

Half-Award in Internet Systems

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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	Computing, Engineering and Mathematical Sciences
Programme accredited by	N/A
Highest award title	BSc (Hons) Internet Systems &
Default award title	
Interim award title	BSc Diploma of Higher Education, Certificate of Higher Education
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)	September 2003
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 half award in Internet Systems has the following aims:

- to provide students with an education in Information Systems with a specific focus on Internet/World Wide Web applications;
- to familiarise students with some of the purposes for which web-based systems can be used;
- to make students aware of the effect of the Internet on business organisations and on individuals and groups who work within them
- to instil an orientation to the needs of users in students' design and development work
- to encourage students to develop a critical, resourceful practice of their own, as well as an ability to work effectively in teams
- to enable students to pursue eventual professional careers, particularly by developing problem-solving and other transferable skills
- to develop study skills that will enable students to become independent, lifelong learners.

Section 3: Learning Outcomes of the Programme

The award route provides opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the areas summarised in the following charts. Specific learning outcomes for individual modules can be seen in the module specifications.

A. Knowledge and Understanding

Knowledge and Understanding of:	Teaching/Learning Methods and Strategies	Assessment
<ol style="list-style-type: none"> 1. foundations and history of Information Technology (IT) and trends in IT 2. hardware and software components of IT, networks and databases 3. web-based IT and its integration with other IT 4. the Internet/WWW environment 5. algorithms as problem-solving procedures 6. systems analysis and design methods and techniques 7. data analysis and design methods and techniques 8. the information systems (IS) development process 9. IS development practice 10. relationship between computer-based IS and organisational/social environment 11. interrelations between Internet and business 12. methods and issues in e-business development 13. selected areas/subjects within e-commerce 14. web page and web site design 15. web authoring tools 16. internet systems development process 17. multimedia technologies, methods, data representation, and applications 18. hypertext/hypermedia systems evolution, methods and applications 	<p>The half award can be seen as formed from three complementary themes:</p> <ol style="list-style-type: none"> 1. a treatment of information technology, starting from a general base and developing through web-based technologies to a specific focus on Internet systems and their multimedia and hypermedia components 2. a treatment of information systems analysis and design, extending from a general base in the Development & Practice modules to a specific focus on web design, and developing at the same time from more simple towards more complex tasks, as well as from individual towards group tasks 3. a treatment of the information systems context, present throughout the modules and reflecting a specifically IS attitude towards applications of IT, but with a particular focus on the challenge of the Internet in business contexts <p>These themes become progressively intertwined in successive Levels of the award, achieving a culminating integration in the Group Project. Throughout, knowledge and understanding are developed by parallel engagements with theory and practice, mediated by constant discussion and evaluation.</p>	<p>Knowledge and understanding are assessed at the conceptual and theoretical level by examination, primarily, and practically in coursework assignments. Different elements are covered as follows:</p> <ul style="list-style-type: none"> ▪ Introductory technological elements (1-2, 5): in the Information Technology module. ▪ Internet/WWW, web-based information systems and web design (3, 4, 14-15): Web-Based IS and Web Design modules. ▪ Systems and data analysis and design, and IS development and practice, including for Internet systems (6-9, 16): in Development & Practice 1 and 2, and the Internet Systems Group Project. ▪ Organisational/social environment (10): fundamental to IS and assessed <i>passim</i>. ▪ E-Commerce and business uses of the Internet (11-13): in the Foundations of E-Business and E-Commerce SIGs modules. ▪ Multimedia and Hypermedia developments and applications (17-18): in the Multimedia Systems and Hypermedia IS modules.

