MEng Communication Systems

Programme Specification

Primary Purpose:
Course management, monitoring and quality assurance.

Secondary Purpose:
Detailed information for students, staff and employers. Current students should refer to the related Course Handbook for further detail.

Disclaimer:
The University of Portsmouth has checked the information given in this Programme Specification and believes it to be correct. We will endeavour to deliver the course in keeping with this Programme Specification but reserve the right to change the content, timetabling and administration of the course whilst maintaining equivalent academic standards and quality.

Contents

Programme Specification

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1. Named Awards

MEng Communication Systems

2. Course Code (and UCAS Code if applicable)

H646 / C2184S

3. Awarding Body

University of Portsmouth

4. Teaching Institution

University of Portsmouth

5. Accrediting Body

IET UK-SPEC (CEng)

6. QAA Benchmark Groups

Engineering

7. Document Control Information

R1.0

R1.2 May 2014

8. Effective Session

2014-15

9. Author

Dr A N Tawfik

10. Faculty

Faculty of Technology

11. Department

School of Engineering

12. Educational Aims

The course aims to combine an understanding of analogue and digital communications, low to high frequency electronics, computer systems and modern networking technologies with a knowledge of modern theories, techniques and technologies; to produce fluent practically oriented graduates able to operate within academic, industrial and research professional environments; to produce graduates who understand business with excellent employability and interpersonal skills capable to self-manage, self-learn and communicate productively.

By providing a challenging and stimulating university environment, the course aims to provide a focussed and coherent programme of studies that is accredited by the Institute of Engineering and Technology (IET) that meets the full educational requirements leading to Chartered Engineer (CEng) status.

The course aims to allow students to flourish along three dimensions.

1. The Communication Systems Engineer as a specialist who is a technical expert capable of solving sometimes complex technical problems.

   The main technical focus is on digital and analogue communication systems, digital signal processing, data communications and networks, electronics, computer hardware, programming and embedded systems.
   A core priority is that the principles, theories and analyses introduced in lectures are widely applied in the physical world, through project-based learning, individual and group design project and laboratory experiments. For this, the course contents and learning resources are continually updated to reflect the latest state-of-the-art technologies.

2. The Communication Systems Engineer as integrator who can operate and manage across boundaries be they technical or organizational in a complex business environment.

   The multidisciplinary group project addresses directly this point with students given the opportunity to self-manage and develop an innovative product that spans more than one discipline and mixes students from different courses within the constraint of the university environment as an institution.
   Students also develop an understanding of project management and planning, business contexts and the need to cope with uncertainty and risk. This experience is further enhanced by the one-year sandwich placement option, with both UK and other European opportunities. Opportunities like careers advice, professional development portfolios and records aim to develop a range of keys skills to enhance students' understanding of the job market and to optimize their career potential.

3. The Communication Systems Engineer as change agent who provides the creativity, innovation and leadership to change the industry in an uncertain future.

   Project and problem based learning, multidisciplinary group project and exercises/tutorials are used throughout the course to allow students to develop research-based solutions to a variety of technical and non-technical problems.
   The course culminates in an individual project which brings together many strands of their course and challenge the student's technical and non-technical knowledge to solve a range of innovative problems.

Successfully completing this MEng course will allow individuals to achieve the full educational requirements for Chartered Engineer (CEng) status upon graduation. Graduates will also be awarded the EUR-ACE certificates meaning that they will fully meet the criteria of second cycle European engineering programmes. Completing this course will open up a wide range of employment opportunities in areas such as terrestrial and satellite broadcasting, mobile communications, communication networks and project management.

13. Reference Points

The major reference points were:

- University of Portsmouth (2012), Curriculum Framework Document 2012.
- University of Portsmouth (2013), Examination and Assessment Regulations.
- University of Portsmouth (2010), Code of Practice for Work-based and Placement Learning.
- QAA (2013), The QAA UK Quality Code for Higher Education.

- QAA (2010), Subject engineering benchmark statement: Engineering.
- Engineering Council (2013), UK-SPEC: UK standard for professional engineering competence.
- IET (2009), IET Learning Outcomes Handbook for BEng and MEng Degree Programmes.
- Royal Academy of Engineering (2007), Educating Engineers for the 21st Century.
- The scholarship and research expertise of academic members of staff.

