Section 1: Basic Data

Awarding institution/body:	**UWE**
Teaching institution:	**UWE**
Faculty responsible for programme:	**FBE**
Programme accredited by:	
Highest award title:	**FdSc River and Coastal Engineering**
Default award title:	
Interim award title:	**CertHE River and Coastal Engineering** **Certificate River and Coastal Engineering**
Modular scheme title:	**Faculty of the Built Environment UG Modular Scheme**
UCAS codes:	**FH89**
QAA subject benchmarking group(s):	**Engineering, Geography and Environmental Science**
Valid until:	
Valid from:	**2004/5**
Authorised by:	**UG Modular Scheme Director** Date:
Version code:	**1**
Version year:	**2005**

Section 2: Educational aims of the programme

The programme has the following aims:
1. To develop knowledge and understanding of processes operating in river and coastal systems and the impact of human interaction with the natural environment;

2. To develop students' competence in carrying out technical duties; with the knowledge, skills, experience and potential for an effective career in river and coastal management;

3. To encourage an awareness of environmental, social and professional issues relevant to their work;

4. To encourage students to reflect critically upon their learning;

5. To enable students to communicate effectively with other professionals, clients and the public; with understanding and respect for the objectives and values of other stakeholders.

Section 3: Learning outcomes of the programme

A: Knowledge and understanding

By the end of the programme, the student should be able:	Teaching/learning methods and strategies
1. To demonstrate an understanding of the role of a professional engineer in flood control and management, within the broader social and environmental context 2. To identify and examine critically the processes shaping river and coastal systems 3. To demonstrate an understanding of the impacts of human activity on river and coastal systems 4. To appreciate different spatial and temporal scales over which formative environmental processes and human impacts operate 5. To demonstrate an understanding of national and international water and environmental policies and laws 6. To demonstrate an in-depth knowledge and understanding of the form and function of engineered structures for flood control and mitigation and their application in practice 7. To demonstrate an appreciation of operations and project management and their importance in the technical role of an engineer	Acquisition of these outcomes will be primarily through lectures and formative activities associated with each module and with workplace applications. Lectures provide a central core of factual and theoretical information covering a range of themes. Candidates will consolidate their knowledge base through a variety of techniques including tutorial work, the study of specific texts in readers and in online learning materials, and a variety of IT applications. Formative work will also be designed to consolidate students' learning. Intensive technical sessions in laboratories, in the field and in the workplace enable students to revise and consolidate knowledge via practical applications. Problems posed in projects will require elements of engineering judgement in developing solutions to technical implementation and environmental management problems. Across all modules the learner is encouraged to undertake independent reading following specified reading lists and using online follow-up materials, to consolidate and supplement the taught material and to broaden their individual knowledge and understanding of the subject. Health and Safety issues will be integrated into all aspects of the course and put into practice in the laboratory, in fieldwork and in workplace applications. **Assessment** Testing of knowledge and understanding occurs using a variety of assessment methods. Assessed coursework includes essays, practical files based on laboratory work, environmental management plans, oral presentations individually and in groups, project case studies and reflective learning logs. Essays and practical work are also undertaken under controlled examination conditions. These are largely in response to unseen papers, though some seen papers are used.

B: Intellectual skills

By the end of the programme, the student should be able:	Teaching/learning methods and strategies
1. To apply theoretical knowledge to the solution of practical problems in flood engineering 2. To construct arguments and make informed decisions concerning appropriate environmental management options, identifying any flaws in reasoning and contrasting their merits 3. To analyse situations and problems critically, objectively and logically and postulate and implement realistic solutions, integrating skills and knowledge from a range of modules 4. To articulate and justify personal views (and Agency policy) about environmental engineering and management issues 5. To analyse and evaluate information from a range of sources and communicate qualitative information effectively and objectively 6. To think and learn creatively, pursuing original ideas and identifying preferred learning styles 7. To research topics that relate to the theory and practice of river and coastal engineering, relating it to current literature, engineering priciples and experimental methodology as appropriate 8. To bring a broad ethical perspective to the profession including environmental and social awareness	These skills are developed through project work, seminar discussions, individual tutoring and workplace applications. Analytical and evaluation skills are developed using projects and case studies. Students will consider spatial variability, scale and system differentiation and consider management options to meet site specific requirements. Tutors provide feedback on formative work via oral tutoring and written feedback and in group seminars. **Assessment** A variety of assessment methods are employed to test intellectual skills. Coursework includes essays with formative and summative written feedback. Oral presentation enable students to offer, test and argue their perspectives. Refective learning logs enable students to critically assess their understanding of theoretical concepts and their impementation in practice. Professional presentation of management plans enables communication of personal views and the prosecution of original and creative ideas in problem solving. Students also prepare critial evaluations and critical summaries of management plans and engineering strategies. Essays to demonstrate intellectual skills are undertaken under controlled examination conditions. These are largely in response to unseen papers, though some seen papers are used.

