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) Web Design
Default award title	
Interim award title	BSc Web Design Diploma of Higher Education, Web Design Certificate of Higher Education, Web Design
Modular Scheme title (if different)	
UCAS code (or other coding system if relevant)	
Relevant QAA subject benchmarking group(s)	Computing Librarianship and Information Management
On-going	
Valid from (insert date if appropriate)	1st September 2006

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 more general aims of the programme are:

1. to encourage students to examine the effects and potential of the technologies they study, so that they will be able to participate insightfully in technological innovation;
2. to encourage students to develop a critical, resourceful practice of their own, as well as an ability to work effectively in teams;
3. to enable students to pursue productive professional careers, partly through the particular knowledge and skills they gain in Web Design, but also by developing general transferable skills which will enable them to be flexible in a changing environment
4. to develop study skills that will enable students to become independent, lifelong learners.

The specific aims of the programme are:

1. to provide students with an education in Web Design, with emphases on information architecture and information services, and on web- and Internet-oriented programming and technologies;
2. to teach within an overall information systems perspective, hence emphasising the importance of information processes and systems practice, and of the role and interests of users;
3. to combine development of technical skills in Web Design with a broader treatment of information architectures and services in the organisational context;
4. to foster in students an interest in the longer-term and broader implications, directions and impacts of the World Wide Web and related developments, while exposing them to specific contemporary technologies, models and methods which will be useful to them as they enter work after graduating.

Section 3: Learning Outcomes of the Programme

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, intellectual (or cognitive) skills, subject-specific, professional or practical skills, and general transferable skills, as summarised in the charts below.

A. Knowledge and Understanding

Knowledge and Understanding of:	***Teaching/Learning Methods and Strategies***	***Assessment***
Students of this programme will gain knowledge and understanding of: 1. The nature, uses and forms of information, and the role and evolution of information systems in general, in the organisational (and inter-organisational) context. 2. Multimedia and networked forms of information, and the technologies that enable them. 3. The origins, structure, evolution and impact of the World Wide Web. 4. Methods and tools for the design and implementation of web pages and web sites. 5. The essential hardware/software platform for system development	The programme in Web Design is delivered through a mix of lectures, tutorials, seminars, and practical work. Students are encouraged throughout to expand their knowledge and understanding by independent reading, in particular to keep abreast of developments in web technologies, uses, and impacts, and the consequent challenges for the Web Designer. The central material on Web Design and related topics is supported by more general development of programming skills on the one side and information systems perspectives on the other. In Level 1 of the programme, the range of information systems applications is introduced in *IS Applications Contexts* and fundamental concepts and skills in information and communication are presented in *Informing & Communicating in Practice* [item1 in the list to the left]. These two modules put Web Design into a broader context, as well as beginning students' engagement with information systems through case study material and developing their own information literacy and communication skills.	The primary method for assessing knowledge and understanding of these various topics is by examination. Most modules in the programme are assessed partly by examination (the exceptions are *IS Practice 2*, *Application Development Project, IS Dissertation,* and *Internet Systems Group Project*). While examination is appropriate to assess the general range and coherence of knowledge and understanding, practical knowledge

