University of the West of England
BRISTOL

PROGRAMME SPECIFICATION

Section 1: Basic Data

Awarding institution/body	UWE
Teaching institution	UWE
Delivery Location(s)	Frenchay
Faculty responsible for programme	FET
Modular Scheme title	FET Modular Scheme
Professional Statutory or Regulatory Body Links (type and dates)	Not sought
Highest award title	BEng(Hons) Electronics and Communications
Default award title	none
Interim award titles	none
UWE progression route	n/a
Mode(s) of delivery	Full-time
Codes **UCAS code** H640	**JACS code** H640
ISIS code	**HESA code**
Relevant QAA subject benchmark statements	Engineering
On-going/	
Valid from (insert date if appropriate)	Sept 2011
Original Validation Date:	
Latest Committee Approval…	**Date:…**
Version Code 3	dated Feb 11th 2011 HW

Section 2: Educational aims of the programme

This programme is designed as a one year top-up to a BEng(Hons) degree for students from overseas who do not wish to commit to more than one year of study in the UK. In that respect it shares many of the educational aims of the BEng(Hons) Electrical and Electronics programme.

1. To respond to the need for effective engineering practitioners by offering programmes that are an intellectually challenging mix of taught engineering science and experiential learning. The practitioner approach is intended to produce engineers with a strong orientation towards problem solving, underpinned by theoretical knowledge.
2. To produce graduates with a broad understanding of electronic and communications engineering, equipped to solve lead future developments in the field.
3. To produce graduates with a wide range of expertise relevant to the industry in general and in particular industry related to telecommunications.

The aims of the programme are therefore that the graduate shall:

1. gain a sound knowledge and understanding of the fundamental principles governing the behaviour of electronics and communications devices/systems and of the related mathematics;
2. be capable of analysis of the behaviour of complex electronic and communication systems
3. demonstrate a capacity for innovative and creative design and be able to draw on knowledge of fundamental principles and proven systems to further develop existing systems and to generate new systems which meet required specifications;
4. have an broad knowledge and understanding of engineering theory, practices and applications and be able to use advanced techniques of analysis, synthesis and implementation in the field of electronic engineering and communications,
5. have developed the ability, interest and motivation to conduct independent study and keep abreast of future changes in technology and engineering practices.
6. be able to communicate clearly, concisely and persuasively with individuals and groups, using a professional standard of English, both orally and in writing.
7. be able to work in a largely unsupervised way to undertaken an individual research project and present the findings in a professional manner.

Section 3: Learning outcomes of the programme

The award route provides opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the following areas: …

A Knowledge and understanding

Learning outcomes	Teaching, Learning and Assessment Strategies
A Knowledge and understanding of: 1. Mathematical applications appropriate to electronic and communications engineering, in particular in Digital Signal Processing. 2. Design principles and standards for computer networks, including the architecture, components, protocol, and control systems of both local and wide area networks 3. Application of high level language approaches to hardware and software design 4. The underlying principles of analogue and digital telecommunications 5. The complexity of large-scale engineering systems and projects, with particular emphasis on telecommunications systems.	**Teaching/learning methods and strategies:** Acquisition of 1-5 is through combination of formal lectures, tutorials, laboratory work, examples classes, group assignments, student directed learning, case studies and independent projects. Additional support is provided through the provision of appropriate software. Throughout, the learner is encouraged to undertake independent reading both to supplement and consolidate what is being taught/learnt and to broaden their individual knowledge and understanding of the subject This is further emphasised in the project module. **Assessment:** *Testing of the knowledge base is through assessed laboratory and programming exercises, individual and group coursework, and through oral presentations and examinations undertaken in controlled conditions.*

B Intellectual Skills

B Intellectual Skills	**Teaching/learning methods and strategies**
1. Demonstrate a professional attitude to the responsibilities of engineering practitioners 2. Demonstrate the ability to apply knowledge and understanding in the development of engineering solutions to complex problems. 3. Comprehend and evaluate the techniques employed in modern communication systems and networks 4. Demonstrate the ability to select and apply appropriate computer-based methods for modelling and analysing problems relating to the design, manufacture and control of electronic components and telecommunications systems. 5. Be able to use independent thinking and analysis to evaluate the limitations of computer and telecommunications systems from a theoretical perspective. 6. Undertake with confidence the practical analysis and testing of computer networks and telecommunication systems, to evaluate system performance. 7. Critically review available literature on relevant topics.	Intellectual skills (esp 1) are developed through all modules in the programme. Engineering subject modules (Computer Networks, Telecommunication Systems, Digital Signal Processing, Embedded Co-design) will develop the ability to evaluate alternative methods and designs and to balance conflicting objectives in problem solving contexts (2-6) Independent thinking, information gathering and analysis (7) is also expected throughout, but development will be encouraged in Engineering Research Skills and demonstrated in the Individual Project.. **Assessment** *Comprehension of and ability to apply knowledge are tested in all engineering modules, through coursework, lab and computer exercises and examinations.* *7 is assessed particularly but not exclusively in the modules, Engineering Research Skills and Individual Project.*

