEQ level 4) BEng (Honours) Engineering (Electronic and Communications) (FHEQ level 6)
15. UCAS Code	Not applicable
16. HECoS Code	100163
17. Route Code	H640UELECOCC

<p>18. Relevant subject benchmark statements and other external and internal reference points used to inform programme design</p>	<p>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.</p> <p>Engineering Council "The Accreditation of Higher Education Programmes"</p>
<p>19. Admission Requirements</p>	<p>Details of entry requirements are provided on the University's and College website and on the CQUPT website. Levels of English for non-native speakers are defined in terms of the English language component of the Chinese national College entrance examinations. There is no English requirement on admission but if a student's mark for the English language component of the entrance examinations is below 115 out of 150, it will be difficult for the student to successfully complete the BUL degree.</p>
<p>20. Other relevant information (e.g. study abroad, additional information on placements)</p>	<p>None</p>
<p>21. Programme regulations not specified in Senate Regulation 2. Any departure from regulations specified in Senate Regulation 2 must be stated here and approved by Senate.</p>	<ol style="list-style-type: none"> 1. No more than 20 credits of E is allowable at each level. 2. For BEng Honours degree, the student must have achieved an IELTS score of 5.5 (on each component) or above or a Brunel English language test score of 55 or above to progress from Level 5 to Level 6. 3. Degree award rule for Honours degree: <ol style="list-style-type: none"> 3.1 The student must have achieved an IELTS score of 6.0 (on each component) or above or a Brunel English language test score of 58 or above. 3.2. A student cannot get Brunel Honours degree if the student fails to meet CQUPT's degree requirements. 4. Ordinary Degree: <ol style="list-style-type: none"> 4.1 300 credits in total, including at least 100 credits in Level 4, 100 in Level 5 and 80 credits at level 6. 4.2 The student must have achieved an IELTS score of 6.0 (on each component) or above or a Brunel English language test score of 58 or above. 4.3 To get a BEng Ordinary degree, a student needs to take all modules specified in CQUPT Chinese degree program specification.
<p>22. Further information about the programme is available from the College website.</p>	<p>BEng Electronic and Communications Engineering</p>

23. EDUCATIONAL AIMS OF THE PROGRAMME

The programme is aimed at producing professional engineers with the knowledge and understanding, and intellectual and technical skills to work and research in electronic and communications engineering. They will be able to design, integrate, and develop technological solutions for the generation of electronic and communications engineering systems. The programme provides a coherent curriculum through which problem solving, professional development and transferable skills required to work in electronic and communications engineering and related industries are developed.

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	Associated Modular Blocks Code(s)
4	K	Knowledge of scientific principles and methodology necessary to underpin their education in electronic and communications engineering, to enable appreciation of its scientific and engineering context, and to support their understanding of historical, current and future developments and technologies.	EE1655, EE1618, EE1619
	K, C	Knowledge of mathematical principles necessary to underpin their education in electronic and communications engineering and to enable them to apply mathematical methods, tools and notations proficiently to evaluate engineering problems.	EE1655, EE1618, EE1613, EE1614
	C	Ability to present, evaluate and interpret quantitative methods and computer software relevant to electronic and communications engineering.	EE1619, EE1612 EE1616
	K	Knowledge of characteristics of particular materials, equipment, processes, or products and the use of technical literature and other information sources	EE1619, EE1616 EE1618, EE1655
	S	Demonstrate essential practical Engineering skills	EE1616, EE1619
	S	Use ICT Tools effectively	EE1616, EE1619
	S	Communicate effectively in a range of media and modes (e.g. oral and written)	EE1616, EE1619