6. Object-oriented programming, software design methods and models, and component-based software development. 7. Client-server architecture and programming. 8. Data, database and document structures, schemas and operations. 9. Concepts and methods for creating an Information Architecture to structure an organisation's information repositories and processes. 10. The role, design and management of Information Services, including web services, in and between organisations. 11. The conduct and management of a group-based Internet/Web project. 12. Individual conduct and management of a computing project or an IS dissertation. 13. Advanced Web topics, including the Semantic Web, markup languages, Internet security, and emerging web software technologies	*Introduction to Program Development* introduces students to object-oriented programming and develops their skills in Java [6]. *Introduction to Web-based IS* starts the special focus on the Web, examines the particular nature of web-based information systems, and begins the development of specific web design skills [3, 4]. This is supported by a more general introduction to Internet system development tools and methods in *Systems Development* [5,4], and coverage of the different media technologies encountered in web applications, and their integration, in *Media Technologies* [2]. Level 2 includes strong design and architectural elements, as well as developing practical team-based, project-oriented skills in *IS Practice 2* [11]. *Web Design* builds on its Year 1 precursors to advance students' web page and web site design skills further, within a clear, user-oriented, design methodology [4]. *Software Design* similarly directs the students' developing programming skills through a detailed design lifecycle, as well as developing modelling frameworks and user interface aspects [6]. *Client-Server Programming* [7] presents the client-server architecture and communication system fundamental to the operation of the Web and develops students' skills in client- and server-side programming. *Data, Schemas and Applications* [8] focuses on the vital link between web and database, exploring the schemas and translations that make it possible to connect web and back office applications. How an organisation's diverse information sources can be integrated and restructured into a coherent repository is the central subject in *Information Architecture* [9]. At Level 3, students move on to some more advanced or specialist topics relating to the Web, as well as engaging in project work. In *Information Services* [10], attention focuses on the organisational and technological elements needed to operate a service to provide information over the Web or in similar networked environments. *Component-based Development* [6] takes the software design thread of the course further into the territory of large-scale distributed systems. The Internet/Web group project with an external client organisation (in *Internet Systems Group Project* [11]) expands students' understanding of the currents and constraints of collective work. In addition they also undertake an individual computing project (*Application Development Project*) or *IS dissertation* [12], so gaining understanding of how to conduct such sustained pieces of autonomous work. The four half-modules deal with important special or emerging aspects of the Web [13], which the Web Designer needs to be responsive to: *Semantic Web,* and the associated developments in ontology and metadata which are also treated in *Text & Markup Languages*; security issues and systems (*Internet Security*); and emerging *Software Technologies for the Web*, including the various Java web models and VRML (Virtual Reality Modelling Language)/X3D.	can also be demonstrated and assessed in coursework. Coursework is accordingly a supplementary method of assessment of this mode of learning, and in those modules where the examination is absent or counts for less than 50% of the marks (*Informing & Communicating in Practice, Systems Development,* and *Software Design*), it becomes the main method.

B. Intellectual Skills

Intellectual Skills	***Teaching/Learning Methods and Strategies***	***Assessment***
The general intellectual or cognitive skills developed in this programme include: 1. Appreciating problem contexts 2. Balancing conflicting objectives 3. Problem formulation and handling 4. Synthesis of different types of information 5. Analysis 6. Design 7. Evaluation 8. Critical thinking These skills are developed over the course of study in Web Design, partly through experience in following through a development process a number of times, and partly through paying attention to the broader context of application. The development process in Web Design, as in other IS/IT projects, flows through from problem formulation to post-implementation review [items 3-7]. Through study and development work, students will gradually gain a better understanding of problem contexts [1-2]. In due course, by reflecting on their experience and practice, they will develop their ability in critical thinking [8].	Examples of the more specific intellectual or cognitive skills developed in the modules which compose the Web Design Programme include: • Understand the role of information systems within organisations and society (*IS Applications Contexts*) • Understand the World Wide Web as a significant factor in the Information Revolution and globalisation (*Introduction to Web-based IS*) • Design information to be comprehensible and usable (*Informing & Communicating in Practice*) • Use traditional and online information sources (*Systems Development*) • Compare and critically evaluate hardware associated with media technologies (*Media Technologies*) • Understand the need to extract program specifications from a descriptive account (*Introduction to Program Development*) • Integrate and apply IS theory in IS practice (*IS Practice 2*) • Separate and define data, schema, and metadata (*Data, Schemas and Applications*) • Design web pages and web sites (*Web Design*) • Relate information architecture to organisational context (*Information Architecture*) • Synthesise and communicate Java implementations that are demonstrably traceable to models (*Client-Server Programming*) • Formulate, analyse, visualise, synthesise, evaluate and communicate object-oriented designs to resolve application software problems (*Software Design*) • Integrate social-communicative objectives with technological resources (*Semantic Web*) • Integrate complex knowledge of markup languages and associated technologies (*Text & Markup Languages*) • Plan, test and evaluate a website implementation (*Internet Systems Group Project*) • Assess the impact of the diffusion of information services and infrastructures (*Information Services*) • Appraise the usefulness of various security techniques for particular situations (*Internet Security*)	The skills discussed here are in the main rather abstract, general or high-level, and furthermore are interconnected. They are developed in parallel and cumulative through the course of study, and are best assessed in combination than separately. Students' ability to deploy their intellectual capacities articulately are most directly assessed through examination. These skills are also assessed in their practical realisation through coursework, especially longer, sustained pieces (eg, a project, portfolio or dissertation), A good level of ability in these skills is therefore likely to show up at the higher end of examination or project performance ranges, though many pieces of coursework in this programme ask for a reflective commentary on work done, so these skills can be evidenced there too.

