



University of the  
West of England

**ACADEMIC SERVICES**

**PROGRAMME SPECIFICATION**

<b>Part 1: Basic Data</b>	
<b>Awarding Institution</b>	University of the West of England
<b>Teaching Institution</b>	Global College of Engineering and Technology (GCET)
<b>Delivery Location</b>	GCET, Muscat Oman
<b>Study abroad / Exchange / Credit recognition</b>	
<b>Faculty responsible for programme</b>	Faculty Environment and Technology (FET)
<b>Department responsible for programme</b>	Computer Science and Creative Technologies
<b>Modular Scheme Title</b>	UWE UG Modular Scheme
<b>Professional Statutory or Regulatory Body Links</b>	
<b>Highest Award Title</b>	BEng (Hons) Software Engineering
<b>Default Award Title</b>	
<b>Fall-back Award Title</b>	
<b>Interim Award Titles</b>	BEng Software Engineering DipHE Software Engineering CertHE Software Engineering
<b>UWE Progression Route</b>	
<b>Mode(s) of Delivery</b>	FT, PT
<b>ISIS Codes</b>	<b>I300</b>
<b>Relevant QAA Subject Benchmark Statements</b>	Computing (2016)
<b>CAP Approval Date</b>	
<b>Valid from</b>	November 2017
<b>Valid until Date</b>	
<b>Version</b>	2

## **Part 2: Educational Aims of the Programme**

BEng (Hons) Software Engineering has the following general aims:

1. To prepare students for entry into the Software Engineering profession and the more general challenges of professional and personal life.
2. To inculcate in students problem-solving and other transferable skills that will be valuable to them in any career.
3. To prepare students for progression to higher degrees in Computing and in particular Software Engineering.
4. To continue the development of those general study skills that will enable students to become independent, lifelong learners.

BEng Software Engineering has the following specific aims:

1. To impart technical skills including requirements analysis, system specification and design (including human-computer interface and database design), programming, and testing.
2. To impart those skills which will enable a student to manage a software development project; these include: quality management as well as planning, estimating, project monitoring and control.
3. To provide exposure to the body of research that underlies the use of computers and to develop familiarity with some major themes within software engineering.
4. To develop the students' understanding of the importance of solving complex ill-defined problems in any domain, though with particular reference to the development of software.

### **Programme requirements for the purposes of the Higher Education Achievement Record (HEAR)**

Graduates would be expected to have strong technical skills in computer programming, software and database design and web and network--based applications, allied with an understanding of the importance of, and methods for, collaborative working on large-scale projects. They would be expected to have a good understanding of the underlying principles of computing. As software engineering is a fast-developing field they would be expected to understand the need for continual learning after graduation.

### **Part 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 of:**

On completion of the programme students will have developed an understanding of a complex body of knowledge, some of it at the current boundaries of the disciplines, in the areas of:

1. Basic understanding of engineering, mathematics and computing principles.
2. The modelling of the software development process in an object-oriented paradigm
3. Understanding the importance of data management
4. Underpinning hardware technologies
5. Underpinning mathematical concepts
6. The business contexts of software engineering
7. The principles underpinning professional practice of software developer.

#### **(B) Intellectual Skills**

On completion of the programme students will be able to demonstrate skills in:

1. Critical Thinking
2. Analysis
3. Synthesis of different types of information
4. Evaluation
5. Problem Solving
6. Appreciate problem contexts
7. Balance conflicting objectives
8. Construction of logical arguments
9. Discussion and debate about technical subjects

#### **(C) Subject/Professional/Practical Skills**

On completion of the programme students will have acquired skills in:

1. Requirements gathering, analysis, design, implementation and testing using appropriate paradigms models and tools
2. Design and deployment of databases
3. Web based systems implementation
4. User interface design
5. Management of software development projects

#### **(D) Transferable skills and other attributes**

On completion of the programme students will be able to demonstrate:

1. Communication skills: to communicate orally or in writing.
2. Self-management skills: to manage one's own time; to meet deadlines; to work with others.
3. IT skills in context: to use software tools in the context of application development.
4. Logical reasoning skills: To undertake analysis and interpretation of information in the context of the Computing discipline.
5. Problem formulation skills: To express problems in appropriate notations.
6. Progression to independent learning: To gain experience of, and to develop skills in, learning independently of structured class work. For example, to develop the ability to use

### **Part 3: Learning Outcomes of the Programme**

on-line facilities to further self-study.

