OXFORD
BROOKES
UNIVERSITY

PROGRAMME SPECIFICATION

for the award of

BSc (Hons) Software Development for Business

Managed by the Faculty of Technology, Design and Environment

delivered by Department of Computing and Communication Technologies

Date approved:	
Applies to students commencing study in:	September 2018

RECORD OF UPDATES

Date amended*	Nature of amendment**	Reason for amendment**
January 2018	Changes to module offering	To better focus the module offering and better align the programme with market expectations.
July 2016	Transferred to new template, update graduate attribute from global to active citizenship, Ordinary degree requirements.	CMA Compliance, Update to graduate attribute
October 2016	Checked for errors and amended by Subject Coordinator and Programme Lead.	Subject specialist knowledge.
November 2016	Checked by Faculty Quality Team	Following further CMA Compliance guidance
July 2017	Amends to U08007 and addition of U08004	Major and minor changes

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SECTION 1: GENERAL INFORMATION

Awarding body:	Oxford Brookes University
Teaching institution and location:	Oxford Brookes University, Wheatley Campus
Language of study:	English
Final award:	BSc (Hons)
Programme title:	Software Development for Business
Interim exit awards and award titles available:	CertHE, DipHE, BSc
Brookes course code:	WB
UCAS code:	I329
JACS code:	I300
HECoS code:	100374
Mode of delivery:	Full-time (face to face/on-campus) Part-time (face to face/on-campus)
Mode/s and duration of study:	Full-Time 3 years Part-Time 6 years Sandwich Mode (Full-Time) (placement in year 3) 4 years Sandwich Mode(Part-Time) (placement in year 3) 7 years In all cases the maximum length of registration is 8 years
QAA subject benchmark statement/s which apply to the programme:	Computing (2016) http://www.qaa.ac.uk/en/Publications/Documents/SBS-Computing-16.pdf
Professional accreditation attached to the programme:	BCS, The Chartered Institute for IT www.bcs.org Chartered IT Professional (CITP) and CEng Chartered Engineer (partial fulfilment)
University Regulations:	The programme conforms to the University Regulations for the year of entry as published/archived at: http://www.brookes.ac.uk/regulations/

SECTION 2: WHY STUDY THIS PROGRAMME?

Software Development for Business (SDB) is a national brand. The degree has been devised as a sister programme to the highly successful Information Technology Management for Business (ITMB) degree because employers felt a need for a degree with a stronger focus on more technical software capabilities and solid professional skills within a business context. The degree has been designed around the requirements of a wide assortment of major employers including IBM, HP, Logica, Capgemini, Accenture and Morgan Stanley. The degree is endorsed by e-skills UK, the National Sector Skills Council for the IT and Telecommunications industry, and is run at multiple universities in the UK.

While there are many degrees which combine computing technology with business, SDB is unique in that it has the ongoing support of these employers, who are specifically targeting graduates from the programme as future employees. Graduates from the programme will have exactly the right mix of technical, business and project-based skills to play key roles in the design and implementation of computing solutions for tomorrow's businesses. They will also develop the ability to stay up to date with rapidly changing technologies and the competence to apply these technologies effectively in a business context, which they will need in order to be effective practitioners in this area.

The design of our programmes is informed by state of the art research being undertaken in the department. For example, Prof. Hong Zhu and Dr Ian Bayley, are internationally renowned academics, outstanding in the fields of design patterns, requirements engineering and software testing. Students on our programmes have access to highly specialised computer laboratories where they learn the practical application of cutting edge theoretical skills and techniques.

The degree programme is designed to reflect industry's changing needs and market requirements and to ensure that students are up to date with the knowledge and practical skills that will be required of them when they graduate. The curriculum is based on learning outcomes devised by e-skills UK which are in turn based upon the IT professional standards, SFIA frameworks and current industry demands. Students will learn a balanced set of computing knowledge and skills with contextual information to enable them to apply these skills to the modern workplace. These skills will include the ability to design and implement solutions to computing problems, knowledge of good management practice, and understanding of the professional issues associated with software development.