The core elements of the engineering benchmark, interpreted in the context of -communications engineering, are:

Underpinning Science and Mathematics (US): Comprehensive knowledge and understanding of engineering university mathematics relevant to communication systems engineering including algebra, calculus, logic, signal and systems analysis and statistical methods; algorithms and programme design, procedural and object oriented paradigms; scientific principles underpinning the design of analogue and digital electronic systems including interfacing; Automatas, state and sequential machines, systems principles and digital signals and systems; information theory, digital and modulation, microwave and RF systems; linear programming, decision analysis mathematics, Markov chains and applications of game theory to engineering and management techniques.

Engineering Analysis (E): Understanding of engineering principles and the ability to apply them to analyse key engineering processes, formulate solutions and investigate new or emerging technologies pertaining to communication systems hardware/software, information theory, microcontrollers, advanced control engineering, VHDL & FPGA systems and electronic materials. Ability to identify, classify, test and describe the performance of systems and components through analytical methods and modelling techniques; ability to apply quantitative methods and software to computer engineering problems and the ability to assess the limitations of particular cases; understanding of and ability to apply a systems approach to hardware/software problems. Ability to extract data pertinent to an unfamiliar problem including scientific/technical research information and apply it for required design purposes.

Design (D): Creation and development of an economically viable solution, product or system to meet a defined need and an ability to generate innovative design to fulfil new needs using sound design methodology and CAD (Computer Aided Design) tools; 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. Wide knowledge and comprehensive understanding of design processes & methodologies and the ability to apply and adapt them in unfamiliar situations.

Economic, Social and Environmental Context (S): 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; the ability to make general evaluations of commercial risks through some understanding of the basis of such risks; extensive knowledge and understanding of management and business practices, and their limitations, and how these may be applied appropriately; understanding of the need for a high level of professional and ethical conduct in engineering.

Engineering Practice (P): Solution of engineering problems to meet specified technical requirements as well as time and resource constraints with an emphasis on electronics, programmable electronics, computer programming and networks. Knowledge of characteristics of particular equipment, processes, or products; extensive knowledge of programmable hardware and software systems; workshop and laboratory skills; engineering project management methods,

including planning, monitoring, control and reporting; use of technical or scientific 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; pcb design, fabrication, assembly and test; design and proving of analogue and digital circuits, understanding or engineering practice and limitations, appreciation of new developments; ability to apply engineering techniques with consideration to commercial and industrial constraints.

The abbreviations in parentheses are used for cross-reference purposes in the learning outcomes.

14. Learning Outcomes

A. Knowledge and Understanding of:

A1. Digital and analogue communication systems, data communication and networking techniques and applications, digital signal processing, microwave and RF systems, microprocessor systems and related design techniques, software analysis and design, programming in high and low level languages. (US, E, D, P)
A2. Appropriate mathematical methods. (US)
A3. The role of computing and simulation in the solution of problems, including hardware description languages. (US, E, D, P)
A4. Practical design of electronic, computer, software and information systems. (D, P)
A5. The business context of engineering: commercial, legal, contractual and statutory frameworks. (S)
A6. Professional and ethical responsibility. (S)
A7. (Sandwich placements) Engineering practice and the roles of engineers in industry. (P)

Learning and Teaching Strategies and Methods

Knowledge (A1, A2, A3) is acquired through lectures, design projects, experimental work and computer laboratory work. Directed reading, study guides, tutorial questions, worked examples and design problems support individual learning.
Practical design considerations (A4) are learned through lectures, project work, practical exercises and simulations. The business, industrial, and professional contexts (A5, A6) are mainly understood through lectures, engineering applications and group project. Sandwich students (A7) learn through experience and observation on an industrial placement for one year.

Assessment

Testing of core knowledge is through a mix of unseen examinations, assignment work and tests (some of which are computer based).
Project and laboratory work are assessed by observation and submission of reports.

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

B1. Select, acquire and apply appropriate knowledge of communications, electronic, software, computer and network principles to model, plan and analyse systems. (US, E, P)
B2. Select and apply appropriate mathematical methods to model, analyse, plan or program communication systems. (E)
B3. Select and apply computer-based design and simulation techniques. (P, E)
B4. Design, build and test systems and subsystems to meet specified sometimes conflicting requirements. (D, P, S)
B5. Assess electronic, software and computer systems from commercial and statutory viewpoints, including assessment of risks. (S)
B6. Solve problems in a systematic and manageable manner. (E,P)

Learning and Teaching Strategies and Methods

Intellectual and analytical skills (B1, B2) are developed through lectures, design and experimental work, case studies, research work and worked examples. The ability to apply knowledge to achieve viable solutions (B3, B4, and B6) is acquired through design projects and simulations. Assessment of products from a commercial standpoint (B5) is developed through business and application focussed lectures, and through the group, multidisciplinary and individual projects.

