University of the
West of England

UWE
BRISTOL

Bristol Institute of Technology
Faculty of Environment and Technology

FdSc Computing
(Gloucestershire College and New College, Swindon)

April 2008

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Programme Specification

Section 1: Basic Data

Awarding institution/body	University of the West of England
Teaching institution	University of the West of England
Faculty responsible for programme	Environment and Technology
Programme accredited by	N/A
Highest award title	FdSc Computing
Default award title	
Interim award title	Cert HE Computing
Modular Scheme title (if different)	
UCAS code (or other coding system if relevant)	
Relevant QAA subject benchmarking group(s)	Computing
On-going/valid until* (*delete as appropriate/insert end date)	
Valid from (insert date if appropriate)	1st September 2008

Authorised by…   **Date:…**

Version Code
For coding purposes, a numerical sequence (1, 2, 3 etc.) should be used for successive programme specifications where 2 replaces 1, and where there are no concurrent specifications. A sequential decimal numbering (1.1; 1.2, 2.1; 2.2 etc) should be used where there are different and concurrent programme specifications.

Section 2: Educational Aims of the Programme

The FdSc Computing seeks to provide a general introduction to theories, concepts and skills in Computing with the opportunity to specialise via programme pathways. The design of the programme is therefore built around a concept of a core of modules at levels 1 and 2 with options at each of those levels which allow the programme to be tailored to a particular specialism. Regardless of the specialism the programme balances intellectual and practical skills and requires the students to relate their academic learning to practice in the workplace.

The programme has the following general aims:

1. to enable students to embark upon professional careers by developing problem-solving and other transferable skills, and by providing a foundation of knowledge and understanding;

2. to develop study skills that will enable students to become independent, lifelong learners;

3. to serve local and regional needs of industry by providing appropriate opportunities to enhance the skills and education of the workforce, both current and potential;

4. to encourage reflection on the way that academic study underpins employed work and contributes to insights that can improve practice.

The FdSc Computing has the following specific aims:

1. to prepare students for entry into level 3 of BSc (Hons) Computing at UWE, Bristol;

2. to provide a broad-based treatment of the fundamental aspects of computing, the development of computer systems and the application of computing to practical problems;

3. to develop sufficient experience, knowledge and understanding to enable students to analyse, model and develop applications in a diverse application areas such as internet systems, database applications and modern component-based construction.

Section 3: Learning Outcomes of the Programme

The award route provides opportunities for students to develop and demonstrate knowledge and understanding, intellectual skills, subject-specific skills and transferable skills. The individual student's choice of pathway will deliver additional learning outcomes however, all students will study the core modules and thus the programme has core learning outcomes and these are given below. For information, the learning outcomes associated with the pathways are also given. In the case of the pathway specific outcomes, all of the pathway specific modules contribute to those outcomes The teaching and learning strategies and the modes of assessment are as in the relevant module specifications, and are shown here for indicative purposes.

A. Knowledge and Understanding

Knowledge and Understanding of:	Teaching/Learning Methods and Strategies	Assessment

1. The contribution that academic theory makes to behaviour in the workplace and vice versa. 2. Behaving professionally 3. The development, structure, purpose and impact of computer-based systems.. 4. Ways of abstracting from the particular in order to explore solutions to problems. 5. The presentation of data so as to make it useful to individuals and organisations. **Software Development Pathway** 1. The systematic development of medium and large scale software systems. **ICT Pathway** 1. The interface between technical and human systems. **Multimedia Pathway** 1. The integration of multimedia components within software systems.	Throughout the programme, T& L methods aim to help students reflect upon how their academic learning can be applied in the workplace and how their work-related experience contributes to academic learning. This aim is broadly realised by, wherever possible, using live, employer-backed projects as the medium through which the knowledge and understanding associated with the modules is achieved. (LO 1,2) On all modules, at all levels, the learner is encouraged to undertake independent reading both to supplement and consolidate what is being taught/learnt and to broaden their individual knowledge of the subject. At level 2, students are increasingly required to manage this independent reading with minimal guidance. The modules at level 1 are chosen to give students a general knowledge of computing environments at a sufficient technical depth to allow them subsequently to tackle problems of both a technical and/or end-user nature. (LO 3) The programme of study is designed to introduce the knowledge and understanding necessary to engage, from the beginning, in appreciating and solving small-scale problems. At level 1 the context in which these issues reside is introduced but the in-depth understanding of large, complex, problems essentially starts with level 2 study. (LOs 3,4,5) At this stage, increasingly in-depth knowledge and understanding of business and technical solutions to real-world problems for topics pertinent to the present state of the industry are presented. Throughout the programme there is a strong emphasis on coupling theory with practice. In most modules, knowledge and understanding is developed through discussion of theory in lectures and in small groups and a consolidation of that theory in a practical context, usually supported by a live brief or case-study (all Los). In some modules a theoretical discussion will be followed by a practical exercise, in others theory is extracted by analysis of practical activities. In the early stages of the programme practical activities are well-defined and well-bounded. As the programme progresses activities become less prescribed and students are encouraged to become reflective, independent learners. (LOs 2 – 5). Wherever possible students are encouraged to consider their learning in relation to established working practices (LO1). The LOs associated with particular pathways are supported by the T&L methods described above within a context appropriate to the pathway. Knowledge development in the areas listed pervades the entire programme; nonetheless, specific examples of places where these outcomes can be identified in the Programme Learning Outcome x Module matrices that are appended to this document.	The possession of this knowledge is demonstrated in a variety of ways including by the development of artefacts that demonstrate knowledge of technical aspects (LOs 3,4,5), reflective writings and presentations (all LOs) and examinations (principally LOs 3,4,5 but also LO1 the modules. Other assessment include ♦ Assessed report-type coursework ♦ Peer and tutor evaluation ♦ Group coursework /project ♦ Portfolio of exercises Wherever possible, assessments will require students either to work on, or reflect on, live projects. Projects may arise from employer involvement but in all cases student work is assessed by academic tutors.