7. Skills in selecting and using information sources appropriate to the discipline to support learning activities.
8. Teamwork skills:: to be able to work as a member of a team; to be aware of the benefits and problems which teamwork can bring.

### **Part 4: Student Learning and Student Support**

#### **Teaching and learning strategies to enable learning outcomes to be achieved and demonstrated**

The programme learning outcomes are delivered through an appropriate mix of lecture, tutorial and practical lab-based sessions supported by directed independent learning. Throughout the delivery, fundamental software engineering principles are explored and consolidated through practical lab-based learning. The development of design and modelling skills is embedded in a number of modules at each level. Group work activities and projects are used to add to the development of academic knowledge with the aim of producing well-rounded individuals who understand the demands of the professional environment they will enter as graduates. At appropriate stages of the programme industrial experts are brought in to lead sessions.

At GCET Muscat (Oman), there is a policy for a minimum average requirement of 18 hours/week contact time over the course of the full undergraduate programme. This contact time encompasses a range of face to face activities as described below. In addition a range of other learning activities will be embedded within the programme which, together with the contact time, will enable learning outcomes to be achieved and demonstrated.

In STEM subjects it is recognized that a higher contact time is desirable and so laboratory-based modules have an extra factor included in the time calculation which provides more hours. In addition the level 2 and 3 students have timetabled Peer-Assisted Learning hours, where trained level 3 and 4 students (as appropriate) work with groups.

On the BEng (Hons) Software Engineering programme teaching is also a mix of scheduled learning and independent learning.

#### **Class Activities**

The mode of delivery of a module is determined by its Module Leader, and typically involves a combination of one or more lectures, tutorials, 'lectorials', laboratory classes, group activities and individual project work.

Modules are predominantly delivered by means of large group lectures, supported by smaller 'lectorials': classes for groups of 20-30 students to allow a closer interaction and discourse with staff.

#### **Academic Support**

Academic advice and support is the responsibility of the staff delivering the module in question. 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.

#### **Pastoral Care**

The College offers pastoral care through two routes:

- Academic Personal Tutors: All level 1 students are assigned a Personal Academic Tutor,

### Part 3: Learning Outcomes of the Programme

who is an academic member of staff in their department. Students meet individually with their tutor at least twice a year and also participate in group sessions with the Personal Academic Tutor's tutor group (max size 15) during years 1 and 2. In year 3 project supervisors take on the role of Personal Academic Tutor.

- Student Advisers, a team of administrative staff who provide comprehensive, full-time student support service on a drop-in basis or by appointment. Advisers are trained to provide advice on matters commonly of concern, including regulatory and other matters; the Adviser will, when necessary, advise the student to seek advice to from other professional services including the university's Centre for Student Affairs or from members of academic staff.

#### Progression to Independent Study

Many modules require students to carry out independent study, such as research for projects and assignments, and a full range of facilities are available to help students with these. The philosophy is accordingly to offer students both guided support and opportunities for independent study. Guided support, mainly in the form of timetabled sessions, takes the form of lectures, tutorials, seminars and practical laboratory sessions. Students are expected to attend all sessions on their timetable, and this is especially important because of the high content of practical work in the programme.

The progression to independent study will also be assisted by the nature of the support offered in individual modules. Typically, module leaders will provide a plan for the module indicating the activities to be carried out and the forms of learning to be undertaken during the delivery of the module, with a view to encouraging students to plan ahead and to take responsibility for managing their time and resources.