Assessment

Cognitive skills are assessed through examination, assignment work and project reports.

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

C1. Use standard and specialist laboratory instruments, conduct experiments and report on them. (P)
C2. Apply relevant mathematical methods in developing solutions to problems. (US, E)
C3. Use computer-based simulation, design and software development tools. (D, E)
C4. Design, construct, test and evaluate electronic circuits and computer systems. (D, P, E)
C5. Search a range of sources for information pertinent to technical and professional tasks. (P)
C6. Plan, manage and undertake a range of engineering projects, taking into account constraints. (D, P, S)

Learning and Teaching Strategies and Methods

Experimental and project work are used to develop skills in using laboratory instrumentation (C1) and in the design of circuits (C4). Analytical and design exercises develop the ability to apply mathematics appropriately. Use is made of CAD systems to synthesize and evaluate complex designs (C3). The ability to research, plan and manage project work (C5, C6) is acquired through individual projects and group projects.

Assessment

Laboratory work, simulation work and projects are generally assessed by submission of reports and by observation.

D. Transferable (Graduate and Employability) Skills, able to:

D1. Manipulate and present information. (D, S)
D2. Analyse scientific and technical information in the solution of problems. (US, E)
D3. Use information technology to handle text and data and for simulation and design. (E, D)
D4. Develop solutions in a creative manner, sometimes based on inadequate information. (D, P)
D5. Communicate effectively in a variety of formats. (D, S)
D6. Work effectively as an individual and as part of a team to achieve goals. (D, S)

Learning and Teaching Strategies and Methods

The emphasis is generally on learning through individual and team-based practical and project work, through written reports and through verbal presentations (D1, D2, D3, and D5). Scientific and mathematical techniques (D1, D2) and familiarity with IT systems (D3) are fundamental to the nature of the course. Problem solving (D4) is developed through laboratory sessions and group and individual projects. Teamwork (D6) is particularly developed in group project work.

Assessment

These skills are particularly assessed through individual and group design activities and projects and their associated reports and verbal presentations. The abilities to solve problems are also assessed in assignments and examinations.

15. Course Structure, Progression and Award Requirements

This is a 4-year full-time or 5-year sandwich course. It runs in parallel with a BEng (Hons) course with the same title, and there are transfer opportunities between the BEng (Hons) and MEng courses at the end of years 1 and 2 subject to meeting the transfer criteria.

The course consists of a mix of lectures, tutorials, experimental work and design projects. It makes extensive use of the School's computer suites and electronics laboratories. Whilst the majority of units have a focus on computer engineering, digital electronics and related technologies, ENGx00 units develop study and employability skills, group working and an understanding of engineering business.

Except for the individual project unit, the course consists of 20-credit taught units, where each year consists of 120 credits. In line with university guidelines, a 20-credit unit of the MEng course is expected to require 200 hours of total study of which:

- at level 4 typical contact hours will be between 36 and 72 hours over 24 weeks;
- at level 5 typical contact hours will be between 24 and 60 hours over 24 weeks;
- at level 6 typical contact hours will be between 18 and 48 hours over 24 weeks;
- at level 7 typical contact hours will be between 18 and 48 hours over 12 weeks.

The individual engineering project takes place throughout the third year (24 weeks) and represents 40 credits (400 hours) of studying. The project may be carried out in the School or in industry or in some cases it may be part of the academic research activities in our research groups.

Scheduled small group tutorials in years 1 and 2 ensure that contact is maintained between students and their personal tutors.

In Year 2, students can choose to take an optional 20 credits unit as part of the Institution-Wide Language Programme (IWLP) to learn a foreign language.

The course as a whole is highly career-focused, with the technical content and opportunities to develop analytical and design skills being the major factors contributing to this. Practical work uses hardware and software systems that are widely used in industry and this familiarity eases the transfer of graduates into employment. The content of the course is periodically discussed with our Industrial Advisory Board. Career education and guidance is specifically provided in a second year unit. The School has an Industrial Liaison Officer whose particular role is to maintain contact with employers, although most staff maintain good industrial and research links.

