# Programme Specification

Software Engineering {Dual} [Aug][FT][Taylors][3yrs]

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## Section 1: Key Programme Details

### Part A: Programme Information

**Programme title:** Software Engineering {Dual} [Aug][FT][Taylors][3yrs]

**Highest award:** BSc (Hons) Software Engineering

**Interim award:** BSc Software Engineering

**Interim award:** DipHE Software Engineering

**Interim award:** CertHE Software Engineering

**Awarding institution:** UWE Bristol

**Affiliated institutions:** Taylor's University

**Teaching institutions:** Taylor's University

**Study abroad:** No

**Year abroad:** No

**Sandwich year:** No

**Credit recognition:** No

**School responsible for the programme:** FET Dept of Computer Sci & Creative Tech, Faculty of Environment & Technology

**Professional, statutory or regulatory bodies:**

Malaysian Quality Assurance (MQA)

**Modes of delivery:** Full-time

**Entry requirements:**

**For implementation from:** 01 August 2018

**Programme code:** G70E-AUG-FT-TU-G700

## Section 2: Programme Overview, Aims and Learning Outcomes

## Part A: Programme Overview, Aims and Learning Outcomes

**Overview:** Software Engineering 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.

**Features of the programme:**

**Educational Aims:** BSc (Hons) Software Engineering has the following general aims:

To prepare students for entry into the Software Engineering profession and the more general challenges of professional and personal life.

To inculcate in students problem-solving and other transferable skills that will be valuable to them in any career.

To prepare students for progression to higher degrees in Computing and in particular Software Engineering.

To continue the development of those general study skills that will enable students to become independent, lifelong learners.

BSc Software Engineering has the following specific aims:

To impart technical skills including requirements analysis, system specification and design (including human-computer interface and database design), programming, and testing.

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.

To encourage students to uphold professional, ethical and social standards and to keep up to date with recent technological and theoretical developments.

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.

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 Learning Outcomes:**

On successful completion of this programme graduates will achieve the following learning outcomes.

**Knowledge and Understanding**

A1. The modelling of the software development process in an object-oriented paradigm

A2. Understanding the importance of data management

A3. Underpinning hardware technologies

A4. Underpinning mathematical concepts

A5. The business contexts of software engineering

A6. The overarching professional and ethical responsibilities of software developer

**Intellectual Skills**

B1. Critical Thinking

B2. Analysis

B3. Synthesis of different types of information

B4. Evaluation

B5. Problem Solving

B6. Appreciate problem contexts

B7. Balance conflicting objectives

B8. Construction of logical arguments

B9. Discussion and debate about technical subjects with peers

**Subject/Professional Practice Skills**

C1. Software Engineering Process

C2. Design and Deployment databases

C3. Web based systems implementation

C4. User interface design

C5. Management of software development projects

**Transferable Skills and other attributes**

D1. Communication skills: to communicate orally or in writing

D2. Self-management skills: to manage one's own time; to meet deadlines; to work with others

D3. IT skills in context: to use software tools in the context of application development

D4. Logical reasoning skills: To undertake analysis and interpretation of information in the context of the Computing discipline

D5. Problem formulation skills: To express problems in appropriate notations

D6. 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 on-line facilities to further self-study

D7. Skills in selecting and using information sources appropriate to the discipline to support learning activities

D8. 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.

**Assessment strategy:** 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).

**Student support:** 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.

Virtual Learning Environment:

UWE uses the Blackboard virtual learning environment to support the delivery of modules. All students at UWE have access to Blackboard for all modules on which they are enrolled. For most modules course materials and announcements are provided through Blackboard and for many modules the additional facilities provided by Blackboard are utilised to (e.g.) run formative tests, provide online forums and provide access to provisional coursework marks. Taylors University also uses a virtual learning environment in a similar manner.

Pastoral Care:

At UWE the faculty offers pastoral care through its Student Advisers, a team of staff who provide comprehensive, full-time student support service on a drop-in basis or by appointment. All students on the same route are allocated to the same Adviser,

who is 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 UWE's Student Services Department or from members of academic staff.