#### Description of the teaching resources provided for students

The College offers a specialised computing facility alongside the general College provision. There is a general PC computing laboratory running Windows and two specialist computing labs. The specialist laboratories are equipped with the specific software for Computing students; including Software Design Tools development environment, mathematics and statistics packages to support the taught program. The specialist Computing laboratories are designed to target the discipline taught in that area.

The College provides a user support Helpdesk. The Helpdesk provides first line support to the users.

#### Description of any Distinctive Features

##### Professional Practice and Lab Facilities

Students can access a suite of newly purchased PCs (I7 and I5), modern software, free printing facilities and an IT help desk/line. The General IT lab is open from 8am till 9pm.

Besides the College's plan of extending its IT facilities as the number of students grows, it also has a policy of upgrading 25% of its IT facilities every year.

##### Technology Enhanced Learning

Staff members in the department are keen adopters of technology to support and enhance student learning. This includes:

- Computer based e-assessment implemented in a number of modules, so that students can take regular short tests with automated computer generated feedback.
- Recordings of some lectures (audio and video) which are made available after classes via

### Part 3: Learning Outcomes of the Programme

the university's Virtual Learning Environment.

#### **Mathematics Support**

The Math Support Centre provides drop-in one-to-one tuition each day and a web-site that provides a portal to a variety of on-line resources in mathematics and statistics.

## Part 5: Assessment

A: Approved to [University Regulations and Procedures](#)

### Assessment Strategy

Assessment strategy to enable the learning outcomes to be achieved and demonstrated:

Assessment strategies for Software Engineering require a balance between:

- the assessment of technical knowledge, (by means of examinations and individual assignments),
- the assessment of the ability to work in teams (assessed by group work)
- the assessment of the ability to carry out extended periods of coordinated work (assessed by projects and portfolios of work).


### Assessment Map

The programme encompasses a range of **assessment methods** including; written examinations, individual and group assignments, individual and group presentations, portfolios of work, practical based assignments, projects, posters.. These are detailed in the following assessment map:

#### Assessment Map for BEng (Hons) Software Engineering

		Type of Assessment*									
		Unseen Written Exam	Open Book Written Exam	In-class Written Test	Practical Exam	Practical Skills Assessment	Oral assessment and/or presentation	Written Assignment	Report / Project	Dissertation	Portfolio
Compulsory Modules Level 0	<b>UFCMFBG-30-0</b>	A(50)		B(25)	B(25)						
	<b>UFCEXX30-0</b>	A(30)			A(20)						B(50)
	<b>UFCXXX-30-0</b>										
	<b>UFMFEG-30-0</b>										A(100)
Compulsory Modules Level 1	<b>UFCFC3-30-1</b>							A(50)			B(50)
	<b>UFCF93-30-1</b>			A(50)				B(50)			
	<b>UFCFB3-30-1</b>						A(70)				B(30)
	<b>UFCFA3-30-1</b>										
Compulsory Modules Level 2	<b>UFCFV4-30-2</b>	A(50)						B(50)			
	<b>UFCFQ4-30-2</b>	A(50)						B(25)			B(25)
	<b>UFCFB6-30-2</b>	A(50)					B(50)				
	<b>UFCFK6-30-2</b>	A(50)							B(50)		
Compulsory Modules Level 3	<b>UFCFR4-45-3</b>						A(15)		A(85)		
	<b>UFCF95-15-3</b>							A(100)			
	<b>UFCFU3-15-3</b>	A(50)						B(50)			
	<b>UFCF85-30-3</b>	A(50)						B(50)			
	<b>UFCFX5-15-3</b>	A(30)						B(49)			B(21)