The industrial placement, which can be taken either at the end of the second or third years of a sandwich course, is strongly recommended, and the School has a number of exchange arrangements that provide overseas industrial placements. Upon completing the placement, the IET awards the ICTTech or EngTech qualifications depending upon the subject area of the placement subject to meeting the registration requirements.

Students are encouraged to rely on the university's Purple Door career and recruitment service to prepare for and find part-time or vacation jobs, identify volunteering schemes to gain experience or to secure a graduate position.

16. Employability Statement

The course is accredited (CEng) by the Institution of Engineering and Technology (IET). Students enrolled on the course are offered free student membership to the IET.

Addressing employability is an important priority that has been integrated by design into the course. This is also informally supported through the personal tutorial system. Through exploration of technology projects, three consecutive units at levels 4, 5 and 6 aim at equipping students with a set of key employability skills. This covers (i) preparation of documents and strategies for successful employment applications (ii) the need for professional registration and professional networking; (iii) the necessity to maintain a professional portfolio record (PDR) demonstrating and reflecting upon the acquisition of professional competence throughout and beyond their course; (iv) the practice of using Personal Development Planning (PDP) portfolio to identify and review of skills at all levels of study.

Assessment of contextual, legal, environmental, business and commercial aspects impacting on product design are also addressed. Through problem-based learning, independent and group work, students can also develop or improve their team and leadership skills. As work-based learning activity, the level 7 multidisciplinary product design project aims at challenging the students by letting them apply their skills while working with students with different expertise.

The optional sandwich year is highly career focused and students are given help in identifying placements through the Faculty Student Placement and Employability Centre (SPEC.

It is common that some of the individual projects are incorporated within the research activities taking place in our research groups working in mobile and fixed communications systems, control and robotics, embedded and distributed systems, intelligent context aware systems, security and fraud detection. Where possible, we also fully encourage and support students undertaking projects in collaboration with external companies and institutions.

The School operates an Industrial Advisory Board (IAB) with guest industrialists whose input is sought to inform the currency of the curriculum and its relation to the job market.

17. Support for Student Learning

- The Programme Leader of the School's Undergraduate MEng Programme manages the Course.
- Students are visited during the placement year, and required to maintain a logbook of work experiences gained.
- Extensive induction programme introduces the student to the University and their course.
- Each student has a personal tutor, responsible for pastoral support and guidance.
- University support services include careers, financial advice, housing, counselling etc.
- The Academic Skills Unit (ASK).
- The Additional Support and Disability Advice Centre (ASDAC).
- Excellent library facilities.
- Excellent laboratory, computer and network suites.
- The University of Portsmouth has consistently been awarded an excellent rating for student support and guidance in a number of Quality Assurance Agency inspections.
- Student course and unit handbooks provide information about the course structure and University regulations etc.
- Key Skills opportunities are incorporated into all units.
- Feedback is provided for all assessments.
- Personal Development Planning (PDP) for all awards.

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 and Control Engineering Laboratory
- The Telecommunications Laboratory
- The Digital Signal Processing Laboratory
- The Computer Suites (Linux and Windows)
- The Network Laboratory

The School also runs an extensive web forum (message board) for news and other communications between students and with academic staff.

In order to support the students' learning, the School also financially supports:

- The student computer surgery

covering areas such as general computer and computing, office applications, web and database design, programming

- The Student Electronic surgery

  Covering areas like digital logic, microprocessor programming, DSP, VHDL, Assembler and PCB design.

Students have also access to the Maths Café which provides informal and friendly one-to-one mathematics support with academic staff.

18. Admissions Criteria

A. Academic Admissions Criteria

Standard University rules apply but in addition a UCAS tariff of 300-340 points, to include 3 A Levels in Mathematics and Science/Technology subjects. Grade "C" or higher in GCSE Mathematics and English.
Other qualifications are accepted including access courses and equivalent overseas awards.

B. Disability

The University makes no distinction in its admissions policy with regard to disability and will endeavour to make all reasonable adjustments in order to make it possible for students to study at Portsmouth on a course of their choice.