Students at Taylors University have access to similar support services. In addition, Taylors has a system of 'academic probation'. Students who have failed a module are placed in 'academic probation' and are offered counselling to help them towards success.

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 at all sites 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.

Student Support and Guidance:

At both UWE and TU, is provided by academic staff, usually module leaders, for all issues relating to the content and delivery of the module. The UWE student advice services provide timely, accurate and confidential advice where necessary on all aspects of the provision including that relating to fees, assessment arrangements, late work and extenuating circumstances procedures, option choice, timetabling,

examination and progression counselling and so on, as well as where and how to access the support provided by UWE. Additional support and guidance is provided by Programme Managers who are also responsible for ensuring the collection of and response to student feedback using student representatives and Programme Management Committees.

Further support is provided through the UG administration team, the admissions office, the Students Union, the central University career service and UWE's counselling provision. The UWE placements services provide extensive support for students in preparation for, as well as throughout, their study year abroad and acts both as an intermediary with partner institutions and as a recruitment service for employers.

In addition, BSc (Hons) Software Engineering will students will be encouraged to use social networking (e.g. Facebook) to interact – a strategy that has proven highly valuable on other degrees. The Facebook site fosters social and academic contacts between students on all years of the Programme and acts as an initial portal for applicants and a forum for graduates.

Students seeking employment opportunities during their studies have access to UWE's Job Shop and are also encouraged to develop valuable skills by volunteering with the Community Volunteer Service. The UWE international office provides support and organises specific activities to assist international students in adapting to life in the UK, such as an additional induction week, and the provision of specific literature to assist with their study. Further student support is provided through the UG administration team, the Placements Office, the Admissions Office.

All students have a formal induction process to socialise them to university life and to provide them with the means to access the support that they may require during their study at UWE. A student handbook documents this for students. There are a range of central services offered to students. These include: Student Advice and Welfare for advice on finance and UWE's counseling provision; Career Development Unit for careers information; information technology services, student accommodation services, sports facilities, student union services, the Chaplaincy, and the Centre for

Performing Arts.

Support to students with disability is offered both at the faculty level under the remit of the Disability Adviser and centrally through UWE's Disability Resource Service. The Disability Adviser coordinates academic support for disabled students in the Faculty. This includes communication of individual student's support requirements to teaching and support staff and advice and recommendations on reasonable adjustments to teaching and assessment. The Disability Adviser also coordinates staff development on disability issues and provides information and advice to academic and support staff and to students in relation to disability issues. Together, these act as a holistic service for disabled students and applicants to UWE and also support the academic and administrative staff members who work with disabled students.

At TU Student Central is responsible for handling matters pertaining to student welfare, counselling, international office and training materials for students. The Counselling Central helps students cope with studies, stress, time management and personal concerns ranging from homesickness to relationship problems. Student Services Department assists students with regards to study loans, scholarships, study grants and other financial assistance during their course of study at TU.

The International Office promotes understanding, cross-cultural learning and appreciation among students from various nationalities, racial and ethnic backgrounds on campus. It provides a comprehensive range of support services to international students to enable them to adapt to the culture and lifestyle of Malaysia. Services offered include course counselling; application and admission; student visa and pass application; airport pickup; orientation and familiarisation; and Immigration advice.

Formed by students for students, the Student Council represents students' 'voice' at TU. The Council plays a very central role in seeking solutions to problems faced by students in the academic and non academic areas. They also spearhead the organisation of social activities for students. Members of the council are elected by the student body with representation from each programme. The Council is managed

by an Executive Committee and advised by an Officer of TU.

The Divisional Office of the various schools is the nerve centre of the school around which all academic activities and student administration revolve. It handles a broad range of activities which include: timetabling; programme information; subject choice counselling; subject registration; student attendance; subject exemptions; course prerequisites; student withdrawal; Student certification letters for loan application and EPF withdrawal; matters relating to fees; and general academic support.

The Career Centre provides various services and programmes to assist students in analysing their career interests, aptitudes, values and goals. It also assists students in career planning and preparation for job interviews, in addition to providing job placement services for graduating students through our network with industry and potential employers It's services include: career counselling; career talks and workshops; resume writing and grooming seminars; career-related fairs and company trips.