B. Subject Specific Skills

Subject specific skills	Teaching/Learning Methods and Strategies	Assessment
<ol style="list-style-type: none"> 1. model and design procedures, data structures, information systems (IS) 2. construct basic IS, including web-based IS 3. use system development support tools, including CASE tools 4. follow system development methods, including prototyping 5. build applications using tools, methods, packages 6. specify requirements for e-business applications and recognise business opportunities opened up by IT 7. select tools for e-business applications 8. use web authoring tools to design and implement web pages and web sites 9. build a functioning website incorporating multimedia and hypermedia elements 10. use design methods and tools to produce multimedia and hypermedia applications 11. work (alone and in teams) in disciplined manner on IT development projects, including Internet/WWW focused projects 12. integrate design methods, working methods, and toolsets to achieve coherent and focused practice in application of IT/Internet technologies in business contexts 	<p>The specific skills inculcated in the half award can be grouped into three major categories:</p> <ol style="list-style-type: none"> 1. generic skills in IS analysis, design, and implementation, leading towards general competency in IS practice 2. specific skills in Internet, particularly Web, analysis and design, leading towards competency in content design and web site creation 3. in respect of the application context, particular skills relating to business uses of the Internet, leading towards competency in application selection and development in the area of e-Business <p>These three skill sets are developed in parallel from the beginning of the course, each gaining momentum as the course progresses, and the three mutually supporting one another. All three, for effective development, depend on collaboration and an unremitting outward orientation towards use and users.</p> <p>The development of these skill sets requires focused material delivery and assignment design on the part of tutors, extensive student lab work and group work, exposure to real-world requirements, and commitment and creativity on the part of students.</p>	<p>For the development of these skills, coursework is particularly important., though students' ability to reflect on experience and extend it to an analysis of novel domains is also something that can be examined formally. Subject-specific skills are principally assessed as follows:</p> <ul style="list-style-type: none"> ▪ Development of a basic skill set for building IS, including abilities to model, analyse, design and construct systems, to use tools, methods, and packages effectively, and to work effectively individually and in teams (1-5, 11): in the two Development & Practice modules and the Group Project particularly, but generally throughout. ▪ Additional skills for developing business applications (6-7): in the Foundations of E-Business and E-Commerce SIGs modules. ▪ Additional specific skills relating to multimedia and hypermedia applications (10): in the Multimedia Systems and Hypermedia IS modules. ▪ Specific web design skills (8-9): in Web-Based IS, Web Design, and the Internet Systems Group Project. ▪ Integration of methods, tools, context and teamwork (12): particularly in the Internet Systems Group Project.

C. Cognitive (Intellectual) Skills

Cognitive (Intellectual) Skills	Teaching/Learning Methods and Strategies	Assessment
<ol style="list-style-type: none"> 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 	<p>In information systems courses, including this one, the emphasis from the outset is on <i>applying</i> and <i>using</i> information technologies in human contexts. Because 'context' is understood as fundamental, and not as an outer layer on a technical core, these cognitive skills tend to be developed in parallel, rather than sequentially. Thus, element 6 is developed alongside elements 5 and 2; element 7 is developed alongside element 3; and elements 1 and 4 are inculcated from the beginning.</p> <p>Element 6 is particularly salient in IS, where 'problem context' is understood broadly, to include organisational and social settings, as well as a historical perspective. This produces a concomitant breadth in elements 3 and 5, because problems are viewed as sociotechnical (and situated) rather than technical (and abstract), and relevant information sources are correspondingly expanded. The award has a strong focus on the <i>usability</i> and <i>accessibility</i> of IT/Internet systems, so that element 7 has to address the spread and diversity of requirements and objectives present in the user community.</p> <p>Analysis (2) - coupled with design - and problem solving (5) are strongly featured throughout the half award, but form a particular centrepiece to the two Development and Practice modules, Web Design, the Group Project, and the Multimedia and Hypermedia modules.</p> <p>Appreciation of Problem Contexts (6) is also found as an element widely distributed across the modules. The two e-Business modules focus particularly on the business context, while other modules - even when technically oriented - constantly refer to the context and background in which IS are applied. The more practically focused modules move beyond <i>appreciating</i> the problem context towards <i>acting</i> within it. These modules also give students the most direct and practical experience of balancing conflicting objectives (7).</p> <p>Modules with a higher theoretical or descriptive content are the ones where synthesising different types of information (3) will be most overt, but</p>	<p>These cognitive skills permeate the award and cannot be narrowly tied down to the assessment in particular modules. Some general observations can be made:</p> <ul style="list-style-type: none"> • analysis (1) and problem solving (5) are most directly assessed by coursework in the Development & Practice, Group Project, and design oriented modules (Web Design, Hypermedia, Multimedia) • appreciation of problem contexts (6) and balancing conflicting objectives (7) is assessed in the development and design oriented modules, but also more generally in the two business modules; and through examination as well as coursework) • critical thinking (1), synthesis (3), and evaluation (5) can be well assessed throughout by examination, but in this award are also assessed for their practical realisation in project and design work

	<p>the half award is also designed to achieve a synthesis between theoretical and practical knowledge. Critical thinking (1) and evaluation (4), are foundational principles for the IS discipline as conceived at UWE. Attention to these is seen everywhere in the award, from the Level 1 technical modules upwards, demonstrating the core commitment in IS awards, including one like this with significant technical content, to developing reflective practitioners.</p>	
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D. Key (Transferable) Skills

