



UNIVERSITY OF
PORTSMOUTH

COURSE SPECIFICATION

BEng (Hons) Electronic Engineering

Academic Standards, Quality and Partnerships
Department of Student and Academic Administration

June 2020

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COURSE SPECIFICATION

| | |
|---|---|
| Course Title | Electronic Engineering |
| Final Award | BEng (Hons) |
| Exit Awards | CertHE Electronic Engineering DipHE Electronic Engineering |
| Course Code / UCAS code (if applicable) | C2174S / H610 |
| Mode of study | full time |
| Mode of delivery | Campus |
| Normal length of course | 3 years, 4 years with placement |
| Cohort(s) to which this course specification applies | From September 2020 intake onwards |
| Awarding Body | University of Portsmouth |
| Teaching Institution | University of Portsmouth |
| Faculty | Faculty of Technology |
| School/Department/Subject Group | School of Energy and Electronic Engineering |
| School/Department/Subject Group webpage | https://www.port.ac.uk/about-us/structure-and-governance/organisational-structure/our-academic-structure/faculty-of-technology/school-of-energy-and-electronic-engineering |
| Course webpage including entry criteria | www.port.ac.uk/study/courses/beng-hons-electronic-engineering/ |
| Professional and/or Statutory Regulatory Body accreditations | Institution of Engineering and Technology |
| Quality Assurance Agency Framework for Higher Education Qualifications (FHEQ) Level | Level 6 |

This course specification provides a summary of the main features of the course, identifies the aims and learning outcomes of the course, the teaching, learning and assessment methods used by teaching staff, and the reference points used to inform the curriculum.

This information is therefore useful to potential students to help them choose the right course of study, to current students on the course and to staff teaching and administering the course.

Further detailed information on the individual modules within the course may be found in the relevant module descriptors and the Course Handbook provided to students on enrolment.

Please refer to the [Course and Module Catalogue](#) for further information on the course structure and modules.

Educational aims of the course

The main aim of this course is to provide the students the opportunity to develop and acquire the knowledge, skills and behaviour required by professional Electronic Engineers. This course is designed with the QAA's Engineering benchmark and the Engineering Council's UK-SPEC in mind. This course is accredited by the Institution of Engineering and Technology (IET), leading to Chartered Engineer status with further study. This course is also accredited by the Accreditation of European Engineering Programmes (EUR-ACE). Students have the opportunity to transfer to the MEng Electronic Engineering course at the end of years 1 (level 4) and 2 (level 5) provided they have met the minimum threshold required.

The course aims:

- **Underpinning Science and Mathematics:** Knowledge and understanding of scientific principles and methodology appropriate to electronic design, to enable appreciation of its scientific and engineering context, and to support their understanding of historical, current, and future developments and technologies; with particular reference to principles governing: analogue circuits and systems; digital and microprocessor systems, including hardware description languages; control systems; telecommunication systems; software systems. Knowledge and understanding of mathematical principles and methods appropriate to electronic design, with particular reference to methods required in analogue electronics, control systems, telecommunications and signal processing. Ability to apply and integrate knowledge and understanding of other engineering disciplines to support study of their own discipline.
- **Engineering Analysis:** Understanding of engineering principles and the ability to apply them to analyse key engineering processes; ability to identify, classify and describe the performance of systems and components through analytical methods and modelling techniques; ability to apply quantitative methods and computer software to electronic engineering problems; understanding of and ability to apply a systems approach to engineering problems in such areas as analogue circuits and systems; digital and microprocessor systems, including hardware description languages; control systems; telecommunication systems; software systems.
- **Design:** Creation and development of an economically viable product or system to meet a defined need. Knowledge, understanding and skills to: identify constraints including environmental and sustainability limitations, health and safety and risk assessment issues; understanding of customer and user needs; identify and manage cost drivers; use creativity and innovation; ensure fitness for purpose for all aspects of the problem and manage the design process.
- **Economic, Social and Environmental Context:** Knowledge and understanding of commercial and economic context of engineering processes; knowledge of management techniques which may be used to achieve engineering objectives, sustainable development; awareness of the framework of relevant legal requirements including personnel, health, safety, and risk (including environmental risk) issues; understanding of the need for a high level of professional and ethical conduct in engineering.
- **Engineering Practice:** Solution of engineering problems to meet specified technical requirements as well as time and resource constraints. Knowledge of characteristics of particular equipment, processes, or products; workshop and laboratory skills; engineering project management methods, including planning, monitoring, control and reporting; use of technical literature and other information sources; awareness of nature of intellectual property and contractual issues; understanding of appropriate codes of practice and industry standards; awareness of quality issues; ability to work with technical uncertainty. Electronic design practices, including: electronic components and data sheets; use of laboratory instruments and equipment and test; design and proving of analogue and digital circuits.