C: Subject, Professional and Practical Skills

By the end of the programme, the student should be able:

1. To demonstrate practical abilities such as environmental assessment, surveying, field and laboratory techniques with an awareness of Health and Safety

2. To identify, measure and monitor processes within river and coastal environments with due regard for risk assessment

3. To apply mathematical concepts and principles to the solution of river and coastal engineering and management problems

4. To employ a variety of technical methods including ICT tools for analysing, interpreting and presenting both numerical and spatial data and other information

5. To appraise the environmental consequences of human interactions with natural riverine and coastal environments

6. To use technical equipment competently (including surveying and laboratory equipment) in practical engineering activities

7. To demonstrate an understanding of the principles of hydraulic modelling; hydraulic and structural design of flood defences

8. To communicate effectively using engineering drawings and sketches

9. To identify the need to manage and organise at both a business and operational level to achieve flood control and mitigation objectives

10. To demonstrate a clear appreciation of the health and safety responsibilities of a professional engineer

11. To undertake safety and environmental risk assessments

12. To demonstrate an appreciation of the roles of other agencies and organisations in managing the water environment, and their interactions with the Environment Agency

Teaching/learning methods and strategies

Lectures introduce and define the nature of engineering skills.

Field visits, laboratory classes and workplace applications allow practical application of subject skills. Field work requires students to collect research data and articulate their findings. Laboratory and workplace projects require students to apply knowledge to solve practical problems. Seminars develop experience with ICT and online teaching materials consolidate learning.

Completion of formative work supported by feedback from staff both by oral tutorial and online packages enables practical skills to be learnt. These include the effective use and manipulaton of numbers and physical quantities, interpretation of plans and engineering drawings, the use of surveying equipment, the use of laboratory equipment and experimental method, the production and evaluation of design solutions to flood management and control problems.

Students are expected to undertake a proportion of self-directed independent study, using recommended reading lists and online preparation and follow-up materials.
Computer-aided analysis tools will be used extensively throughout the course. Students will be required to use a wide range of communication tools and these skills will be taught in the skills based modules and developed where appropriate in other modules.