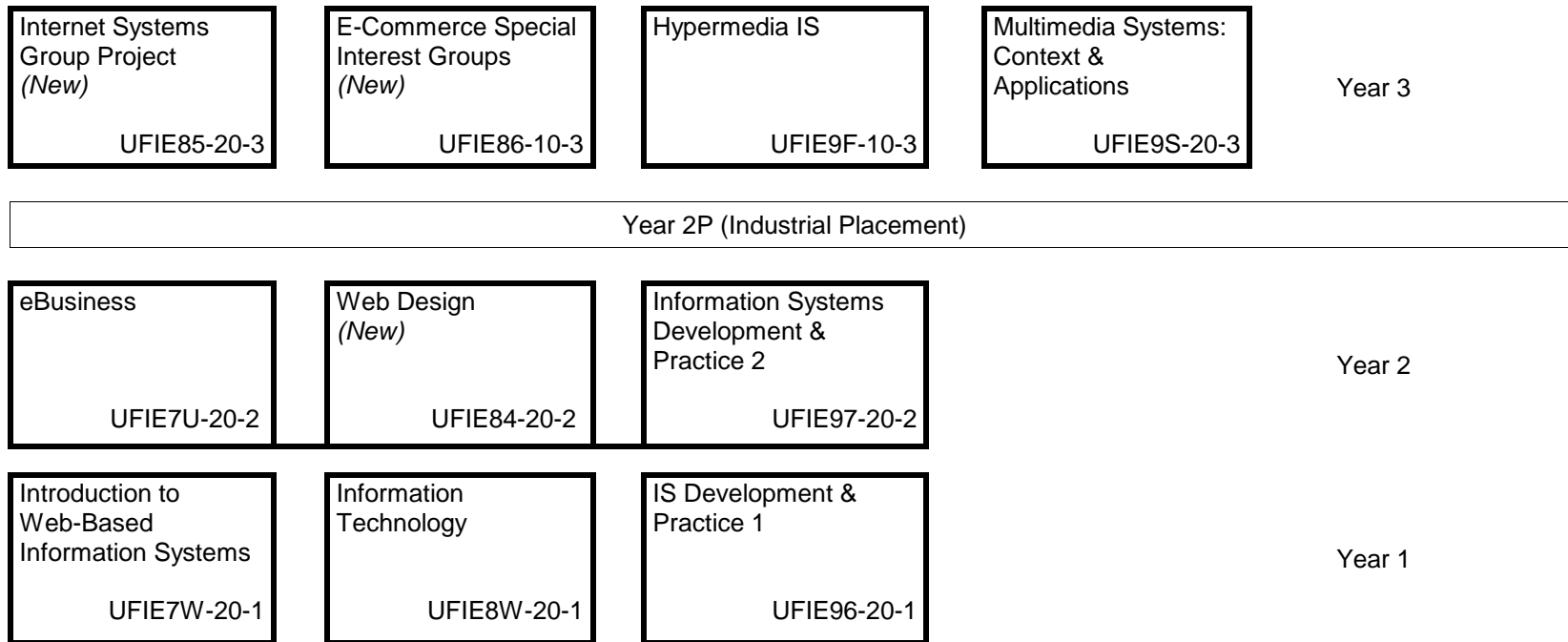
Key (Transferable) Skills	Teaching/Learning Methods	Assessment
1. Communication skills: to communicate orally or in writing.	1. Students' communication skills are developed through, eg: <ul style="list-style-type: none"> ◆ participation in tutorials and other discussion forums ◆ participation in online discussion groups ◆ negotiation of work plans and requirements with team members and clients ◆ presentation of work to peers, staff, and clients ◆ writing essays, reports, and examination answers 	All of the skills are demonstrated in varying degrees in all assessments with the exception of teamwork, which is required in important elements of the coursework, and IT skills, needed for most of the coursework. It would be impossible to progress to completion on the half-award without demonstrating a basic competence in all of these skills.
2. Self-management skills: to manage one's own time; to meet deadlines; to work with others	2. Students' self-management skills are developed through, eg: <ul style="list-style-type: none"> ◆ self-managed practical work ◆ effective participation in tutorial and laboratory sessions ◆ methodical execution of analysis and design tasks ◆ synchronising with others in team work ◆ scheduling assignment work and revision ◆ scheduling and attending meetings with clients 	
3. IT skills in context: to use software tools in the context of application development.	3. Students' IT skills are developed through, eg: <ul style="list-style-type: none"> ◆ regular involvement in systems analysis and design activity ◆ use of range of system development tools, methods and packages ◆ cumulative mastery of tools and methods ◆ use of online teaching materials ◆ sustained use of the Internet ◆ emphasis on user-centred and accessible systems design work ◆ building systems to a user-focused specification and to actual client briefs 	