Although the programme puts particular emphasis on Web Design, it from the outset positions that activity within wider information systems and technical contexts. The mastery of particular tools or methods is important in developing competence in web design, but this has to be established within the context of broader understanding of organisational purposes of technological development, and the particular challenges presented by the spread and consolidation of the Web platform. The programme accordingly emphasises the organisational purposes for which web design takes place, the personal information skills that web designers need, the pace and complexity of technological change, and the particular challenges presented by large-scale systems and services. To be able to deploy relevant competences in complex sociotechnical projects, when technological and organisational environments are always changing, students will need higher-level intellectual capacities in problem assessment, and analysis and design, which will enable them to move from one toolset or method to another.	• Discuss and compare the current range of web technologies (*Software Technologies for the Web*) • Discuss the implications for design and project management created by the adoption of component technologies (*Component-based Development*) • Design a product (*Application Development Project*) • Synthesise and correctly reference ideas from multiple sources (*IS Dissertation*) From the beginning, synergies between modules will stimulate students to bring together, synthesise and integrate the knowledge and skills they are acquiring. The cumulative effect of this process will be to develop students' design and analysis practice and their evaluative and critical abilities. In Level 1, the various development skills (from problem formulation through to evaluation) are established by working on small-scale problems, case studies and programming tasks in several modules. The problems are generally constrained or simplified to avoid the complications of real-world projects. Also in Level 1, a broader perspective, emphasising the dynamic evolution of the technologies and the diversity of application contexts, is established. In Level 2, development skills are strengthened, and particular emphasis is put on design and architecture, which together produce an integrative momentum. There is at the same time a move away from smaller scale problems to the design of larger scale systems. With this comes the need to evaluate alternative methods and designs and to balance conflicting objectives. Level 3 includes specialist subjects, a group project with a real client, an individual computing project or IS dissertation, and increased emphasis on organisation-level or other large scale systems and services. Students' skills in problem formulation and assessment, as well as their understanding of problem contexts, are further developed through these larger scale, specialised, or more sustained pieces of work.	

C. Subject, Professional and Practical Skills

Subject/Professional/Practical Skills	*Teaching/Learning Methods and Strategies*	*Assessment*
In this practically oriented, design-focused programme, students will develop a range of subject-specific practical skills, in the following areas: 1. designing and implementing web-based information systems 2. organising, designing and communicating complex information, especially through web sites 3. handling a variety of multimedia technologies to create online documents and web pages 4. handling a variety of software and hardware tools, components and configurations to evaluate and build systems 5. appraising information systems contexts and case studies 6. modelling and designing object-oriented programs 7. programming for client-server and component-based systems 8. devising and implementing models of structured and semi-structured data 9. devising an information architecture for an organisation 10. scoping and planning an information service for an organisation 11. using semantic web technologies and markup languages to structure knowledge	Several practical skills strands are developed as the programme progresses, which intertwine with and reinforce one another. Against a general information systems [5] and system-building [4] backdrop, a more particular orientation towards the Web is established in the web design [1] and multimedia [3] skills development, which in combination foster general web-based information design skills [2] The programming skills necessary for more advanced work in web design begin to be established early in the programme, in a module on object-oriented programming [6], and are extended in the direction of client-server and component-based software development [7]. Skills in information structuring are developed in relation to database and XML design [8]. At the level of the organisation, students learn how to define an adequate information architecture [9] and design effective information services [10]. The pragmatic, context-sensitive skills needed in IS practice are developed in group project work in Level 2 [14], then applied in an Internet/Web project with a real client [15] in Level 3. Through the conduct of an individual computing project or IS dissertation [16], students acquire skills in carrying through sustained pieces of work, which might later take them into research or development avenues. Towards the end of the course, skills are developed in specialist or emerging areas, such as semantic web and markup languages [11], Internet security [13] and web server technologies [12].	Subject-specific skills are primarily, though not solely, assessed through coursework. Exam questions can be used to test the understanding that lies behind the skill. Forms of coursework used include: • Written reports detailing an investigation or the carrying out of a task • Essays, typically used to develop skills in argument and analysis • Group and individual presentations • Team-based projects with a client • Use and analysis of work logs • Casework analysis • Problem-centred assessment Some more specific examples are: • Design and implementation of web pages and web sites • Design, modelling and implementation of object-oriented programs • Building systems using operating system and Internet tools • Information Architecture design • Design and implementation of a relational database and of an XML schema • Planning an information service • Development of client-server and component-based applications • Development of a secure application • Document design with markup