B. Intellectual Skills

Intellectual Skills	Teaching/Learning Methods and Strategies	Assessment
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 **There are no additional pathway specific intellectual skills**	At all levels students are required to bring together knowledge and skills acquired in several modules and hence determine new ways of working. As the student progresses, the need to synthesise (3) ever-greater volumes of information and approaches into a coherent approach is developed and consequently so is their critical thinking (1). At level 1 Analysis (2), Evaluation (4) and Problem Solving (5) are developed on small-scale problems in various programming activities in a number of modules. Here the focus is on understanding the problem and then solving it free from the environmental implications of real-world problems and without the need to examine alternatives and to balance conflicting goals. At level 2 there is a move away from small-scale problems to the design of larger scale systems. With this comes the need to evaluate (4) alternative methods and designs and to balance conflicting objectives (7).	The analysis and programming of complex software systems requires demonstration of all of the intellectual skills. Most of the coursework assessments require students to produce some sort of artefact – a program, a small database, a Web presence (principally LOs 2, 4, 5 and 7) – and to reflect on the 'fitness' of that artefact (LOs 1, 2, 3, 4, 6 and,7). Where ever possible, assessments are contextualised by employer-provided projects. Where exams are used at level 1, the emphasis is on assessing knowledge about the way that systems are built or used (1, 3, 5 and 6). At level 2 the emphasis is much more on assessing system contexts and the students' judgements about fitness for purpose (LOs 1, 2, 4, 6 and 7) . Independent reading is used to enable students to focus on their own areas of interest and in the process asses skills 1-4 in the submitted reports, essays and exam answers. Design-work, even when not implemented in a programming language, requires demonstration of skills 1, 2, 5, 6 and 7 and a number of coursework assessments and exam questions are devoted to such work.

C. Subject, Professional and Practical Skills

Subject/Professional/Practical Skills	Teaching/Learning Methods and Strategies	Assessment
Students will be able to: 1. Use a range of programming languages. 2. Create high-level and low-level designs that correspond to stated requirements. 3. Design databases to meet application requirements. 4. Build web-based systems. 5. Employ a range of tools and notations to support the activities listed above: e.g. editors, compilers, design workbenches, HTML, CGI, Java etc. 6. Use project management tools. **Software Development Pathway** 1. Tools and techniques relevant to the development of medium and large scale software systems. **ICT Pathway** 1. Strategies for analysing the impact of IT systems on organisations and individuals. **Multimedia Pathway** 1. Tools for the integration of multimedia components within software systems.	Throughout the program, the skills listed (1 – 6) are developed through a combination of theoretical discussion, practical laboratory based work, classroom based tutorial exercises and directed self-study. Throughout students are required to reflect on how the acquisition of professional/practical skills contributes to their development as an effective member of a team, both within the classroom and in the workplace. This reflection takes place during tutorial discussions and in elements of the assessed work. All of the skills listed (1-6) are introduced at level 1 and then drawn into sharper focus at level 2. The general teaching/learning method is therefore to impart these practical/professional skills by a process of moving from an overview of what is required to a specific application of an individual skill at a higher level. Pathway specific skills are developed as described above, principally within the pathway specific modules.	The possession of these skills is demonstrated both by the development of a practical pieces of coursework and by examination. The practical nature of the skills to be acquired means that some are specifically addressed by particular modules (3, 4 and 6). The more generic skills (1, 2 and 5) are assessed across the modules. Where ever possible, assessments are contextualised by employer-provided projects. Skills such as conformance to design and requirements (1 and 2) and the construction of adequate testing strategies (5) are fundamental to professional software development of any sort and thus contribute to the assessment of all the practical work produced.