Educational aims of the course

- To enable students to become effective team players, able to provide leadership and to support the success of others.
- To enable students to communicate clearly and effectively, in a range of forms and to different audiences.

These engineering topics are taught in a practical and exciting way. The School's laboratories and computing suites will support learning and provide access to industry-standard design tools.

An optional industrial placement year (in the UK or abroad) provides the opportunity to put acquired knowledge and ideas into practice, providing first-hand experience of industry and commerce. It can also lead to the first professional registration of EngTech.

Upon graduation as an electronic engineer, there are employment opportunities in areas as diverse as consumer and professional electronics, robotics, defence, broadcasting and telecommunications. The problem-solving and analytical abilities of electronic engineers also make them very attractive to financial and commercial organisations.

Course Learning Outcomes and Learning, Teaching and Assessment Strategies

The [Quality Assurance Agency for Higher Education \(QAA\)](#) sets out a national framework of qualification levels, and the associated standards of achievement are found in their [Framework for Higher Education Qualifications](#) document.

The Course Learning Outcomes for this course are outlined in the tables below.

A. Knowledge and understanding of:

| LO number | Learning outcome | Learning and Teaching methods | Assessment methods |
|-----------|--|--|--|
| A1 | Analogue and digital electronics, microcontrollers, control systems, DSP, telecommunications, real-time embedded systems and VHDL & FPGA (VHDL=very high speed integrated circuit hardware description language) (FPGA =Field Programmable Gate Array) systems | Lectures, tutorial and laboratory work | Exams, course works and formal reports |
| A2 | Appropriate mathematical methods | Lectures and tutorials | Exams and tests |
| A3 | The role of computing and simulation in the solution of problems, including hardware description languages | Lectures, tutorial and laboratory work | Exams, course works and formal reports |
| A4 | The need for a high level of professional and ethical conduct in engineering and a knowledge of professional codes of conduct | Lectures | Course works and reports |

B. Cognitive (Intellectual or Thinking) skills, able to:

| LO number | Learning outcome | Learning and Teaching methods | Assessment methods |
|-----------|---|--|--|
| B1 | Select and apply appropriate knowledge of electronic principles and mathematical methods to model and analyse systems | Lectures, tutorial and laboratory work | Exams, course works and formal reports |

| LO number | Learning outcome | Learning and Teaching methods | Assessment methods |
|-----------|--|---|--|
| B2 | Select and apply computer-based design and simulation techniques | Lectures, tutorial and laboratory work | Course works, demonstration and formal reports |
| B3 | Design, build and test systems and subsystems to meet specified requirements | Lectures, tutorial and laboratory work | Exams, course works, demonstration and formal reports |
| B4 | Solve problems in a systematic and manageable manner | <i>Lectures, tutorial and laboratory work</i> | <i>Exams, course works, demonstration and formal reports</i> |

C. Practical (Professional or Subject) skills, able to:

| LO number | Learning outcome | Learning and Teaching methods | Assessment methods |
|-----------|--|---|---|
| C1 | To apply relevant practical and laboratory skills | Laboratory work, group work and simulations | Course works and demonstration |
| C2 | Show awareness of relevant legal requirements governing engineering activities, including personnel, health & safety, contracts, intellectual property rights, product safety and liability issues | Lectures and laboratory work | Exams, course works, demonstration and formal reports |
| C3 | Use standard and specialist laboratory instruments, conduct experiments and report on them. Search a range of sources for information pertinent to technical and professional tasks | Laboratory work | Course works, demonstration and formal reports |
| C4 | Design, construct, test and evaluate electronic circuits and computer systems | Lectures, tutorials and laboratory work | Exams, course works, demonstration and formal reports |