12. appraising and configuring web server technologies 13. assessing and designing Internet security strategies 14. applying IS methods and tools to real-world problem situations 15. carrying through a Internet/Web project with a client 16. carrying through an individual computing (application development) project or an IS dissertation	Throughout the programme, skills are developed through a combination of practical laboratory-based work, classroom based tutorial exercises, project work, and consultancy with clients, backed up by discussion in class and directed self-study.	and for the semantic web • Interim and final project reports or dissertations

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".	Students develop communication skills by, for example: • Participating in group work and other forums • Participating and presenting in tutorials and seminars • Maintaining work logs • Working with clients • Writing assignments, exams and reports	Some of these skills are widely developed across the modules of the programme, particularly 1, 3 and 4. Skill 7 is less widespread, but still important in the programme, particularly in the *IS Practice 2* and *Internet Systems Group Project* modules. Skills 2, 5 and 6 are more a feature of the student's pattern of work over the course of the programme, though 5 and 6 can be assessed through the way a student constructs an argument, and skill 2 can be observed in the student's conduct, and might be assessed, for instance, in the context of a group project. Coursework is the usual way of assessing these skills, though 1 and 4 in particular are also amenable to examination. Presentations are also used to test some of these skills, eg 1, 2, 4, 7. There is some specific teaching and assessment of these skills in the *Informing and Communicating in Practice* and *IS Practice 2* modules. Otherwise, the skillset is developed across the programme, and
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.	Students develop self-management skills by for example: • The conduct and timely submission of their coursework • Planning their work timetable. • Orderly practice in design work Diary management, including keeping appointments with tutors, group members and clients • Regular attendance at classes	
3. IT Skills in Context (to use software in the context of problem-solving investigations, and to interpret findings)	This skill is widely developed throughout the course. Much of the activity in the programme involves work on computers, and attention to context and purpose is a central tenet of design.	
4. Problem formulation: To express problems in appropriate notations.	Students develop problem formulation skills by, for example: • Using modelling methods to design of programs, data, systems and applications • Establishing a requirement with a client • Analysing case studies • Working with a group on a project	
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.	Students progress to independent learning by, for example: • Individual research and project work • Using online facilities to discover information • Finding their own line of argument in assignments • Engaging with an emergent discipline • Developing discernment in their extensive use of the Web	
6. Comprehension of professional literature: to read and to use literature sources appropriate to the discipline to support learning activities.	Students' comprehension of professional literature will be developed by, for example: • Regular and competent access to online and library resources • Using and referencing sources appropriately in their assignment work • Following guidance on reading from tutors and library staff • Following their research interests	

7. 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.	Students' ability to work with others will be developed by, for example: • Participating in group work and team work, especially in projects • Reflecting on experience from work logs	elements of it tend to be assessed as part of more specifically tailored assignments.

Section 4: Programme Structure for BSc Web Design

Programme Structure for BSc (Hons) Web Design For September 2006

Year 3	20 Credits **Option 1**	Semantic Web UFIEKL-10-3	Text & Markup Languages UFIEKK-10-3	Internet Systems Group Project UFIE85-20-3	Information Services UFIEKH-20-3	Internet Security UFCEKQ-10-3	Software Technologies for the Web UFCE4X-10-3	Componen based developme UFCE4Y-2
Year 2P	Industrial Placement Year							
Year 2	IS Practice 2 UFIE8P-20-2	Data, Schemas & Applications UFIEKG-20-2	Web Design UFIE84-20-2	Information Architecture UFIEKF-20-2	Client-Server Programming UFCEKP-20-2	Software Design UFCE4B-20-2		
Year 1	IS Applications Contexts UFIE8Q-20-1	Informing & Communicating in Practice UFIEQQ-20-1	Introduction to Web-based IS UFIE7W-20-1	Systems Development UFCE47-20-1	Media Technologies UFCEKR-20-1	Introduction to Program Development UFCE46-20-1		

Option 1 taken from	
UFCEKW-20-3	Application Development Project
UFIE8Y-20-3	IS Dissertation

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

The university's minimum requirements for entry to a degree apply to this programme. In addition entrants are required to have Mathematics at GCSE Grade C or equivalent.