Assessment

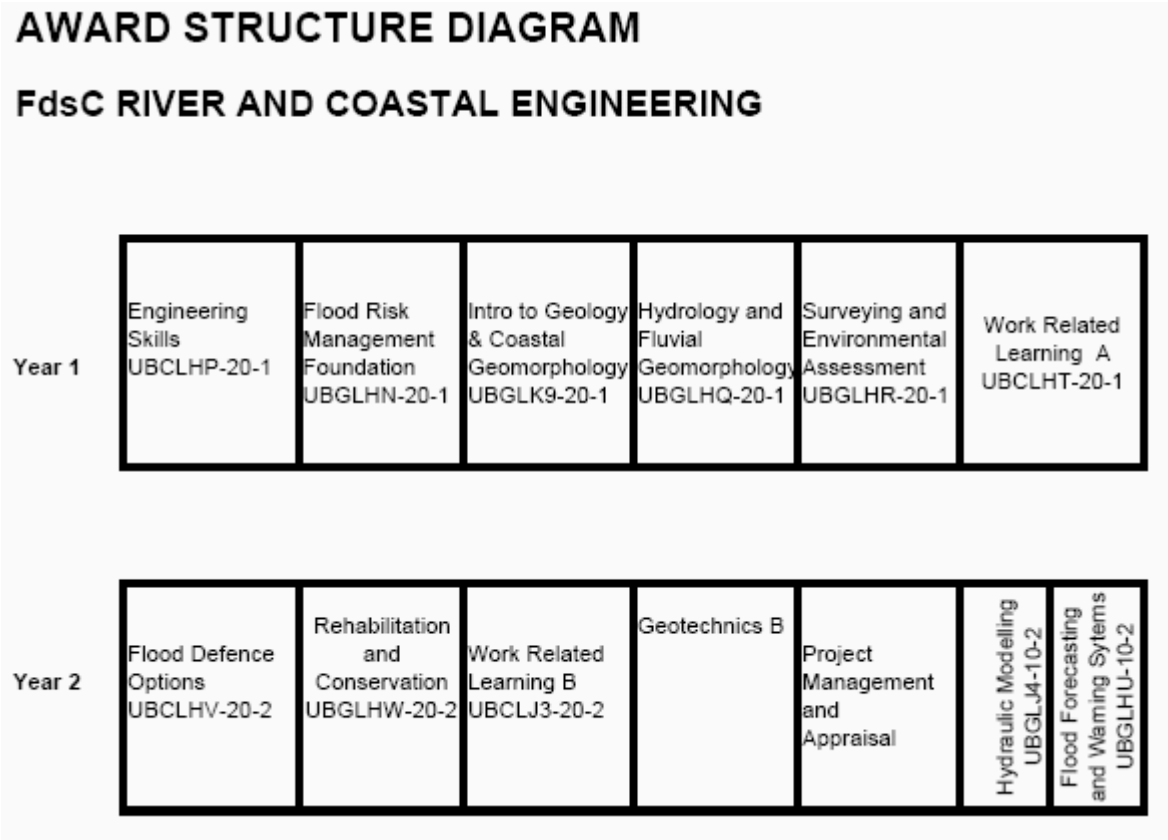
The assessment of the use of equipment and the application of experimental method is undertaken through laboratory experimental practicals and reports. The assessment of project management and organisation is by group work.
Field exercises and presentations, management plans and designs test the application of skills to environmental problems.

Other skills are assessed through essays, oral presentations and examinations under controlled conditions.

D: Transferable skills and other attributes

By the end of the programme, the student should be able:	Teaching/learning methods and strategies
1. To demonstrate professional transferable skills such as literacy, numeracy, ICT skills, time management, problem solving, research and project design and management in the solution of river and coastal engineering problems 2. To communicate information and ideas clearly and coherently and influence the views of others through written, graphical and oral means 3. To practice negotiation, team working and motivation of others 4. To relate material appropriately to a specific audience 5. To demonstrate social awareness respecting and understanding other people’s perspectives 6. To undertake self-appraisal and reflection and formulate plans for continual professional development 7. To identify, access, research and interpret data and information required to undertake engineering analysis	Students' literacy, numeracy and ICT skills are tested diagnostically at the start of the course and support is provided as appropriate. IT applications are used throughout the course embedded in most modules. People management skills and team working are taught in interactive seminars using indicators, role play and simulation as well as discussion to interpret outcomes. Small group workshops and practical classes engage students in a range of essential academic and personal transferable skills. Group discussions and presentations in an interdisciplinary environment promote awareness of alternative viewpoints and the relation of material to a specific audience. Individual research and creative thinking is developed through project work. **Assessment** Project reports provide the opportunity to assess clarity of written presentation and ideas. Assessed oral presentations (both individual and group) indicate competence in communication skills. Team work and time management are assessed in group project reports and presentations. The use of IT is assessed formally in skills modules and influences the quality of assessed work elsewhere in the course. Essays are undertaken under controlled examination conditions and contribute to the assessment of transferable skills.

Section 4: Programme structure



The Department for Environment, Food and Rural Affairs (DEFRA) has responsibility for policy on all matters relating to flood and coastal defence. The responsibility for delivering this service belongs to the operating authorities –the Environment Agency, local authorities and internal drainage boards. The Environment Agency is the principal regulatory body with respect to the protection and management of water. The Agency has functions related to water pollution control,land drainage, water resources, and drought control measures and minimum flows. The Agency supervises flood defence and is responsible for flood forecasting and flood warning services.