C Subject, Professional and Practical Skills

C Subject/Professional/Practical Skills	**Teaching/learning methods and strategies**
The learner is able to 1. Use a wide variety of engineering software, including programming languages, to analyse and solve problems. 2. Undertake an in-depth study of a substantial technical problem. This will involve researching professional literature, selecting and using appropriate strategies for solving the chosen problem, including theoretical analysis and experimental work. 3. Make clear and well argued recommendations for the solution of problems in the field of electronics and communications, and present technical information in various forms.	Skill 1 will be developed and practised throughout the course, as all modules use computer programming and software packages. Skills 2 and 3 are developed at various levels in all modules, but especially in the Individual Project, where the student is responsible for his/her own learning, but with supervisory support. The Engineering Research Skills module is designed to ensure that students from a wide variety of backgrounds, and therefore differing experiences of self-directed learning, are equipped to undertake their individual project work. **Assessment** These skills are assessed in practical exercises in class, in coursework and especially in the Individual Project.

D Transferable Skills and other attributes

D Transferable skills and other attributes	**Teaching/learning methods and strategies**
The learner is able to 1. manage his/her own time, in particular with respect to the demands of the course; 2. meet deadlines for the submission of work on an informal or formal basis; 3. work with others, developing an understanding of the benefits of group work and the problems that may arise, and of personal responsibility; 4. work independently, with or without direct supervision; 5. communicate using professional English in a variety of ways – orally, in written reports, and using posters. 6. select appropriate professional literature and assess its value.	Learners are expected to make full use of all teaching opportunities made available to them (1) and to submit for all assessment (2). Some of the work required, whether in the classroom or outside, will be done in groups (3) and there will be many opportunities for independent learning (4). These may or not be assessed. Students will be expected to communicate in a variety of media, for example taking part in seminar discussion, demonstrating their work in formative and assessed situations. The use of a wide variety of professional literature (5) is expected in all modules, and this will be promoted largely though not exclusively through the use of Blackboard. Students are also expected to search for appropriate sources independently. **Assessment** A learner with strong transferable skills will be successful in all modules. Without these skills it will be impossible to succeed on this course, which is after all specifically designed for level 3 students.

Section 4: Programme structure

level 1	Modules for which credit recognition would normally be sought (essential in bold) **UFCETS-20-1 Programming in C** **UFMERR-10-1 Analogue Circuit Analysis** **UFQETG-10-1 Introductory Mathematics** **UFQETH-10-1 Engineering Mathematics** **UFMETT-20-1 Digital Design and Instrumentation** **UFMETU-20-1 Digital Systems Development** **UFMEUK-20-1 Practical Electronics** UFPENW-10-1 Professional Studies for Electrical/Electronics Engineers (this may not be covered as a separate module,)	
level 2	Modules for which credit recognition would normally be sought (essential in bold) **UFME69-20-2 Micro-Controller Based Systems** **UFMEWQ-20-2 Signal Processing and Circuits** **UFMEVP-20-2 CPU Architecture and VHDL** **UFQEQ8-20-2 Maths for Signal Analysis and Control** UFMEVR-20-2 Electrical Technology UFPENX-20-2 Group Project and Management (may not be included, so an alternative 10 credits would be accepted)	
level 3	**Core modules all compulsory, no options** UFMEAY-30-3 Individual Project UFME77-20-3 Telecommunication Systems UFME5L-20-3 Digital Signal Processing UFME5X-20-3 Computer Networks UFMEMY-20-3 Embedded Co-design (VHDL & C) UFMF4U-10-3 Engineering Research Skills	**Prerequisite requirements** see Entry reqs **Awards:** • Target/highest BEng Electronics and Communications **Credit requirements** 120 credits @ level 3 *Note:* *university regulations require at least one third of credits to be obtained at UWE, so an interim award is not possible*

→ **GRADUATION**

Section 5: Entry requirements

Students from overseas only, whose qualifications are assessed as follows:

1. At a level equivalent to the first two years of a BEng degree – normally this would be a University Diploma or a BSc Engineering

2. In the subject area of electrical or electronic engineering

3. With content meeting the pre-requisites of the modules on the programme, especially Signal Processing and Programming in C/C++

These statements are intended to be indicative. The qualifications of each applicant will be considered on an individual basis until a database of acceptable diplomas and degrees is built up.

English – students must have a minimum IELTS score of 6.5

Section 6: Assessment Regulations

The University's Academic Regulations and Procedures apply to this programme.

Section 7: Student learning: distinctive features and support

Specially designed module
The module Engineering Research Skills has been written specifically for this programme to develop the learning approach of students who may have come from an institution with a different educational style. It is particularly designed to support the student who is unused to working in an unstructured environment, with minimal academic support / maximum self directed learning, which is expected of UWE students at level 3. The module is deliberately broad and generic, as it will attempt to meet the diverse learning needs of the individual students on the programme. Assessment will of course be rigorous.