5	K	Knowledge and critical understanding of well-established scientific principles and methodology necessary to underpin their education in electronic and communications engineering, to enable appreciation of its scientific and engineering context, and to support their understanding of historical, current and future developments and technologies	EE2626, EE2623, EE2634, EE2627, EE2622, EE2632, EE2624
	K, C	Knowledge and understanding of well-established mathematical principles necessary to underpin their education electronic and communications engineering and to enable them to apply mathematical methods, tools and notations proficiently in the evaluation of solutions to engineering problems.	EE2623, EE2627, EE2622, EE2632, EE2624
	K, C	Understanding of engineering principles and a systems approach to engineering problems, and the ability to apply them to evaluate key engineering processes.	EE2626, EE2623, EE2634, EE2627, EE2622
	C	Ability to identify, classify and describe the performance of systems and components through the use of analytical methods and modelling techniques.	EE2626, EE2623, EE2634, EE2627, EE2622, EE2632, EE2624
	C	Ability to apply quantitative methods and computer software relevant to electronic and communications engineering, in order to analyse information and propose solutions to problems arising from that analysis.	EE2634, EE2627, EE2622, EE2632, EE2624, EE2633
	K	Detailed knowledge of characteristics of particular materials, equipment, processes, or products and understanding of contexts in which engineering knowledge can be applied and the use of technical literature and other information sources	EE2633, EE2628
	K, C, S	Ability to undertake a design process taking into consideration a range of factors and an understanding of different needs and constraints.	EE2634 EE2627, EE2632, EE2624, EE2633, EE2628
	S	Demonstrate competence in a range of practical Engineering skills	EE2626, EE2623, EE2634(EE2602), EE2627, EE2622, EE2632, EE2624, EE2628, EE2633.
	K	Awareness of the nature of intellectual property and contractual issues, appropriate codes of practice and industry standards and quality issues	EE2634, EE2633
6	C	Ability to apply and integrate knowledge and understanding of other engineering disciplines to support study of electronic and communications engineering.	EE3631
	K, C	Critical understanding of engineering principles and a systems approach to engineering problems, and the ability to apply them to critically analyse key engineering processes, and to work with uncertainty.	EE3631, EE3626, EE3627, EE3629, EE3628, EE3632, EE3633
	C	Ability to identify, classify and critically analyse performance of systems and components through the use of analytical methods and modelling techniques.	EE3631, EE3632, EE3626, EE3627, EE3629, EE3628, EE3632, EE3633

C	Ability to apply quantitative methods and computer software relevant to the engineering discipline, in order to solve engineering problems with uncertainty.	EE3631, EE3632, EE3628, EE3627, EE3629
K, C, S	Ability to undertake a design process taking into consideration a range of factors and an understanding of different needs, constraints and uncertainty.	EE3631, EE3629
K	Knowledge and understanding of the wider context of engineering processes and the need for a high level of professional and ethical conduct in engineering.	EE3631
K	Specialist knowledge of characteristics of particular materials, equipment, processes, or products and critical understanding of contexts in which engineering knowledge can be applied and the use of technical literature and other information sources	EE3631
S	Use ICT Tools proficiently	EE3631
S	Learn independently and manage time effectively in familiar and unfamiliar situations	EE3631
S	Demonstrate independence and competence in practical Engineering skills	EE3631

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

This joint programme aims to bring together the strengths of CQUPT in communications and BUL in electronics to produce engineers who can take up leadership roles in industry with respect to the delivery of innovative 5G applications.

All teaching on the programme is in English, and to enable students to develop the English language skills required, the programme is delivered over four years. This allows time to include teaching focussed exclusively on developing students' command of English to a professional level, practicing the four core skills of listening, speaking, reading, and writing. The English language modules do not carry credits towards the BUL degree award, but are essential for students to successfully complete assessments in English. The way in which English is used in a work environment is introduced early in the programme. A year 1 technical module has a strong focus on developing students' personal transferable skills. Electronic workshop-based activities are introduced in a progressive manner across years 1 and 2 the programme.

To allow students to experience a significant number of lectures from academics who teach at BUL starting in year 2 some technical modules are delivered in block mode where the BUL lecturer(s) of the module are flown out to CQUPT to deliver a module over periods of two weeks each.

In year 3 the module on Management and the module Comprehensive Electronic System Design, which introduces students to advanced group working, require high level writing skills. These modules will be delivered in English by CQUPT staff so support is available in Chinese.

In year 4 students will carry out a graduation project in English with two supervisors one based at BUL and the other a CQUPT member of staff. This arrangement is intended to provide each student with local support. To prepare students for writing a graduation project report the module Academic English for ICT purposes focusses on technical report writing in English. To experience using English in a professional context, students will complete a Major Internship supervised by CQUPT staff. To provide students with experience of specialist technical modules delivered by internationally recognised researchers based in London students will select one of two optional modules delivered by BUL staff.