## BEng (Hons) Software Engineering

<b>Part 6: Programme Structure</b>			
This structure diagram demonstrates the student journey from Entry through to Graduation for a typical full time student, including: level and credit requirements; interim award requirements; module diet (including compulsory and optional modules)			
<b>ENTRY</b>  <b>Year 0</b>  	<b>Core Modules</b>  <u>UFMFBG-30-0</u> Foundation Mathematics: Algebra and Calculus <u>UFCEXX-30-0</u> Program Design and Implementation <u>UF CFGK-30-0</u> Professional and Academic Skills <u>UFMFEG-30-0</u> Engineering Experimentation	<b>Optional Modules</b>          None	120 credits at Level 0  Successful completion of all level 0 modules required to permit progression to level 1.
<b>Year 1</b>	<u>UF CFC3-30-1</u> Introduction to OO Systems Development <u>UF CF93-30-1</u> Computer and Network Systems <u>UF CFB3-30-1</u> Web Programming <u>UF CFA3-30-1</u> Principles of Computing	None	<b>Interim award:</b>  <b>Cert HE Electronics and Telecommunication Engineering</b>  Credit Requirements: 240 credits At least 100 credits at level 1 or above. 120 credits at level 0
<b>Year 2</b>	<u>UF CFV4-30-2</u> Data, Schemas and Applications <u>UF CFQ4-30-2</u> Computer Networks and Operating Systems <u>UF CFB6-30-2</u> Object-Oriented Systems Development <u>UF CFK6-30-2</u> Software Engineering	None	<b>Interim award:</b>  <b>Dip HE Software Engineering</b>  Credit requirements: 360 credits At least 100 credits at level 2 or above. At least 120 credits at level 1 or above. 120 credits at level 0.
<b>Year 3</b>	<u>UF CFR4-45-3</u> Computing Project <u>UF CFU3-15-3</u> Advanced Databases <u>UF CF85-30-3</u> Enterprise Systems Development <u>UF CF95-15-3</u> Entrepreneurial Skills	<u>15 credits from:</u> <u>UF CFVJ-15-3</u> Professional Development <u>UF CF7H-15-3</u> Mobile Applications <u>UF CFD5-15-3</u> Technical Writing and Editing <u>UF CFM6-15-3</u> Requirements Engineering	<b>Interim award:</b>  <b>BEng Software Engineering</b>  Credit requirements: 420 credits At least 60 credits at level 3 or above. At least 100 credits at level 2 or above. At least 140 credits at level 1 or above. 120 credits at level 0



			<p><b>Highest award:</b></p> <p><b>BEng(Hons) Software Engineering</b></p> <p>Credit requirements: 480 credits At least 100 credits at level 3 or above. At least 100 credits at level 2 or above. At least 140 credits at level 1 or above. 120 credits at level 0.</p>
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## GRADUATION

<p><b>Part time:</b> The following structure diagram demonstrates the student journey from Entry through to Graduation for a typical <b>part-time student</b>.</p>				
<p><b>ENTRY</b></p> <p>↓</p>		<b>Compulsory Modules</b>	<b>Option modules</b>	<b>Awards:</b>
	Part-time 0.1	<u>UFMFBG-30-0</u> Foundation Mathematics: Algebra and Calculus <u>UFCFGK-30-0</u> Professional Academic Skills	<b>None</b>	120 credits at Level 0
	Part-time 0.2	<u>UFCEXX-30-0</u> Program Design and Implementation <u>UFMFEG-30-0</u> Engineering Experimentation	<b>None</b>	Successful completion of all level 0 modules required to permit progression to level 1.  <b>Interim award:</b>
	Part – time Level 1.1	<u>UFFCFC3-30-1</u> Introduction to OO Systems Development <u>UFCFA3-30-1</u> Principles of Computing	<b>None</b>	<b>Cert HE Software Engineering</b>  Credit Requirements: 240 credits At least 100 credits at level 1 or above. 120 credits at level 0
	Part – time Level 1.2	<u>UFCE93-30-1</u> Computer and Network Systems <u>UFCEB3-30-1</u> Web Programming	<b>None</b>	
	Part – time Level 2.1	<u>UFCEV4-30-2</u> Data, Schemas and Applications <u>UFCEK6-30-2</u> Software Engineering	<b>None</b>	<b>Interim award:</b>  <b>DipHE Software Engineering</b>  Credit requirements: 360 credits At least 100 credits at level 2 or above. At least 120 credits at level 1 or above. 120 credits at level 0.
	Part - time Level 2.2	<u>UFCEQ4-30-2</u> Computer Networks and Operating Systems <u>UFCEB6-30-2</u> Object-Oriented Systems Development	<b>None</b>	