Please refer to the following link to view the staff profiles within the Department of Computing and Communication Technologies:
http://cct.brookes.ac.uk/staff/index.html

SECTION 3: PROGRAMME LEARNING OUTCOMES

On successful completion of the programme, graduates will demonstrate the following Brookes Attributes:

3.1 ACADEMIC LITERACY

A1	Contribute to the creation of new software artefacts by applying the key concepts and ways of working derived from a deep understanding of the fundamental principles of Software Engineering as informed by an operational context.
A2	Incorporate risk management and an understanding of information security issues in the design, development, maintenance and use of information systems.
A3	Apply formal methods, finite state machines and other theoretical aspects of computer science to the analysis, construction and evaluation of software artefacts
A4	Create abstractions from observed patterns encountered across the whole spectrum of real world problem domains to facilitate the analysis and synthesis of relevant solutions

3.2 RESEARCH LITERACY

B1	Apply the scientific method and report findings using accepted formalisms.

B2	Identify and utilise trustworthy information sources, such as the ACM Digital Library to develop a coherent understanding of issues in the domain.
B3	Apply appropriate empirical methods, such as software metrics, to study the creation and use of software systems.

3.3 CRITICAL SELF-AWARENESS AND PERSONAL LITERACY

C1	Evaluate and reflect on the evolution of their strengths and weaknesses across the range of subject based competences involved in their chosen domain through the creation and implementation of a discipline based personal development plan.
C2	Apply self-awareness in evaluating their impact in team based work and utilise appropriate communication and problem resolution strategies.

3.4 DIGITAL AND INFORMATION LITERACY

D1	Use appropriate technologies such as online libraries and databases to find, critically evaluate and utilise both non specialist (e.g. reports) and technical (e.g. APIs and RFCs) information
D2	Demonstrate proficiency in a range of formal and informal modes of communication such as giving presentations to groups, writing reports and writing software documentation.

3.5 ACTIVE CITIZENSHIP

E1	Demonstrate an awareness of, and work in a manner guided by, the legal, professional, ethical and social issues relevant to the IT and telecommunications industry.
E2	Evaluate the impact of the development, use and maintenance of information systems in commercial, economic and social contexts in both national and international settings.

SECTION 4: CURRICULUM CONTENT & STRUCTURE

4.1 PROGRAMME STRUCTURE AND REQUIREMENTS:

Code	Module Title	Credits	Level	Status	Coursework: Exam ratio
U08007	Information Systems	15	4	Compulsory	100:0
U08013	Foundations of Computing Systems	15	4	Compulsory	100:0
U08008	Problem Solving and Programming	30	4	Compulsory	100:0
U08009	Object Oriented Programming	15	4	Compulsory	50:50
U08606	Discrete Mathematics	15	4	Compulsory	50:50
U08010	Dev Ops	15	4	Compulsory	100:0
U08011	Networking and Multimedia	15	4	Compulsory	30:70
U08025	Foundations of Computation	15	5	Compulsory	30:70
U08056	Innovative Product Development	30	5	Compulsory	100:0
U08226	Foundations of Security	15	5	Compulsory	100:0
U08223	Data Structures	15	5	Compulsory	50:50
U08028	Software Development with C and C++	15	5	Compulsory	50:50
U08054	Web Application Development	15	5	Compulsory	50:50
U08049	Databases	15	5	Compulsory	50:50
U08868	Independent Study level 5	15	5	Optional	100:0
U08065	Work Experience Placement	0	5	Optional	100:0
U08096	Project	30	6	Compulsory	100:0

U08173	Software Engineering	15	6	Compulsory	100:0
U08186	Advanced Object Oriented Programming	15	6	Compulsory	50:50
U08784	Software Project Management	15	6	Compulsory	100:0
U08174	Cloud Computing and Internet of Things	15	6	Optional	100:0
U08175	Artificial Intelligence	15	6	Optional	100:0
U08088	Independent Study level 6	15	6	Optional	100:0
U08085	Communicating and Teaching Computer Science	15	6	Optional	100:0

4.2 PROGRESSION AND AWARD REQUIREMENTS

For the BSc (Hons) award all compulsory modules must be passed alongside meeting all the usual university rules for undergraduate programmes.

For any of the interim exit awards described below, students must in addition to the specific requirements given here and meet the usual university rules for undergraduate programmes.

For Named DipHE: U08223 and U08226 must be passed.