19. Evaluation and Enhancement of Standards and Quality in Learning and Teaching

A. Mechanisms for Review and Evaluation

- Course Leader's Annual Standards and Quality Evaluative Review.
- Head of School's Annual Standards and Quality Evaluative Review.
- Unit and Course Level student feedback considered at Board of Studies.
- Unit Assessment Board consideration of student performance for each programme.
- Annual Standards and Quality Reports to Board of Studies, including consideration of Subject and Award External Examiner Reports.
- Monitoring of work placements against programme learning outcomes by Industrial Liaison Officer and visits from personal tutor.
- Periodic Programme Review.
- Professional course accreditation (IET/EC-UKSPEC).
- Student Representatives and Student/Staff Consultative Committees.
- National Student Survey.
- Staff Performance and Development Review.
- Peer Review and Development Framework.
- Faculty Learning and Teaching Committee.

B. Responsibilities for Monitoring and Evaluation

- Unit Co-ordinators for unit content and delivery.
- Course Leader for day-to-day running of course.
- Placement Coordinator.
- Board of Studies with overall responsibilities for operation and content of course.
- Head of School.
- Associate Dean (Academic).
- Associate Dean (Students).
- Quality Assurance Committee.

- Unit, Award and Progression Board of Examiners.

C. Mechanisms for Gaining Student Feedback

- Student Representation on Board of Studies.
- Student Staff Consultative Committees.
- Unit and Course level student feedback questionnaires.
- University participates in external student surveys, eg National Student Survey (NSS), and International Student Barometer (ISB).
- School web forums (message board)

D. Staff Development Priorities

- Academic staff undertake activities related to research, scholarship, teaching and learning and student support and guidance.
- Annual staff performance and development reviews match development to needs.
- Managers undertake a variety of management development programmes.
- All academic staff encouraged to seek Higher Education Academy membership.
- Academic staff new to teaching required to undertake Initial Professional Development Programme (IProf).
- Postgraduate students with a role supporting teaching take Graduate Students Professional Development Programme (GProf)
- Support Staff are encouraged to attend short courses in areas such as minute taking, and specific IT packages.

20. Assessment Strategy

The students are exposed to a wide variety of assessment methods at all levels, encompassing such methods as traditional closed-book examinations, open-book examinations, computer based tests, video and oral presentations, programming and design projects, reports, on-line course work in a Wiki based environment, and laboratory experiments.

Level 4
There is plenty of formative feedback opportunities, including exercise/tutorial sessions (e.g. ENG400 and ENG410), online tests (ENG410). The objective here is to help students build their confidence and improve their learning before the official assessment points. These are also provided to encourage early and continuous engagement with the subjects' material.
A variety of summative assessment types are employed. These include end-of-year closed books examinations (most units), timed laboratories (ENG421), Problem and project based design activities running over many weeks (ENG421, ENG431), in-class tests and computer-based tests (e.g. ENG410). Unit ENG430 also introduces students to a design and build activity in addition to labs to expose students to key electronic design and measurement equipment. Unit ENG400 targets more generic communications and employability skills through the building of a portfolio (including PDP and PDR).
Most level 4 units also offer more than one type of assessments (e.g. coursework/assignment/PBL and exam) so as to meet the theoretical and practical requirements inherent to the topics covered. Most lab activities (e.g. ENG430, ENG431 and ENG421) consist of group work in small teams to build confidence and to facilitate the building of social links among the students' cohort and the academic staff.

Level 5
Level 5 has about the same number of assessment artefacts as in Level 4 and targets the measurement of the acquisition, understanding, knowledge, methods and practice accumulated in this important normative year.

For this reason, most units have an end-of-year examination. ENG510 provides multiple in-class formal tests in order to maximise the mastery of key mathematical tools in a progressive and integrated way. In ENG500, important generic skills relevant to practising engineers involved in product development are tested through a group portfolio with an element of peer marking for mark differentiation.
The IWLP option allows interested students to prepare for a potential sandwich placement abroad by learning or improving their foreign language skills.
ENG543 is assessed with a set of laboratory experiments which enable students to learn the key practical elements of telecommunication systems and end of year exam.
Once again, to further add to the accumulation of electronic engineering experience and professional practice, units like ENG530 and ENG531 include large PBL components while others like ENG543 focus more on characterizing/measuring practical systems through lab experiments.

Level 6

Level 6 has about the same number of assessment points as in the previous two years. The main assessment for all units (except ENG600 and option ENG631) is an end-of-year examination as this gives the best way to determine the understanding and proficiency in using key tools, methods and approaches relevant to the electronic engineers.