Section 6: Assessment Regulations

The Modular Assessment Regulations apply to this programme

Section 7: Student Learning: Distinctive Features and Support

Class Activities The mode of delivery of a module is determined by its Module Leader, and typically involves a combination of one or more activities such as lectures, tutorials and seminars, laboratory work, group work and individual project work. The most usual combination is a one-hour lecture with a one-hour lab or tutorial per week.

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 faculty's 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 the university's Centre for Student Affairs or from members of academic staff.

Progression to Independent Study

Many modules require students to carry out independent study, such as research for projects and assignments, and a full range of facilities are available 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.

Computing Facilities The Faculty offers specialised computing facilities and user support alongside the general University provisions. Their nature and extent changes from time to time, as hardware and software provision is updated to follow technological change and as availability of resources permits. This section describes current provision.

There are nine general PC computing laboratories of 20 plus seats all running WindowsXP, along with four Unix based laboratory and 10 specialist computing labs. The specialist laboratories are equipped with the specific software for CEMS students; including Software Design Tools development environment, CAD, finite element analysis, mathematics and statistics packages to support the taught program. The specialist Computing laboratories are designed to target the discipline taught in that

area. Amongst these, is the Computer Systems Architecture and Linux laboratory. The Unix labs offer the latest web development and programming tools. Software facilities to support work in Web Design include the Macromedia MX and Adobe Creative Suites.

The Faculty also provides an Open Access laboratory for student use. This area is never time-tabled and gives students the opportunity to access machines at all times during opening hours. This is a mixed environment consisting of PCs and Unix workstations.

The Faculty's user support Helpdesk provides fist line support to the user base, uniquely supported by both permanent staff and students that are in their second or final year of study (employed on a part time basis) until 20.00hrs every day. These general purpose and specialist laboratories are available to students up until midnight, seven days per week.

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 Benchmark Statements for Computing and for Library & Information Management
3. UWE's Learning & Teaching Strategy

The QAA Framework for Higher Education Qualifications in England, Wales and Northern Ireland describes the attributes and skills expected of Honours graduates. It is our view that the learning outcomes of this programme are fully consistent with 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 Subject Benchmark Statement for Computing was published in 2000 and is applicable to this proposal. The proposal falls clearly within the scope of the Computing benchmark, in that it is concerned with the study and development of computer systems. The Web Design curriculum falls within the cognate area identified in the document and draws from the body of knowledge listed at Annex A of the document. In terms of the Statement's high-level characterisation of Computing, it would be fair to say that ***communication and interaction, software*** and ***practice*** lie at the heart of the programme, while it also includes important elements relating to ***hardware*** and ***theory***. From the body of knowledge, these can be selected as particularly salient for this programme: *databases, distributed computer systems, document processing, graphics and sound, HCI, information retrieval, information systems, middleware, multimedia, professionalism, programming fundamentals, software engineering, systems analysis and design, web-based computing.*

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 2.2 in the Benchmark Statement. The programme, we believe, chimes well with the course design principles listed in 3.1 of the Statement.

The Statement 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.

Mention must also be made of the QAA Subject Benchmark Statement for Librarianship and Information Management which also bears some relevance to this proposal. Because of its organisational location and the background and interests of the staff involved in developing this proposal, Web Design is primarily a Computing proposal. However, realignment of material within Computing and Information Systems, partly web-driven, puts new emphasis on the structuring, accessing and management of information and access, knowledge, areas which also feature strongly in Library & Information Management. The Information Systems School's two most recent submissions to RAE have as a matter of fact been under this unit of assessment.

The Benchmark Statement for Librarianship and Information Management is less detailed than that for Computing, and has a clear central focus on librarianship. Nevertheless, there are clear general overlaps with Information Systems in terms of disciplinary extent and subject knowledge, skills and understanding. This proximity is increased in the case of the present proposal, where we lay more emphasis on information schemas, architecture and services than previously. On the Web itself, and in the discipline of web design, elements of computing and information science which formerly fell in rather separate domains are converging in a manner and at a pace which demands some unification, in the curriculum, of these knowledge areas.

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 can be found in the module specifications.

UWE's Learning & Teaching Strategy has informed the faculty's policy for the delivery of its programmes, whose main features are described in section 7.