For CertHE: All level 4 compulsory modules must be passed.

4.3 PROFESSIONAL REQUIREMENTS

Successful completion of the course meets the professional requirements.

SECTION 5: TEACHING AND ASSESSMENT

Formally scheduled teaching is generally in the form of lectures, tutorials, computer labs or apprentice mode sessions. Each 15 credit module has 150 learning hours associated with it, and of these, 36 (3 hrs x 12 weeks) are formally scheduled teaching. These figures are doubled for a double module, such as U08008. As students generally take 4 modules per semester, they are thus expected to attend 12 formally scheduled teaching hours per week.

The 3 contact hours per week on a module are broken down into either a 1 hour lecture and 2 hour practical session, or a 2 hour lecture and a 1 hour practical session, depending on the module. Lectures are attended by all the students on the module, and give students the opportunity to acquire knowledge and understanding of the key concepts in the subject.   Practical sessions and tutorials are smaller groups of 1 tutor, with less than 20 students, and enable students to practice essential skills in a variety of contexts, as well as, build a wide set of experiences on which to reflect, and develop professional expertise. For more technical skills, including programming, the practical elements will be based around laboratory classes, allowing students to experiment with the technology in a controlled environment.

Some of our core programming modules are taught in an apprentice style. These use a different format which involves a 3 hour session where the time is made up of repeating a sequence of
-   the lecturer giving a short presentation from slides,
-   the lecturer working through examples where they use the technique or concept being taught
-   the students carrying out exercises to practice the technique or concept for themselves with the lecturer providing help and feedback.

This style of teaching takes place mainly in computer labs with 1 tutor and less than 20 students but sometimes in a larger computer lab with 2 tutors and less than 35 students.

Outside of the 36 hours scheduled teaching, the remaining 114 hours associated with a module are split up roughly along the lines of a third of the module time being involved in directed work, or independent study, with the remainder used to prepare for assignments, background reading, research etc. The actual breakdown varies on a module by module basis.

Coursework provides the majority of the assessment on this course in a ratio of approximately 75:25 coursework:exam. It should be noted that timed computer based tests, such as 'write a piece of software to solve this problem', are regarded as coursework rather than exam, and these class tests take place on some of the programming related modules.

Several modules will include an element of team working, enabling students to collaborate with their peers, developing an awareness of their own abilities as reflected by feedback from others. Team work will also be used to assess the students' acquisition of personal and inter-personal skills, so important for this degree, and equally important for most career paths in the industry.

Core modules provide a balance of assessments, appropriate to the learning outcomes of the programme. In particular, early core modules are assessed on the basis of key technical, professional and learning skills, most likely to enable and enhance a student's aptitude for life-long learning. As students master core skills, the issues associated with quality products and processes will play an increasingly important part of the module content. Assessment tasks will be specified in the context of the importance of quality assurance in the IT and telecommunications industry, and criteria for success in assessments will mirror those needed in the work place.

By paying due regard to the Oxford Brookes University Assessment Compact, the assessments on this programme have been designed to develop learning of technical skills, shaped by the underlying theory, and requirements of the industry. Assessment does not present students with a set of hurdles, but rather guides them through the staged acquisition of a complex set of professional skills, so that, by the time they graduate, they are ready to play an effective role in their chosen career. Feedback on the assessment tasks will be provided in a timely manner, emphasizing achievement of the learning outcomes of the modules and the programme. Students will be encouraged to relate the assessment tasks with professional activities, and to relate their achievements with professional standards. Where appropriate, self- and peer- assessment will be used to encourage students to involve themselves in their own professional development.

A year's industrial placement is an optional part of the programme and if chosen is taken in the third year of study before returning to Brookes for a final year to complete the degree.

The department is committed to inclusivity and diversity in its teaching. By the very nature of the discipline, virtually all of our teaching material is available in an accessible format and where possible we follow best practice guidelines and make our electronic material available before the lectures. We also use electronic references and ebooks to further enhance accessibility. Inclusivity and diversity is also embedded in what we teach. As such all new students have a lecture on inclusivity and diversity as part of their induction and important inclusivity and diversity topics such as the need for accessibility and internationalization and how to achieve them are taught on a variety of modules throughout the degree.