Units that have a programming dimension like ENG631 are delivered in addition to lecture using the problem-based approach. ENG642 with its theoretical contents is assessed mainly through CBT and exam but also comprises of lab experiment portfolio exposing students to important practical and experiential aspects of DSP. The individual project (ENG600) is assessed throughout the year and a report is required to be submitted at the end of the project life.

Level 7
Compared to previous years, the overall number of assessment points is reduced at Level 7allowing students to focus more on producing high quality pieces of work including self-planning and management, research activities and reflection. Unit ENG711s1 includes individual and group courseworks that allow discovering how mathematical methods can be applied to project management and analytical decision-making. Four units (ENG747s1, ENG741s1, ENG743s2 and ENG745s2) have end-of-unit closed book examinations. Due to its practical nature, units like ENG741s1, ENG747s1, ENG745s2 and ENG743s2 have coursework type assessments to expose students to research-based work. Most units offer opportunities for formative feedback. Students can interact with colleagues and academic staff in all units. Some revisions/review sessions prior to the exams will also be provided.

21. Assessment Regulations

Standard university rules apply (see Assessment and Regulations). In summary, the main points relating to assessment are as follows but the regulations must be consulted for a full description:

- Unit overall pass mark is 50%. The School holds an approved exemption to the Academic Regulations such that the pass mark in level 7(final year) units is 50%.
- The School holds an exemption related to units where there are different types of assessment components: in order to pass the unit students must achieve a threshold mark of at least 40% derived from all examination based assessments; and a threshold mark of at least 40% derived from all non-examination based assessments (including any course work and laboratory assessment). These requirements are related to IET accreditation.
- At the final stage, units failed at the first attempt may be compensated at the discretion of the Award/Progression Board. IET guidance is that students must achieve at least 40% in a unit to be eligible for compensation (at least 30% is required at earlier years).

It is an IET requirement that, where final year units are passed after referral or repeat, the mark obtained at the original attempt must be used in determining the degree classification. The School has Academic Council Approval for this variation to normal University regulations.

Placement Year
The School has Academic Council approval to manage and assess the optional placement year as a 40-credit level 5 unit. These credits are additional to those required for a full-time award and are assessed on a pass/fail basis.

22. Role of Externals

Subject External Examiners who will:

- oversee unit assessment and usually attend Unit Assessment Boards;
- review unit assessment strategy;
- sample assessment artefacts;
- present report to Unit Assessment Boards.

Award External Examiners (usually also a Subject External Examiner) who will:

- oversee and attend Award/Progression Boards;
- scrutinise and endorse the outcomes of assessment;
- ensure that the standard of the award is maintained at a level comparable with that of similar awards elsewhere in the United Kingdom.

  The names and contact details of the external examiners are included in the Students Handbook.

23. Indicators of Standards and Quality

A. Professional Accreditation/Recognition

The course is accredited for CEng under UK-SPEC by the Institution of Engineering and Technology. The last CEng accreditation process took place in 2014.

B. Periodic Programme Review (or equivalent)

The previous Department of Electronic and Computer Engineering within the current School of Engineering had its Periodic Programme Review in December 2012. The result was that the fitness of purpose of curriculum was confirmed and the annual monitoring and review processes were identified as effective.

C. Quality Assurance Agency

QAA Institutional Audit, December 2008, 'broad confidence' (for full report see QAA Institutional Audit: University of Portsmouth 2008).

D. Others

The School of Engineering is an IET Academic Partner.

24. Other Sources of Information

Other sources of information may be found in

- Course Approval Document.
- Student Handbook.
- University of Portsmouth Curricula Framework.
- University of Portsmouth Undergraduate Prospectus.
- Assessment Regulations.

- University of Portsmouth (http://www.port.ac.uk/) and (http://www.port.ac.uk/eng) websites.
- Course Unit Tables.