D. Transferrable (Graduate and Employability) skills, able to:

| LO number | Learning outcome | Learning and Teaching methods | Assessment methods |
|-----------|--|-------------------------------|--|
| D1 | Communicate their work to technical and non-technical audiences | Lectures | Course works, demonstration and formal reports |
| D2 | Work effectively as an individual and as part of a team to achieve goals | Lectures and laboratory work | Course works, demonstration |

| LO number | Learning outcome | Learning and Teaching methods | Assessment methods |
|-----------|---|---------------------------------|---------------------------------|
| | | | and formal reports |
| D3 | Be proactive in recognising and addressing personal development needs, and able to make informed career decisions | Lectures and Group Tutorials | |
| D4 | Work with information that may be incomplete or uncertain and quantify the effect of this on the design | Lectures and Practical sessions | Course works and formal reports |

Academic Regulations

The current University of Portsmouth [Academic Regulations](#) will apply to this course.

This course is accredited by the IET and hence there is some deviation from the University's academic regulations.

Support for Student Learning

The University of Portsmouth provides a comprehensive range of support services for students throughout their course, details of which are available at the [MyPort](#) student portal.

In addition to these University support services this course also provides:

- Extensive induction programme introduces students to the University and their course.
- Each student has a personal tutor, responsible for pastoral support and guidance.
- Industrial placement tutors
- Subject lecturers offer drop-in tutorial sessions every week for students to seek further support and guidance with their work.
- The School offers excellent experimental up-to-date facilities that are also available to students for extracurricular activities. These include:
 - The Digital Electronics and Microprocessor Laboratory
 - The Analogue Electronics Laboratory
 - The Control Engineering Laboratory
 - The Telecommunications and Digital Signal Processing Laboratory
 - The Computer Suites (Linux and Windows)
- The School offers student-led surgeries in the area of electronics and computing.
- The School has an Industrial Committee, which maintains contact with employers.
- The Faculty Student Placement and Employability Centre (SPEC) office offers a wide range of guidance and support to students to enable them to secure placements.

Evaluation and Enhancement of Standards and Quality in Learning and Teaching

The University of Portsmouth undertakes comprehensive monitoring, review and evaluation of courses within clearly assigned staff responsibilities. Student feedback is a key feature in these evaluations, as represented in our [Policy for Listening to and Responding to the Student Voice](#) where you can also find further information.

The course is accredited by the Institution of Engineering and Technology (IET) and partially meets the educational requirements for professional registration for the Chartered Engineering status (CEng). However, it does fully meet all the educational requirements for the Incorporated Engineering status (IEng).

Reference Points

The course and outcomes have been developed taking account of:

- [University of Portsmouth Curriculum Framework Specification](#)
- [University of Portsmouth Strategy](#)
- [University of Portsmouth Code of Practice for Work-based and Placement Learning](#)
- [Quality Assurance Agency UK Quality Code for Higher Education](#)
- [Quality Assurance Agency Qualification Characteristic Statements](#)
- [Quality Assurance Agency Subject Benchmark Statement for Engineering](#)
- [Quality Assurance Agency Framework for Higher Education Qualifications](#)
- Requirements of Professional and/or Statutory Regulatory Bodies: **Institution of Engineering and Technology**
- Vocational and professional experience, scholarship and research expertise of the University of Portsmouth's academic members of staff
- National Occupational Standards

Disclaimer

The University of Portsmouth has checked the information provided in this Course Specification and will endeavour to deliver this course in keeping with this Course Specification. However, changes to the course may sometimes be required arising from annual monitoring, student feedback, and the review and update of modules and courses.

Where this activity leads to significant changes to modules and courses there will be prior consultation with students and others, wherever possible, and the University of Portsmouth will take all reasonable steps to minimise disruption to students.

It is also possible that the University of Portsmouth may not be able to offer a module or course for reasons outside of its control, for example, due to the absence of a member of staff or low student registration numbers. Where this is the case, the University of Portsmouth will endeavour to inform applicants and students as soon as possible, and where appropriate, will facilitate the transfer of affected students to another suitable course.

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Document details

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