All students will be assigned a Personal Tutor to provide more individual support where necessary.

Summative assessment strategies and methods to enable learning outcomes to be demonstrated.

For the first three semesters, for modules assessed by examination, students are introduced to the requirements and style of the examinations in a phased way through a variety of homework, tests, and midterm examinations.

The assessment of modules focussed on developing students' transferable skills reflects the skills the modules are designed to impart. For example, through coursework and group presentations. Practical workshop and design type activities including group projects are assessed through a variety of presentations, demonstrations, individual and group reports, and critical evaluation.

In years 2 and 3 block taught modules incorporate assessed laboratory work as well as by examination to give a practical context to the material delivered.

Professional skills required by industry are actively developed culminating in year 4 with a Major Internship assessed by assignment, reports, and computer and devices-based test.

The graduation project provides students with the opportunity to undertake a major individual project which is assessed in a way which reflects industry practice through an evaluation of how they went about the work (the execution of the project), a poster presentation (oral presentation), and a final written report.

Level 4	
Compulsory assessment block codes, titles and credit N/A	Optional assessment block codes, titles and credits N/A
Compulsory study block codes, titles and credit volume N/A	Optional Study block codes, titles and credit volume N/A
Compulsory modular block codes, titles and credits <u>Year 1 – Term 1</u> EE1611_CN English for academic purposes (0 credits) delivered in 2 sub-modules: <ul style="list-style-type: none"> • Listening & Speaking • Reading & Writing (Standard delivery by CQUPT) EE1612_CN C Programming (20 credits) (Standard delivery by CQUPT) <u>Year 1 – Term 2</u> EE1613_CB Advanced Mathematics II (15 credits) Core: Block (Standard delivery by CQUPT) EE1614_CB Linear Algebra (5 credits) Core: Block (Standard delivery by CQUPT) EE1615_CB English for Communications Engineering Purposes (0 credits) (term-based delivery by BUL) EE1655_CB Digital Systems and Microprocessors (20 credits). (term-based delivery by BUL) Core: Block <small>Please note: to achieve a D- grade or better in the module students must achieve a minimum grade of E- in both the coursework/test and the examination.</small> EE1616_CB Electronic Workshop (Part I) (20 credits in total) delivered in 2 sub-modules Electronic workshop I in Term 2 of Academic Year 1 and Electronic workshop (Part II) in Term 3 of Academic Year 2 Core: Block (Standard delivery by BUL & CQUPT)	Optional modular block codes, titles and credits

Compulsory modular block codes, titles and credits	Optional modular block codes, titles and credits
<p><u>Year 2 – Term 3</u></p> <p>EE1617_CN Intensive English Training I (0 credits) (Standard delivery by BUL)</p> <p>EE1618_CB Devices and Circuits (20 credits) (Term-based delivery by BUL) Core: Block</p> <p>EE1619_CN Engineering Science, Systems and Society (20 credits) (term-based delivery by BUL) <small>Please note: to achieve a D- grade or better for the module students must achieve a minimum grade of E- in each of, the Engineering system course work, the Engineers in Society and Personal Skills coursework, and the Engineering Science reports and presentations.</small></p> <p>EE1616_CB Electronic Workshop (Part II) (20 credits in total) Delivered in 2 sub-modules Electronic workshop I in Academic Year 1, Term 2 (See above) and Electronic workshop (Part II) Core: Block (Standard delivery by BUL & CQUPT)</p>	

Level 4 Progression and Award Requirements

[As per Senate Regulation 2](#)

Except for the following variation to Senate Regulation 2:

NOTE: Students must have a total of no more than 20 credits at grade E, at each level, in their profile.

CertHE Electronic and Communications Engineering: 120 credits

If a student fails to meet the requirements for progression to level 5 Honours, they may progress to level 5 Ordinary if they have at least 100 credits at level 4 with maximum of 40 credits of E (including in core blocks).

The level 4 progression board will be held after term 3 (first term of Year 2).

Level 5	
<p>Compulsory assessment block codes, titles and credits N/A</p>	<p>Optional assessment block codes, titles and credits N/A</p>
<p>Compulsory study block codes, titles and credit volume N/A</p>	<p>Optional Study block codes, titles and credit volume N/A</p>

Compulsory modular block codes, titles and credits

Year 2 – Term 4

EE2632_CB Communication Signal Transmission (10 credits)

Core: Block

(Delivered in standard mode by CQUPT)

EE2622_CN Fundamentals of Signals and Systems (15 credits)

(Delivered by BUL in block mode).