Unit Assessment Map

UNITS						COURSEWORK				EXAMINATION			
Level	Name	Code	Credit	Delivery	Core/ Option	Total %	Type of Artefact	Duration/ Length	Weighting %	Total %	Open/ Closed	Duration (hrs)	Weighting %
4	Writing and Research in the Workplace	**ENG400**	20	Year long	C	100	Peer Review Written Portfolio	 3000 words	30 70				
4	Mathematical Principles	**ENG410**	20	Year long	C	30	Online tests	Open ended	30	70	closed	1.5h	70
4	Engineering Sciences	**ENG411**	20	Year long	C	20	Lab report	1000 words	20	80	open	1.5h	80
4	Introduction to Algorithms and Programming	**ENG421**	20	Year long	C	50	Coursework 1 Coursework 2	750 words 750 words	25 25	50	closed	1h	50
4	Introduction to Analogue Circuits	**ENG430**	20	Year long	C	40	Portfolio of two lab-based design projects	1500 words	40	60	closed	1.5h	60
4	Principles of Digital Systems	**ENG431**	20	Year long	C	40	Project-based learning coursework	1500 words	40	60	closed	1.5h	60
5	Group Design Project	**ENG500**	20	Year long	C	100	Peer Review Written Portfolio	 4000 words	20 80				
5	Engineering Mathematics	**ENG510**	20	Year long	C	100	Supervised coursework (4)	3000 words	100				
5	Analogue Analysis and Design	**ENG530**	20	Year long	C	40	PBL coursework 1 PBL coursework 2	1000 words 1000 words	20 20	60	closed	2h	60
5	Microcontrollers and Programmable Logic	**ENG531**	20	Year long	O	40	PBL coursework	1500 words	40	60	closed	2h	60
5	Analogue and Digital Communications	**ENG543**	20	Year long	C	30	Coursework 1 (Lab) Coursework 2 (Lab)	1000 words 1000 words	15 15	70	open	2h	70
5	Data Networks, Protocols and Analysis	**ENG541**	20	Year long	C	30	CBT1 CBT2	1h 1h	10 20	70	closed	1h	70
5	Network Simulation and Traffic Management	**ENG555**	20	Year long	O	70	Coursework	3000 words	70	30	Open Verbal exam	20 mins	30
5	IWLP	**IWLP**	20	Year long	O	-	-	-	-	-	-	-	-
6	Individual Project	**ENG600**	40	Year long	C	100	Individual project portfolio	8000 words	100				
6	Advanced Analogue Electronic Systems	**ENG630**	20	Year long	C	40	PBL portfolio Group coursework	1500 words 1500 words	20 20	60	closed	2h	60
6	VHDL and FPGA Systems	**ENG631**	20	Year long	O	100	PBL coursework 1 PBL coursework 2	2000 words 2000 words	40 60				

6	Control Systems Design	**ENG640**	20	Year long	O	20	Lab 1 Lab 2	2h 2h	10 10	80	Closed	2h	80
6	Transmission Techniques and Broadcasting	**ENG641**	20	Year long	C	20	Lab 1 Lab 2	3h 3h	10 10	80	closed	2h	80
6	Digital Signal Processing	**ENG642**	20	Year long	C	40	CBT LAB portfolio (4 sessions)	1h 12h	20 20	60	closed	2h	60
6	Network Security & Reliability	**ENG655**	20	Year long	O	40	Lab coursework	3h	40	60	closed	2h	60
7	Multidisciplinary Group Project	**ENG701 s2**	20	Jan-Mar	C	100	Group project portfolio	8000 words	100				
7	Microwave & Wireless Technology	**ENG747 s1**	20	Sep-Dec	C	50	Coursework	2500 words	50	50	closed	1h	40
7	Communication Systems Analysis	**ENG741 s1**	20	Sep-Dec	C	40	Coursework	4000 words	40	30 30	Closed Closed	1h 1h	60
7	Digital Modulation & Coding	**ENG743 s2**	20	Jan-Mar	O	40	Group Coursework	<3000 words	40	60	closed	2h	60
7	Mobile and Satellite Systems	**ENG745 s2**	20	Jan-Mar	C	40	Individual Coursework	<3000 words	40	60	closed	2h	60
7	Analytical Management techniques	**ENG711 s1**	20	Sep-Dec	C	40	Group Coursework	8000 words	40	60	closed	2h	60
7	Unified Communications	**ENG755 s2**	20	Jan-Mar	O								

Unit Learning Outcomes Map[1]