SECTION 6: ADMISSION TO THE PROGRAMME

6.1 ENTRY REQUIREMENTS

For September 2017;
Admission requirements:
https://www.brookes.ac.uk/studying-at-brookes/courses/undergraduate/2017/september/

Points may be counted from qualifications equivalent to 3 A-levels only.

Please follow this link for details of the new UCAS Tariff: http://www.brookes.ac.uk/studying-at-brookes/how-to-apply/ucas-tariff/

Specific entry requirements

- GCSE: Mathematics at grade B minimum, and English Language at grade C minimum.

Students for whom English is not their main language also need to show that their English is at a high enough level to succeed in their studies. The minimum English language requirements are specified at http://www.brookes.ac.uk/international/how-to-apply/english-language-requirements/

SECTION 7: PREPARATION FOR EMPLOYMENT

Graduates from the programme will be ideally equipped for a career in the computing industry. Graduates are employed across a whole range of careers from development roles in small software houses, to the activities of IT departments in large, multinational corporations, to more specialist roles for providers of IT and telecommunications services. These include technical development roles, including software design and development, specialist product support, and infrastructure and security management roles.

According to research conducted by e-skills UK, the National Sector Skills Council for IT and Telecommunications, the IT professional workforce in the UK, has almost doubled in the last 20 years, and is likely to continue growing at 5-8 times the average employment growth for the coming decade. Recent graduates from this programme have been employed by, for example, Sophos, Logica, Jaguar/Land Rover and IBM. Specific job titles include Software Developer, Threat Researcher, Project Manager, Business Analyst and Web Developer.

Many modules use guest speakers from industry to illustrate the practical application of the module material. U08049 Structured Data is managed by a full time academic but taught by two professional database developers.

The department receives 'Guru' webcasts, delivered as part of this programme. Topics complement a variety of technical and professional learning outcomes, and are delivered by senior employees of the employer consortium. In addition, employers engage with the programme by contributing to a pool of case studies based on real-world projects, which are used in the taught course, and by offering suggestions for final year projects.

Twice a year, e-skills UK organise employer-student events spread throughout the country at which students have the opportunity to meet employers and build important relationships. The annual events include executive presentations, business games, sponsored competitions, skills sessions, careers fairs and other opportunities to network. There is also a community website run by e-skills UK which is exclusive to the participating students, university staff, alumni and supporting employers and intended to help them connect and to give students a wider experience beyond the university in preparation for roles in industry.

All students may take a year out in industry, and e-skills UK secure exclusive opportunities for SDB students with the employer consortium. Employers are keen to promote their companies and the opportunities offered. Even for students who do not take a placement year, this can provide a good insight into the type of jobs available, and the skills employers are looking for. Students who do take a work placement may bring ideas for final year projects back with them, and are noticeably more able to contribute insights into industrial applications to the modules they take in their final year.

SDB students at Oxford Brookes University an also take advantage of specialist careers advice. The department maintains close links with the University Careers Office. Themed 'mini' careers fairs are organised by this office – with technology being a common theme. Students are encouraged to use the facilities offered, including CV workshops, and practice interviews and assessment-centre activities.

An Industrial Advisory Board is run within the department, with senior employees of regional and representative organisations as members. The board is consulted on major initiatives within the department, including programme revalidations, possible research partnerships, future trends and directions, and the feasibility of new course offerings.

An alumni organisation has recently been formed in the department. The aim is to invite ex-students who are now in a variety of technical and managerial roles, to network with each other, and with our current students. It is anticipated that this organisation will be of great benefit to students starting out on their careers, as well as for more senior alumni looking to exploit the skills and expertise of the staff and students in the department.

Research centres within the department are actively involved with Knowledge Transfer Partnerships, and other links with employer organisations. For example, we have formed research links with Sony, Clearview Traffic, UKP World- wide, Nominet, WildKnowledge, Omnima and Engineer Arts Ltd. One of the spin-offs from these activities is the on-campus presence of industrial-based experts in fields closely related to our degree offerings.

Research within the department is strongly disseminated in the taught modules. Lectures and seminars by active researchers, both from within the department and external, are part of U08027.
Students have been actively involved in research projects, via final year projects, live projects, and independent studies.