D. Transferable Skills and Other Attributes

Transferable Skills and Other Attributes	Teaching/Learning Methods and Strategies	Assessment
1. Communication skills**:** to communicate orally or in writing, including, for instance, the results of technical investigations, to peers and/or to "problem owners". 2. Self-management skills: to manage one's own time; to meet deadlines; to work with others having gained insights into the problems of team-based systems development. 3. IT Skills in Context (to use software in the context of problem-solving investigations, and to interpret findings). 4. Problem formulation: to express problems in appropriate notations. 5. 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. 6. Working with Others**:** to be able to work as a member of a team; to be aware of the benefits and problems which teamwork can bring.	The skills listed are fundamental to an individual's development as an effective of a team and are supported throughout the programme. During the programme students are required to participate in electronic conferences, workshops, discussions and groupwork sessions (LO 1) They will prepare for classes and negotiate the requirements of team members in order to produce artefacts (LO2). The use of IT (LO3) and problem solving and problem formulation (LO4) is integral to the field of computing and is supported throughout during design, programming and development activities and discussions. Again, in preparing for classes, and researching answers to assessment tasks, students develop a capacity for independent learning (LO5). Group work (LO6) is supported throughout in tutorial activities and specifically in the development of software as a group during laboratory sessions.	These skills are demonstrated in most of the assessment tasks a variety of contexts. The list below highlights assessment which particularly support particular transferable skills. Assessments include: • examination (LO1,2,5) • poster presentation (LO 1,2,3,6) • individual and group projects (1,2,3,4,6) • practical assignments (3,4) • portfolio of exercises. (4,5) • working to an employer brief/project (1,2,3,4,5,6) In addition skill two is assessed by both peers and tutors.
There are no additional pathway specific transferable skills		

Section 4: Programme Structure

Programme Structure for **FdSc Computing** **for September 2008**

Year 2 Software Design UFCE4B-20-2	Project Management UFIE9B-20-2	Web Design Principles UFIE84-20-2	Working and Professional Practice 2 UFPEVB-20-2	Pathway Specific Modules
Year 1 Introduction to Program Development UFCE46-20-1	Data Modelling and Databases UFCEKN-20-11	Introduction to the Web UFIE7W-20-1	Working and Professional Practice 1 UFPEVA-20-1	Pathway Specific Modules

Pathway Specific Modules

Software Development
Year 1	UFIE8T-20-1	IS Development 1
	UFCE47-20-1	Systems Development
Year 2	UFCE49-20-2	Software Engineering
	UFIE8U-20-2	Information Systems Development 2

ICT
Year 1	UFIE8Q-20-1	Information Systems Application Contexts
	UFIE8W-20-1	Information Technology
Year 2	UFIE7U-20-2	e-Business
	UFIE8R-20-2	Information Systems in the Human Context

Multimedia Technology
Year 1	UFCEKR-20-1	Media Technologies
	UFIE8W-20-1	Information Technology
Year 2	UFCEKS-20-2	Multimedia Authoring
	UFCE4F-20-2	Graphics Programming

PLEASE NOTE: REFER TO THE FACULTY ON-LINE INFORMATION SYSTEM FOR UP-TO DATE STRUCTURE INFORMATION
http://www.cems.uwe.ac.uk/exist/index.xql

Section 5: Entry Requirements

120 UCAS points, GCSE (or equivalent) English and Maths at grade C or above.

Section 6: Assessment Regulations

The Modular Assessment Regulations apply to this programme.

Section 7: Student Learning: Distinctive Features and Support

Work-based Learning and Assessment. A key feature of this programme the support that it receives from local employers. In many cases we are therefore able to use learning for, at and from the workplace to support students on the award. This work-based learning manifests itself in a number of ways but in particular, teaching and assessment are contextualised by reference to live briefs, case-studies and work-related scenarios. In addition, some of the modules on the programme provide the students with placement organisations and real world projects which are completed either at a workplace or with specific reference to a particular employer..

Careers Support The colleges provide a Student Support Service to ensure that students develop their employability to a level that will enable them to compete effectively for jobs in the graduate labour market. Careers support can take a range of forms including group workshops and individual guidance and the cross-college provision supports the weekly timetabled group tutorials which also include careers planning elements. Career prospects are enhanced by the activities that are undertaken during the modules, especially in the Professional Practice modules.