<p>4. Problem Formulation and Decision-Making: To undertake analysis and interpretation of information and express problems in an appropriate form and manner.</p>	<p>4. Students' skills in problem formulation and decision-making are developed through, eg:</p> <ul style="list-style-type: none"> ◆ analysis and design work ◆ working with and negotiating different problem interpretations and formulations ◆ critical comparison of alternative solutions ◆ critical comparison of different methods and tools analysis and decision making ◆ cumulative experience across tasks 	
<p>5. Progression to independent learning: To gain experience of, and to develop skills in, learning independently outside the classroom.</p>	<p>5. Students' progression to independent learning is developed through, eg:</p> <ul style="list-style-type: none"> ◆ being treated from the outset as independent learners ◆ use of libraries, and the Internet and other online facilities to broaden knowledge ◆ articulation of and reflection on own ideas and experience ◆ a degree of negotiation and autonomy in project work and some assignment topics 	
<p>6. Awareness of professional literature: to read and to use literature sources appropriate to the discipline to support learning activities</p>	<p>6. Students' awareness of professional literature is developed through, eg:</p> <ul style="list-style-type: none"> ◆ recommendations in syllabuses and from tutors ◆ own explorations and recommendations from fellows ◆ requirement to refer to literature in assignments 	
<p>7. Teamwork: to be able to work as a member of a team; to be aware of the benefits and problems which teamwork can bring</p>	<p>7. Students' teamwork skills are developed through, eg:</p> <ul style="list-style-type: none"> ◆ involvement in group tasks and projects ◆ working in a team with a client ◆ exploration of topics of common interest with peers ◆ the cumulative experience of working on successive projects 	

Section 4: Programme Structure

Note: This structure is indicative and subject to change

Structure for the Internet Systems Half-Award



(New) indicates modules which have been created for this programme; all other modules are already offered by the Faculty of Computing, Engineering and Mathematical Sciences

Core modules

Section 5: Entry Requirements

The entry requirements are the university's minimum requirements for entry to a degree.

Section 6: Assessment Regulations

The university's Modular Assessment Regulations apply.

Section 7: Student Learning: Distinctive Features and Support

The School of Information Systems has substantial experience of teaching modules designed with an emphasis on the development in students of a critical, reflective practice in IS, and of organising and running, with students, IS projects with external clients. This experience will be brought to bear in the delivery of this programme.

Within the Faculty of Computing Engineering and Mathematical Sciences, student learning is supported in the following distinctive ways:

- Through provision of a large Open Access Laboratory (3P10) containing 50 machines that provide students with access to a wide range of computer-based applications, and a Multimedia Laboratory (3P28) with specialist provision in multimedia systems;
- through provision of nine other, frequently available, computer laboratories that provide similar access;
- through the CEMS System Support Helpdesk that provides a range of support for learning to students including:
 - support for a wide range of applications used by the students;
 - help in the form of Assistants who are trained to resolve many common student problems;
 - and help in the form of a large set of "Helpsheet Documents", developed over a number of years, that cover a variety of common student requests for information;
- in level-3 modules there is scope for engagement with current research undertaken by the staff of the faculty.

In addition to these general features, the School of Information Systems has substantial experience of teaching modules designed with an emphasis on the development in students of a critical, reflective practice in IS, and of organising and running, with students, IS projects with external clients. This experience will be brought to bear in the delivery of the Internet Systems half award.

Section 8 Reference Points/Benchmarks

The proposed half-degree will serve to expand the range of opportunities available within the Joint Honours Programme, which has itself played a large part in fulfilling the university's mission of promoting educational opportunity. It will have a place within a suite of degrees and half-degrees: the Faculty already offers degrees in a range of aspects of computing and computer science as well as half-degrees in computing, in mathematics, in statistics, in business decision mathematics and in information systems. This proposal will complement this range by offering opportunities for the study of Internet systems alongside the study of another discipline.

In comparison with the existing half award in Information Systems, that in Internet Systems is more narrowly scoped. Whereas Information Systems provides a general education in the discipline and includes a choice of options, Internet Systems offers no options, forfeiting variety and generality in order to provide a focused engagement with web design, the Internet, and e-Business.

The QAA Subject Benchmark Statement for Computing is applicable to this proposal. The design team has considered it in drawing up the structure of the proposed half-degree, 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 recognise (paragraph 3.3) that diversity of provision is to be encouraged, and hence joint degrees have an important place. Nevertheless, there are inevitably constraints on the breadth of coverage of the subject possible within a "half-degree". The design team has faced these constraints as part of the course design as set out in the benchmarks (paragraph 3.1), and it believes that it has successfully met them all to the extent that it is possible to do so within the half-degree structure. More positively, students registered for a joint award will bring with them knowledge and interests from their other discipline which will serve as additional context for their study of Internet Systems. Students with an interdisciplinary perspective may indeed be better equipped for dealing with system design in real contexts, where conflicts of interests and plurality of perspectives are normal, and where practitioners need to be resourceful and inventive.

The scope of the half-degree in Internet Systems falls within the "body of knowledge" identified by the benchmarks, and specifically within the areas of "Web-based Computing" and "Information Systems", each of which is explicitly identified in the benchmarks as part of the knowledge area of computing.

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 proposed programme will be able to meet the required standards, albeit in some cases to a lesser depth than would be expected of a graduate in a full honours degree in the discipline.

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.