Whilst the Environment Agency has general supervisory powers over drainage functions, the internal drainage boards undertake maintenance and development within their districts, in terms of the Land Drainage Act (1991). Local authorities are also delegated similar powers under this legislation.

There are also important regional considerations with respect to water management that should be acknowledged. For example, the EU water Framework Directive (2000) requires that member states ensure 'good status' of all inland and coastal waters by 2015. Achieving this aim falls within the mandate of the Environment Agency, and requires the development of River Basin Mangememt Plans

Flooding is a natural phenomenon and cannot be stopped completely so the government's policy is to reduce the risk to people and the environment by requiring the provision of effective flood warning and flood defence systems. However, there is a shortage of personnel with appropriate skills and experience. In an attempt to meet the challenge of delivering successful flood management strategies in the future, this programme has been designed to provide training in river and coastal engineering through a Foundation Degree. This will equip students with skills, knowledge and development that are appropriate for a foundation to a career in flood risk management.

The programme outlined below will be offered by the University of the West of England, Bristol and taught in conjunction with the University of Bristol and Middlesex University. The internationally recognised Flood Hazard Research Centre at Middlesex University will present modules on Flood Risk Management and Flood Forecasting and Warning Systems, whilst the University of Bristol will contribute state of the art laboratory facilities and two engineering-related modules. The University of the West of England will deliver the balance of the modules and provide AL credit for the partner institution modules.

The programme will give students training in hydrology, river and coastal geomorphology and engineering for flood defence, flood prediction and warning systems. The course is designed to offer students the opportunity to undertake practical work in these areas as well as acquiring transferable skills such as numerical analysis, IT, team working, communication, interpersonal and project management skills; thus equipping them for a career in flood risk management.

40 credits of the 240 credit programme are based on work-based learning, where students demonstrate their competence in the suite of work-based learning developed by the Environment Agency or equivalent employer. Within the work environment, students will be guided by an Environment Agency appointed Mentor, assisted by a series of Coaches for specific aspects of work-based learning.

The programme will be delivered through blended learning based around six week-long teaching blocks each year. Most of the modules will be introduced in one block and completed in the following block. However the Engineering Skills module and the Work-based Projects are developed alongside the other modules throughout the year and are designed to prepare students for and to consolidate learning in other modules.

The role of the block weeks will be to introduce topics, to develop and reinforce student learning, to provide feedback on formative work, to support applications and to offer students the opportunity to undertake laboratory and field-based tasks. They will also offer the opportunity for students to obtain support for study skills and numeracy and literacy problems to meet their individual needs. Assessment will also take place during the block weeks.

On-line learning packs will be an integral part of the programme delivery. These may be designed to introduce the module content prior to the block weeks, to develop it between blocks and then to extend students' learning following the completion of the contact time.

Integration at level 1 will be largely achieved through the Engineering Skills Module and the Work-based Project A Module which run through the block weeks. The Engineering Skills Module provides the skills underpinning for the balance of the modules at level 1, while the Work-based Project A Module seeks to develop the link between the knowledge and understanding and the students' learning at work.

At level 2, integration will be achieved through the Work-based Project B Module which will be assessed partly through an oral examination, drawing on the content delivered in the rest of the programme.

The academic programme will be overseen by an Academic Board comprising representatives of all partner HEIs and the Environment Agency.

Core modules

Level 1
UBCLHP-20-1: Engineering Skills (20)
UBGLHN-20-1: Flood Risk Management Foundation (20)
UBGLK9-20-1: Geology and Coastal Geomorphology (20)
UBGLHQ-20-1: Hydrology and Fluvial Geomorphology (20)
UBGLHR-20-1: Surveying and Environmental Assessment (20)
UBCLHT-20-1: Work Related Learning A (20)
Level 2
UBCLHV-20-2: Flood Defence Options (20)
UBGLHU-10-2: Flood forecasting and warning systems (10)
UBCLKE-20-2: Geotechnics B (20)
UBGLJ4-10-2: Hydraulic Modelling (10)
UBCLKF-20-2: Project Management and Appraisal (20)
UBGLHW-20-2: Rehabilitation and Conservation (20)
UBCLJ3-20-2: Work Related Learning B (20)

Target Award

FdSc River and Coastal Engineering

240 credits with at least 100 credits at level 2 or above and a further 120 credits at level 1 or above

Default Award

Interim Awards

Certificate River and Coastal Engineering

60 credits at level 1

CertHE River and Coastal Engineering

120 credits with at least 100 credits at level 1

Section 5: Entry requirements

Selection Procedures

For the first two years, all students will be recruited by the Environment Agency in consultation with the UWE admissions team. Admissions will be based on the selection process adopted by the Agency and the normal UWE entry criteria for Foundation degrees set out below.