EE2623_CN Computer Architecture and Interfacing (20 credits)

(Delivered by BUL in block mode)

EE2628_CN Management (10 credits)

(Delivered by CQUPT in standard mode with guidance from BUL.)

Please note: to achieve a D- grade or better in the module students must achieve a minimum grade of E- in each of the assignments.

Year 3 – Term 5

EE2624_CN Digital Signal Processing (5 credits)

(Delivered in standard mode by CQUPT)

EE2626_CB Principles of Communication (10 credits)

Core: Block

(Delivered in standard mode by CQUPT)

EE2633 (A2011380) Comprehensive Electronic System Design (10 credits)

(Delivered in standard mode by CQUPT)

EE2627_CB Electronic Systems (20 credits)

(Delivered by BUL in block mode).

Core: Block

Please note: to achieve a D- grade or better for the module students must achieve a minimum grade of E- in both the Individual Project Report and the examination.

EE2634 (was EE2602) Digital Systems Design and Reliability Engineering (20 credits)

(Term-based delivery by BUL).

Optional modular block codes, titles and credits

Year 2 – Term 4

EE2631 Intensive English Training II (0 credits)

Optional Block

(Delivered by CQUPT in block mode)

Level 5 Progression and Award Requirements

As per Senate Regulation 2

Except for the following variations to Senate Regulation 2:
No more than 20 credits of E is allowable at this level.

The following English language requirement must be met for a student progress to level 6 Honours degree: the student must have achieved an IELTS score of 5.5 (on each component) or above or a Brunel English language test score of 55 or above (on each component).

DipHE Electronic and Communications Engineering: 240 credits

If students fail to meet the requirements for progression to level 6 Honours, they may progress to level 6 Ordinary if they have at least 100 credits at level 5.

The level 5 progression board will be held after Term 5 (first term of Year 3).

Level 6

Compulsory assessment block codes, titles and credits

N/A

Optional assessment block codes, titles and credits

N/A

Compulsory study block codes, titles and credit volume

N/A

Optional study block codes, titles and credit volume

N/A

Compulsory modular block codes, titles and credits

Year 3 – Term 6 - continued

EE3626_CB Mobile Communications (20 credits)
(Delivered by CQUPT in standard mode.)
Core: Block

EE3627_CB Modern Communication Networks (10 credits)
(Delivered by CQUPT in standard mode.)
Core: Block

EE3628 Control Systems (20 credits)
(Term-based Delivery by BUL).

Please note: To achieve a D- grade or better in the module students must achieve a minimum grade of E- in the examination.

Year 4 – Term 7

EE3629 Major Internship (10 credits)
(Delivered by CQUPT in standard mode.)

EE3630 Academic English for ICT Purposes (0 credits)

Core: Block

(term-based delivery by BUL)

EE3631 Graduation Project (40 credits)

Core: Block

(Joint delivery BUL and CQUPT)

Optional modular block codes, titles and credits

Year 4 – Term 7

One block from:

EE3632 (was EE3039) Design of Intelligent Systems (20 credits)
(Delivered by BUL in block mode.)

EE3633 Emergent Wireless Network Technologies (20 credits)
(Delivered by BUL in block mode).

Level 6 Progression and Award Requirements

As per Senate Regulation 2

Except for the following variations to Senate Regulation 2:

- 1) No more than 20 credits of E is allowable at this level.
- 2) The following English language requirement must be met for a student progress to graduate (both Honours and Ordinary), the student must have achieved an IELTS score of 6.0 (on each component) or above or a Brunel English language test score of 58 or above (on each component).
- 3) **A student cannot get Brunel Honours degree if the student fails to meet CQUPT's degree requirements.**
- 4) BEng (Honours) Electronic and Communications Engineering: 360 credits
BEng (Ordinary) Electronic and Communications Engineering:
300 credits including at least 80 credits at level 6. To get a BEng Ordinary degree, a student needs to take all modules specified in CQUPT Chinese degree program specification.
The awards board will take place at the end of Year 4.

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.