Part – time Level 3.1	<u>UFCFU3-15-3</u> Advanced Databases <u>UFCF85-30-3</u> Enterprise Systems Development <u>UFCF95-15-3</u> Entrepreneurial Skills	<b>None</b>	<b>Interim award</b>  <b>BEng Software Engineering</b>  Credit requirements: 420 credits At least 60 credits at level 3 or above. At least 100 credits at level 2 or above. At least 140 credits at level 1 or above. 120 credits at level 0.
Part – time Level 3.2	<u>UFCFR4-45-3</u> Computing Project	15 credits from: <u>UFCFVJ-15-3</u> Professional Development <u>UFCF7H-15-3</u> Mobile Applications <u>UFCFD5-15-3</u> Technical Writing and Editing <u>UFCFM6-15-3</u> Requirements Engineering	<b>Highest Award</b>  <b>BEng (Hons) Software Engineering</b>  Credit requirements: 480 credits At least 100 credits at level 3 or above. At least 100 credits at level 2 or above. At least 140 credits at level 1 or above. 120 credits at level 0.

**GRADUATION**

## Part 7: Entry Requirements

**Applicants holding the following qualifications are eligible to apply for entry to Level 0 of the programme:**

- Thanawiya amma (General Secondary School Certificate) or the one year certificate with an overall mark of 70%, or above
- Thanawiya amma (General Secondary School Certificate) with an overall mark of 65% or above PLUS a mark of over 60% in each stage of the GCET Foundation Studies Programme

### **PLUS**

- A minimum overall score of IELTS 5.5, or equivalent

Further details of entry requirements for applicants holding the IB Diploma or A Levels can be found at

<http://www1.uwe.ac.uk/whatcanistudy/applyingtouwe/undergraduateapplications/entryrequirements.aspx>

Applicants holding more advanced qualifications may be considered for entry to the programme with advanced standing on an individual basis.

## Part 8: Reference Points and Benchmarks

### **Reference points/benchmarks (UWE)**

1. The QAA Computing benchmark statement is the key influence to have informed the design of the international awards within FET:

#### **2 The QAA Computing benchmark statement**

The QAA Subject Benchmark Statement for Computing was published in 2016, and is applicable to this proposal. The design team has considered it in drawing up the structure of the programme, and is of the view that the proposal falls clearly within the scope of the benchmarks, as regards curriculum, teaching and learning, and the benchmarking standards themselves.

The benchmark (paragraph 2.7) describes “Computing” as a discipline based on Computer Science and contributed to by other areas, including Software Engineering. This programme therefore sits squarely within the area covered by the benchmark statement. It provides relatively detailed coverage of a subset of computing topics and embraces the three key ideas:

- Development of software systems
- The management of data
- Balance between theory and practice.

This is entirely consistent with what is defined by the benchmark statement and by the associated curriculum definition (the ACM publication *SE2014 Curriculum Guidelines for Undergraduate Degree Programs in Software Engineering* 2015).

## **Part 8: Reference Points and Benchmarks**

The benchmark offers guidance on teaching, learning and assessment (section 4). We are confident that this programme is consistent with this guidance and in particular recognizes “the range of student backgrounds” (paragraph 4.1) and “encourages students to reflect, evaluate, select, justify, communicate and be innovative in their problem solving” (paragraph 4.3).

The benchmark also contains (section 6) statements of the standards expected of graduates at both modal and threshold levels. The team is of the view that graduates of the programme will be able to meet the required standards, and indeed have done so on earlier versions of the programme.

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 are to be found in the module specifications.





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First CAP Approval Date				
Revision CAP Approval Date <i>Update this row each time a change goes to CAP</i>	6 Nov 2017	Version	1	Link to <a href="#">MIA</a> (ID 3947)
			2	Link to <a href="#">RIA</a> (ID 4533)
Next Periodic Curriculum Review due date	2023/24			
Date of last Periodic Curriculum Review				