Equal Opportunities Policies
The Faculty, in line with University policy, is committed to an equal opportunities policy in relation to all aspects of the Modular Scheme including widening access to awards and ensuring that applicants are not disadvantaged on grounds of race, gender, disability, age, background, sexual orientation, belief or marital status. All those who have an equal potential to succeed on awards within the Faculty should have an equal chance of obtaining a place and completing their award.

General Entrance Requirements
A student is admitted to the University when he or she has satisfied the University's general entrance requirements or otherwise provided evidence of ability to achieve the required standard at entry as stated in the prospectus, has registered for an award route or enrolled on a module or short course and paid the required fees

The minimum level of attainment required for entry to a Foundation Degree is:

1. at least 40 UCAS Tariff points in one subject at Advanced General Certificate of Education (AGCE) or Advanced Vocational Certificate of Education (AVCE) or BTEC National Award supported by three subjects at General Certificate of Secondary Education (GCSE) at Grade C or above; or

2. (BTEC) National Certificate or National Diploma; or

3. National Vocational Qualifications or Scottish Vocational Qualifications Level III in the number of subjects specified in the regulations for the award route; or

4. a QAA recongised Access certificate awarded by an Authorised Validating Agency; or

5. such other qualifications recognised as equivalent by the Academic Board; or

6. other European and international qualifications and/or experience which the University considers equivalent to the above

English Language requirements: a recognised English Language qualification is normally required for entry to all programmes. If English is not the first language, tests such as the British Council's International English Language Test (IELTS) will be acceptable. Applicants must achieve a minimum grade of 6.0.

In addition to the above, applicants must have achieved GCSE Maths at Grade B or above or have completed a pre-induction learning pack to ensure they have achieved the level of numeracy required.

Section 6: Assessment Regulations

This programme will be assessed under the current version of the Modular Assessment Regulations. Details of the Faculty's assessment structure are set out in Volume 1 of the Scheme documentation.

The on-line learning includes a significant amount of formative work and a sign-off exercise for each topic. Summative assessment will be based on a variety of methods including exams, projects, practical and fieldwork. There will be an oral examination at the end of the Work-based Project B Module intended to ensure that students have integrated the knowledge and understanding developed in other modules with their learning at work.

Assessment will normally take place within the teaching blocks to avoid students from across the country having to attend examinations at Bristol separately from the teaching blocks.

Section 7: Student learning: distinctive features and support

1. The programme draws on the teaching and research strengths of three Universities with expertise in this field - the University of Bristol, Middlesex University and the University of the West of England

2. The programme includes a significant element of work-based learning so that students can achieve credit based on learning at work

3. The programme benefits from the close involvement of the Environment Agency as the key employer in the design of the programme as well as mentoring students

4. The programme is delivered through a series of block weeks which include lectures and small group discussion as well as field/practical work. Learning materials are available on-line and learning between blocks will be supported by designated tutors. Work-based mentors will contribute to the mentoring of the two work-based learning modules.

5. Student support will be provided by a dedicated student advisor who will act as the first point of contact for students with problems

6. It is anticipated that students who successfully complete the Foundation Degree will be able to tranfer into the fourth year of an honours degree programme at UWE. The team will seek to provide a designated routeway appropriate to the needs of the Foundation degree graduates.

7. Learning support is available for students returning to education or who have difficulties with numeracy, literacy or study skills more generally.

Section 8: Reference points/benchmarks

1. QAA benchmark statements for Engineering, Geography and Earth Sciences, Environmental Sciences and Environmental Studies

2. Employer requirements and in particular the Environment Agency statement of competencies

3. Staff research and consultancy

4. QAA and University guidelines on Foundation degrees