An orientation programme is organised for all students prior to the start of the programme. It introduces students to the support available within the School and University, via a range of speakers (e.g. representatives from the Divisional Office, Student Services, Library, ICT, etc.). An ICT services orientation will introduce students to the email, blackboard and student portal. International students will receive an induction from the International Office.

## Part B: Programme Structure

### Year 1

The student must take 120 credits from the modules in Year 1.

### Year 1 Compulsory Modules

The student must take 120 credits from the modules in Compulsory Modules.

| Module Code | Module Title | Credit |
|---|---|---|

| | | |
|---|---|---|
| UFCF93-30-1 | Computer and Network Systems 2018-19 | 30 |
| UFCFC3-30-1 | Introduction to OO Systems Development 2018-19 | 30 |
| UFCFA3-30-1 | Principles of Computing 2018-19 | 30 |
| UFCFB3-30-1 | Web Programming 2018-19 | 30 |

**Year 2**
The student must take 120 credits from the modules in Year 2.

**Year 2 Compulsory Modules**
The student must take 120 credits from the modules in Compulsory Modules.

| Module Code | Module Title | Credit |
|---|---|---|
| UFCFQ4-30-2 | Computer Networks and Operating Systems 2019-20 | 30 |
| UFCFV4-30-2 | Data, Schemas and Applications 2019-20 | 30 |
| UFCFB6-30-2 | Object-Oriented Systems Development 2019-20 | 30 |
| UFCFK6-30-2 | Software Engineering 2019-20 | 30 |

**Year 3**
The student must take 120 credits from the modules in Year 3.

Please see Taylor's programme specification for Taylor's Modules.

**Year 3 Compulsory Modules**
The student must take 120 credits from the modules in Compulsory Modules.

| Module Code | Module Title | Credit |
|---|---|---|
| UFCFU3-15-3 | Advanced Databases 2020-21 | 15 |
| UFCFR4-45-3 | Computing Project 2020-21 | 45 |
| UFCF85-30-3 | Enterprise Systems Development 2020-21 | 30 |

| | | |
|---|---|---|
| UFCF7H-15-3 | Mobile Applications 2020-21 | 15 |
| UFCFM6-15-3 | Requirements Engineering 2020-21 | 15 |

**Part C: Higher Education Achievement Record (HEAR) Synopsis**

Software Engineering 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 largescale 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 D: External Reference Points and Benchmarks**

Reference points/benchmarks (UWE):

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

The QAA Computing benchmark statement:

The QAA Subject Benchmark Statement for Computing was published in 2007, 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 benchmarks (paragraph 2.1) identify a range of types of degrees in computing. At one extreme is a programme that "covers a wide range of topics spanning the entire area of computing". At the other programmes that "take one very specific aspect of computing and covers it in great depth". This programme resides in the middle of these two extremes providing relatively detailed coverage of a moderately

broad subset of computing topics and embraces the three key ideas:

Development of computing systems;

Importance of specialism and position within a broader context;

Balance between theory and practice.

The benchmarks establish a set of Principles of Course Design (paragraph 3.1). This programme, whilst first developed prior to the writing of the benchmarks, nevertheless satisfies these design principles and continues to be revised bearing them in mind.

The benchmarks also contain (section 5) 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.

Reference points/benchmarks (Taylor's University):

Three key influences have informed the design of the international awards within the TU:

UWE’s mission and purpose statements.

Statutory Requirements.

International Standards.

Taylor's University mission and purpose statements:

The TU’s 10-year mission is to be a university of 20,000 students, renowned for its teaching excellence and the distinctive qualities of its graduates.

The TU’s purpose is to educate the youth of the world to take their productive place as leaders in the global community.