Placement Opportunity The work-based production units in both years of the programme provide an opportunity for students to engage with employer/sponsor work experience: either through a work experience placement or by engagement with a professional brief supported by a external provider. The employer sponsor provides feedback for assessment which is used to support learning and guide personal development and career planning.

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, individual tutor support and individual project work. Modules on the FD which require laboratory classes are commonly delivered by means of a combination of lecture and practicals or tutorials. Other modules are often delivered by means of 'lectorials', classes for groups of 15-18 students with no distinction between lectures and tutorials, and this has proved to be an effective mechanism for modules especially at Level 1.

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 the appointment of a personal tutor who will hold regular personal tutorials to support students progress and achievement.

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 the site and through its distance learning facility. 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. Students will also have additional access to specialist computer studios with technician support.

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 Foundation Degree Qualification Benchmark
3. The QAA Benchmark Statement for Computing
4. UWE's Learning & Teaching Strategy
5. CEMS (former faculty, now renamed the Bristol Institute of Technology) Teaching, Learning and Assessment Strategy.

The QAA Framework for Higher Education Qualifications in England, Wales and Northern Ireland (January 2001) describes the attributes and skills expected of graduates at Intermediate level. Amongst other attributes, at level 1 graduates will have demonstrated "knowledge and critical understanding of the well-established principles of their area(s) of study" and will have "qualities and transferable skills necessary for employment requiring the exercise of personal responsibility and decision-making". It is our view that the learning outcomes of this programme are fully consistent with these standards, that the programme fulfils the qualification descriptor in the Framework, and hence that graduates will be able to demonstrate that they meet the expectations of the Framework.

The QAA Foundation Degree Qualification Benchmark (October 2004)
The Foundation degree qualification benchmark describes the characteristics of a Foundation degree as depending on the integration of "employer involvement; accessibility; articulation and progression; flexibility and partnership". The programme is designed to meet the needs of local and regional employers, to provide access to Higher Education to students who might otherwise be deterred from embarking on further study and to allow progression to BSc (Hons) Computing at UWE, Bristol. In addition, the programme provides the opportunity for full or part-time study and will be delivered, further developed and monitored by staff at participating FE colleges, at the BIT department, UWE and local employers. It thus strives to meet the defining characteristics of a Foundation degree.

The QAA Subject Benchmark Statement for Computing (2000, amended 2007)
The QAA Subject Benchmark Statement for Computing refers to bachelor degrees with honours. Nonetheless, the standards outlined in the statement have been considered in the design of this programme. This proposal falls clearly within the scope of the Computing benchmark, in that it is precisely concerned with "the understanding, design and exploitation of computation and computer technology" (Benchmark Statement, section 1.1). The benchmark (para 2.1) identifies a range of types of degrees in computing from (at one extreme) a programme which "*covers a wide range of topics spanning the entire area of computing*" to (at another extreme) programmes which "*take one very specific aspect of computing and covers it in great depth*". This proposal is closer to the first of these extremes; nevertheless it does allow students to recognise the importance of speciality areas through the pathway choices. The benchmarks recognise (para 3.3) that diversity of provision is to be encouraged. This programme meets the ambition of the faculty and the University to provide programmes suitable for as wide as possible a range of entrants by enabling entry to applicants offering a wider range of entry qualifications than is the case for

most other degrees in computing. In terms of the Statement's high-level characterisation of Computing, the programme has at its heart ***practice*** and ***software*** though ***communication and interaction, theory*** and ***hardware*** are important and significant strands.

Great attention has been paid in the design of this programme to create a teaching and learning programme which will foster a good and effective mix of the cognitive, practical and generic (transferable) skills discussed in section 3 in the Benchmark Statement. The programme matches well with the course design principles listed in section 4 of the Statement.

The Statement also contains (section 5.11 on onward) statements about student motivation and induction. The team is of the view that the proposed programme meets the standards outlined in this section and that the standard of graduates of this programme will be consistent with those outlined in section 5 of the benchmark.

UWE's Learning & Teaching Strategy sets out 7 major aims and this programme is broadly in line with those aims.

CEMS Teaching Learning and Assessment Strategy is informed by the University strategy and includes a number of strategic objectives. Some of those objectives are outside of the scope of this programme, in particular those objectives that relate to staff development and the development of skills that are principally nurtured at level 3. However, the following objectives are supported by this programme:

- "A student-centred approach, that encourages students to take responsibility for aspects of their learning, and teachers to take responsibility for facilitating that learning;

- curriculum development and the critical appraisal of curriculum content and delivery as a central aspect of the teaching role;

- the expansion of opportunity and removal of unnecessary barriers to learning;

- the development of skills that will equip students as lifelong learners."