UNITS						LEARNING OUTCOMES																						
Level	Name	Code	Credit	Delivery	Core/ Option	A1	A2	A3	A4	A5	A6	B1	B2	B3	B4	B5	B6	C1	C2	C3	C4	C5	C6	D1	D2	D3	D4	D5	D6
4	Writing and Research in the Workplace	**ENG400**	20	Year long	C		▯			▯	▯					▯						▯		▯		▯	▯	▯	
4	Mathematical Principles	**ENG410**	20	Year long	C		▯						▯				▯		▯					▯	▯		▯		
4	Engineering Sciences	**ENG411**	20	Year long	C	▯	▯					▯	▯				▯	▯				▯		▯	▯				▯
4	Introduction to Algorithms and Programming	**ENG421**	20	Year long	C	▯		▯	▯			▯	▯	▯			▯	▯		▯		▯	▯			▯	▯		
4	Introduction to Analogue Circuits	**ENG430**	20	Year long	C		▯		▯			▯			▯			▯	▯		▯		▯		▯		▯		▯
4	Principles of Digital Systems	**ENG431**	20	Year long	C	▯	▯	▯	▯			▯	▯	▯	▯		▯	▯		▯	▯		▯		▯		▯		▯
5	Group Design Project	**ENG500**	20	Year long	C		▯			▯	▯				▯	▯	▯					▯		▯			▯		▯
5	Engineering Mathematics	**ENG510**	20	Year long	C		▯					▯	▯				▯		▯					▯	▯	▯			
5	Analogue Analysis and Design	**ENG530**	20	Year long	C		▯		▯			▯			▯		▯	▯	▯		▯		▯		▯		▯	▯	▯
5	Microcontrollers and Programmable Logic	**ENG5314 0**	20	Year long	O	▯	▯	▯	▯			▯	▯	▯	▯			▯		▯	▯		▯			▯	▯		▯
5	Analogue and Digital Communications	**ENG543**	20	Year long	C		▯	▯				▯		▯			▯	▯	▯	▯				▯	▯			▯	
5	Data Networks, Protocols and Analysis	**ENG541**	20	Year long	C	▯	▯	▯				▯		▯				▯	▯	▯						▯			
5	Network Simulation and Traffic Management	**ENG555**	20	Year long	O	▯	▯	▯				▯		▯			▯	▯	▯		▯	▯		▯	▯			▯	
5	IWLP	**IWLP**	20	Year long	O					▯														▯			▯	▯	▯
6	Individual Project	**ENG600**	40	Year long	C	▯			▯	▯	▯	▯	▯	▯	▯	▯	▯	▯			▯	▯	▯	▯	▯		▯	▯	▯

[1] A = Knowledge and Understanding; B = Cognitive (Intellectual) Skills; C = Practical (Subject Specific) Skills; D = Transferable Skills

6	Advanced Electronic Systems	**ENG630**	20	Year long	C	▯			▯			▯	▯			▯	▯	▯			▯	▯		▯	▯				▯
6	VHDL and FPGA Systems	**ENG631**	20	Year long	O	▯		▯	▯			▯	▯	▯			▯	▯	▯	▯	▯		▯		▯		▯		▯
6	Control Systems Design	**ENG640**	20	Year long	O		▯	▯				▯		▯			▯	▯	▯	▯					▯	▯			▯
6	Transmission Techniques and Broadcasting	**ENG641**	20	Year long	C	▯	▯					▯	▯				▯		▯						▯			▯	
6	Digital Signal Processing	**ENG642**	20	Year long	C		▯	▯					▯				▯	▯		▯				▯	▯			▯	
6	Network Security & Reliability	**ENG655**	20	Year long	O	▯					▯	▯				▯					▯				▯		▯		▯
7	Multidisciplinary Group Project	**ENG701s1**	20	Jan-Mar	C		▯		▯	▯	▯	▯	▯		▯	▯	▯	▯			▯	▯	▯	▯	▯		▯	▯	▯
7	Microwave & Wireless Technology	**ENG747s1**	20	Sep-Dec	C	▯	▯	▯				▯	▯		▯			▯	▯		▯	▯	▯		▯				▯
7	Communication Systems Analysis	**ENG741s1**	20	Sep-Dec	C	▯	▯	▯					▯				▯	▯		▯		▯			▯				▯
7	Digital Modulation & Coding	**ENG743s2**	20	Jan-Mar	O		▯	▯				▯	▯				▯		▯	▯	▯	▯		▯	▯				▯
7	Mobile and Satellite Systems	**ENG745s2**	20	Jan-Mar	C	▯			▯	▯		▯	▯				▯		▯					▯					▯
7	Analytical Management Techniques	**ENG711s1**	20	Sep-Dec	C		▯			▯			▯	▯			▯		▯			▯		▯	▯			▯	▯