Academic writing, Communication and English Skills (ACES) Programme
The ACES Programme offers a range of support activities for international students in academic writing, communication and English language skills. It provides courses, workshops, consultations and drop-in sessions to meet the individual language and communication needs of students. Full fee-paying overseas students are given credits to spend on courses of their choice, including modules on Intercultural Communication and Academic Writing Skills.

All other modules on this programme are shared with students on other courses.

Timetabled classes:
The mode of delivery of a module is determined by its Module Leader, and involves any combination of the following: lectures, tutorials, 'lectorials' (where the distinction between traditional lectures and tutorials is blurred), laboratory classes in electronics labs and computer rooms. Learning is a mixture of individual and group activities.

Students are expected to attend all classes on their timetable and to submit work for assessment at the appropriate time.

Academic Support
Academic advice and support is the responsibility of those delivering the individual modules. Academic staff are expected to be available outside normal timetabled hours, either by appointment or during published "surgery" hours, in order to offer advice and guidance on

matters relating to the material being taught and on its assessment.

Personal Development
This being a course at level 3, learners are expected to develop a professional attitude to their studies, reflect on their study skills needs and to see the inter-relations between the various modules in the programme. They are expected to be able to work unsupervised on their Individual Project. A course of lectures relating to personal and professional development forms part of the Faculty's Graduate Development Programme provision at this level, highlighting the knowledge, skills and experiences gained on the course.

Pastoral Care
The university offers pastoral care through Student Advisers, a team of staff who provide comprehensive, full-time student support service on a drop-in basis or by appointment. The Adviser will, when necessary, advise the student to seek advice to from other including the Student Advice and Welfare Services, the Counselling and Psychological Service, or from members of academic staff.

Facilities to Support Learning
Within the Faculty of Environment and Technology student learning will be supported in the following distinctive ways :

1. Through provision of Open Access and other available computer laboratories that provide access to a range of relevant computer based applications
2. Through provision of the System Support Helpdesk that provides a range of support for learning to students including: support for a wide range of applications used by the students; help in the form of assistants who are trained to resolve many common student problems and help in the form of a large set of 'help-sheet documents', developed over a number of years, that cover a variety of common student requests for information.
3. Technical support staff are available in laboratory sessions and during project work.
4. Extensive laboratory facilities to support the technological modules. These include the Electronics Laboratory (1N70) with facilities for investigation of electrical and electronic principles and circuit design, build and test, the Control and Telecommunications Laboratory (2N40) with facilities for control system analysis and design, the Robotics and Microprocessors laboratory (2N24) and the Unix laboratory 3P28 for DSP and digital hardware analysis.
5. Several Project Rooms which provide students with individual and group work spaces and the facilities.

University-wide services include a Virtual Learning Environment (Blackboard), significant library facilities including dedicated services for international students, and a Global Student Support team.

Computing Facilities

In addition to the wide range of computing facilities offered by the University, the Faculty runs a specialised system with 13 laboratories running Windows and 4 with the Linux operating system. The facilities are available on a 24 hours basis during term time, with swipe card access during evenings, at night and at weekends. The labs offer a variety of specialist engineering software, much of which is available for students to download for their home machines. In addition there is an Open Access lab, not used for teaching so giving access to machines at all times.

Support for the computing system is provided with extensive information on the web, ranging from which lab has free machines (on a real time basis), where to find specific software packages and how to use the printing system, to problem solving and FAQs. A support desk, staffed largely by placement students, provides first line support to users during normal office hours.

Section 8 Reference points/benchmarks

In designing this programme, the faculty has drawn upon the following external reference points:
1. The QAA Framework for Higher Education Qualifications in England, Wales and Northern Ireland
2. The QAA Benchmark Statement for Engineering
3. UWE's Learning & Teaching Strategy

The QAA Framework describes the attributes and skills expected of Honours graduates. It is our view that the learning outcomes of this programme are fully consistent with the qualification descriptor in the Framework, and hence that graduates will be able to demonstrate that they meet its expectations.

The **QAA Subject Benchmark Statement for Engineering** outlines a set of skills expected of a graduate in an engineering discipline (Section 4 of the Statement refers), while noting that they should be interpreted in the context of the particular engineering discipline which is being studied. These skills map closely to the skills contained in the learning outcomes for this programme, and hence we have confidence that the programme is in accordance with the precepts of the Statement.

UWE's Learning & Teaching Strategy has informed the faculty's policy for the delivery of its programmes, whose main features are described in section 7.

This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical 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 of individual modules can be found in module specifications. These are available on the University Intranet.

Programme monitoring and review may lead to changes to approved programmes. There may be a time lag between approval of such changes/modifications and their incorporation into an authorised programme specification. Enquiries about any recent changes to the programme made since this specification was authorised should be made to the relevant Faculty Academic Registrar.