The concrete indicators in TU’s Mission Statement are substantiated by two existing Taylor’s policies:

Taylor’s Graduate Capabilities; This policy substantiates the following clause in our Mission Statement: “….. the distinctive qualities of its graduates”

Taylor’s University Teaching and Learning Framework; This policy substantiates the following clause in our Mission Statement “…. Renowned for its teaching excellence”

TheTaylor’s Graduate Capabilities andTeaching and Learning Framework both support our Mission Statement, which in turn supports our Purpose. All academic and research policies and procedures at Taylor’s are to be in accordance with the focus provided by these policies.

Taylor’s Graduate Capabilities and Teaching and Learning Framework;

The teaching and learning approach at Taylor’s University is focused on developing the Taylor’s Graduate Capabilities in its students, capabilities that encompass the knowledge, cognitive capabilities and soft skills of our graduates.

Reference Points and Benchmarks:

A Taylor’s graduate has proven ability and is capable in the following areas;

Discipline-specific knowledge:
Sound understanding of foundational concepts and theories in subject area.

Cognitive capabilities:
Foundation and skills for lifelong learning;
Learns autonomously;
Able to acquire and manage information;
Ability to comprehend a wide variety of literature;
Awareness of contemporary global issues.

Problem solving skills:
Defines issues of problems well;
Analyses problems comprehensively;
Allies knowledge effectively and applies theory to practice;
Able to arrive at workable and effective solutions.

Soft Skills:
Communication skills;
Ability to speak and write well;
Able to organize, synthesize and present information effectively.

Interpersonal skills:
Understands team dynamics, power of teams and team work;
Works with others in a team;
Able to assume leadership in small and/or big groups.

Intrapersonal skills:
Ability to manage time effectively;
Understands the role of personal image and professionalism at work;
Works independently in context of tasks to be completed.

Cosmopolitan thinking and intercultural competence:
Forms opinions and articulates views from a global perspective;
Awareness of and sensitivity to cross-cultural differences.

Technology savvy:
Executive keyboarding;
Effective use of ICT and related technologies.

The learning environment at Taylor's is further geared towards nurturing the Taylor's Core Values; the personal attributes of excellence, integrity, passion for work, interpersonal respect and care, openness in communication and a healthy balance between professional and personal life.

Through participation in various optional electives, including co-curricular activities, Taylor's students may also develop additional knowledge, cognitive capabilities and soft skills other than those listed. These, as well as the Taylor's graduate capabilities above, are recorded by students in the form of individual student portfolios and verified by Taylor's University against the set of expectations for each subject, program and co-curricular activity.

Statutory Requirements:

Degree qualifications offered by Malaysian private higher education institutions are required by the government to comply with the internationally benchmarked points of reference below, for the purpose of quality control. Summaries of each of the instruments' relevant requirements, contextualized for TU, are given in the Appendices to the programme specification document.

Malaysian Qualifications Framework, MQF.
Code of Practice for Programme Accreditation, COPPA.
Code of Practice for Institutional Audit, COPIA.
Requirements of Professional Bodies, where applicable.

International Standards:

For the purpose of international benchmarking, we integrate best practices in quality assurance in higher education from the regions from which Taylor's partner

universities are drawn.

To implement the policy of compliance with the benchmark documents identified in this section, collating the information from all sources the scope of the TQM is categorized into 10 distinctive areas.

Scope: Overview and goals.
Identified from: MQF, COPPA, European Standard.

Scope: Curriculum.
Identified from: MQF, COPPA, COPIA, professional bodies requirements;.European, Australian and US Standards.

Scope: Intake.
Identified from: COPPA.

Scope: Assessment.
Identified from: COPPA, European and Australian Standards.

Scope: Faculty.
Identified from: COPPA, European, Australian and US Standards.

Scope: Resources.
Identified from: COPPA, European, Australian and US Standards.

Scope: Review.
Identified from: COPPA, COPIA, European, Australian and US Standards.

Scope: Public Transparency.
Identified from: European Standard.

Scope: External QA Mechanisms.
Identified from: COPPA, COPIA, professional bodies requirements; European, Australian and US Standards.

Scope: Improved mechanisms.
Identified from: COPPA, professional bodies requirements; European, Australian and US Standards.

Please see Programme Specification Document for further information.

**Part E: Regulations**

Approved to University Regulations and Procedures.