University of the West of England
BRISTOL

Gloscat

Gloscat

FdSc Mechanical Engineering

by part-time study

Programme Specification

2007

Contents

Programme Specification

Section 1: Basic Data

Awarding institution/body	University of the West of England
Teaching institution	Gloucestershire College
Faculty responsible for programme	Computing, Engineering and Mathematical Sciences
Programme accredited by	
Highest award title	FdSc Mechanical Engineering
Default award title	Cert HE Mechanical Engineering
Interim award title	
Modular Scheme title (if different)	
UCAS code (or other coding system if relevant)	
Relevant QAA subject benchmarking group(s)	Subject benchmark statements: Engineering, QAA (2006) Foundation Degree Qualification Benchmark, QAA (2004)
On-going/valid until* (*delete as appropriate/insert end date)	
Valid from (insert date if appropriate)	September 2007

Authorised by… **Date:…**

Version Code
1

Section 2: Educational aims of the programme

The generic aims of any Foundation Degree programme is that it *should "enable learners to benefit from the interpretation of ideas and the experience of practice, within the wider context of employment and one in which knowledge, understanding and skills are clearly integrated. By focusing on learning within a work context, that is underpinned by both vocational and academic understanding, Foundation Degrees should demonstrate learning outcomes that are explicitly relevant to both employers', and perhaps also professional, needs. Furthermore… …… the application of the knowledge, understanding and skills achieved should enable successful progression both within employment and to honours level or to other qualifications"* (QAA Foundation Degree Benchmark).

The educational aims of the programme outlined within this document are therefore to :

1. provide education and training within the disciplines of mechanical and manufacturing engineering to prepare graduates for a range of technical and managerial careers within the engineering field;

2. provide opportunities for students from a wide range of backgrounds and academic attainments to achieve their full academic potential

3. provide successful graduates with a sound foundation for progression to higher degree level study thus ensuring subsequent enhanced career development;

4. facilitate the academic and personal development of individual students and to foster a culture of independent and life-long learning;

5. enable students to benefit from learning opportunities, and to apply the knowledge gained from the course to solving problems, in the workplace;

6. serve the local and regional needs of industry by providing opportunities to enhance the skills and educational base of the workforce;

7. provide up-to-date curricula to meet the specific aims of named awards.

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 following areas: …

A Knowledge and understanding

Knowledge and understanding	Teaching/learning methods and strategies:	Assessment
Students should be able to demonstrate knowledge and understanding of: 1. The mathematical and scientific principles that underpin the solution of engineering problems 2. The scientific principles that underpin the design and operation of engineering systems 3. The processes and practices of design and how design solutions may be achieved including the use and application of CAD systems 4. The regulatory framework governing safe practice within the workplace 5. Manufacturing processes and techniques as applied to a variety of materials and manufacturing processes 6. Management techniques including cost control, project planning and quality control, assurance and management systems	Teaching and Learning will take place through a rich mix of lectures, tutorials and practical work taking a variety of forms. Practical work, as appropriate to this type of course, will include individual and group assignments, laboratory and design office work and IT based activity. There will be a strong focus on learning through the work environment through work-based projects and learning in the workplace. Students will be expected to draw on their professional and work experience to conceptualise their learning. Throughout, the student is encouraged to undertake independent reading both to supplement and consolidate what is being taught/learnt and to broaden their individual knowledge and understanding of the subject Additional support is provided through the contribution of external lecturers, visits to sites and exhibitions and tutorial support	Students' knowledge and understanding will be assessed through a combination of examinations, individual and group projects, written assignments, laboratory-based work and industrially-based work. Each module is assessed separately in a way that is appropriate to the nature of the module and its intended learning outcomes.

B Intellectual Skills

Intellectual Skills	Teaching/learning methods and strategies	Assessment
Students should be able to: … 1. Apply engineering principles, numerical methods and analytical skills to evaluate, analyse and solve problems of an engineering nature. 2. Apply managerial principles and practices to evaluate and propose solutions to industry-based problems. 3. Demonstrate the ability to operate as an independent learner by undertaking a significant individual project requiring the synthesis and application of knowledge gained throughout the course 4. Demonstrate critical thinking, reasoned conclusions and sustainable judgements.	Basic concepts and principles are presented in level 1 modules and then developed at a greater intellectual depth at level 2. Students' analytical skill are developed through problem solving and through a wide range of assessed tasks. The relevance of the taught part of the course to industrial practice is reinforced through project, group and work-based activities. An individual project, conducted in the work-environment will ensure that both B3 and B4 can be adequately addressed	Students will be assessed through a combination of examinations, individual and group projects, written assignments and laboratory-based work Assessment tasks are designed to be both formative as well as summative thus ensuring a structured development of intellectual (and other) skills throughout the course.

C Subject, Professional and Practical Skills

Subject/Professional/Practical Skills	Teaching/learning methods and strategies	Assessment
Students should be able to: … 1. Demonstrate the ability to operate independently, and as part of a team in order to analyse problems of a technical and managerial nature and to provide appropriate solutions. 2. Use and apply appropriate aspects of information technology 3. Use laboratory and workshop equipment to generate and thence interpret data 4. Operate safely within their professional fields	The professional and skills-focussed nature of this course ensures that professional and practical skills are developed as an inherent part of course delivery. Lectures, laboratory classes, tutorials and workshops together with self directed learning will ensure the inculcation of these skills. The level 1 and level 2 work-based learning modules will facilitate the development of professional and practical skills in a real-life professional environment	Students will be assessed through a combination of examinations, individual and group projects, written assignments and laboratory-based work The wide range of assessment techniques will ensure that students are given every opportunity to demonstrate their abilities in these areas. Assessment of work-based learning will play an important role, particularly in assessing C1

D Transferable Skills and other attributes

Transferable skills and other attributes	Teaching/learning methods and strategies	Assessment
Students should be able to: … 1. Act as independent learners and carry this ability into their future career and/or further studies. 2. Demonstrate a range of skills that are transferable within an engineering context including communication (both oral and written), problem solving, information technology, application of numbers, working with others and improving their own learning and performance	Most modules will be aimed at developing personal, transferable skills inherently within the module delivery. Self-directed learning forms a major element of all modules and the necessity to work within tight deadlines is an essential requirement across the curriculum. The ability to communicate orally and in writing will be developed across the range of modules. Independent study will encourage, facilitate and stimulate independence in learning.	Transferable/key skills are generally incorporated within modules and are related to relevant assessments as appropriate. Students will be assessed through examinations, individual and group projects, written assignments and laboratory-based work The wide range of assessment techniques will ensure that students are given every opportunity to demonstrate their skills in these areas.

See *Annex 1* for the mapping of the above Learning Outcomes across the modules that make up this programme

Section 4: Programme structure

4.1 Modules within the Programme

Modules within the programme, the levels at which they are studied, their credit value and pre-/co requisites are given in Table 1 below. All modules are mandatory, i.e. must be studied and passed for the award, unless exemption is given for accredited prior learning. The modules are designed to provide coverage of all the key knowledge and skills areas and to assess them in order to meet the programme aims and learning outcomes.

Work-based learning modules are designed give students the opportunity to integrate academic learning and learning that can take place in the work-base. In this way students can benefit from work-based learning opportunities in order to develop relevant intermediate higher-level skills and knowledge. As the course is designed for part-time students who are industry based, many other modules will draw on learning opportunities within the individual student's working environment in order to integrate theory and practice.

Table 1: Modules within the programme

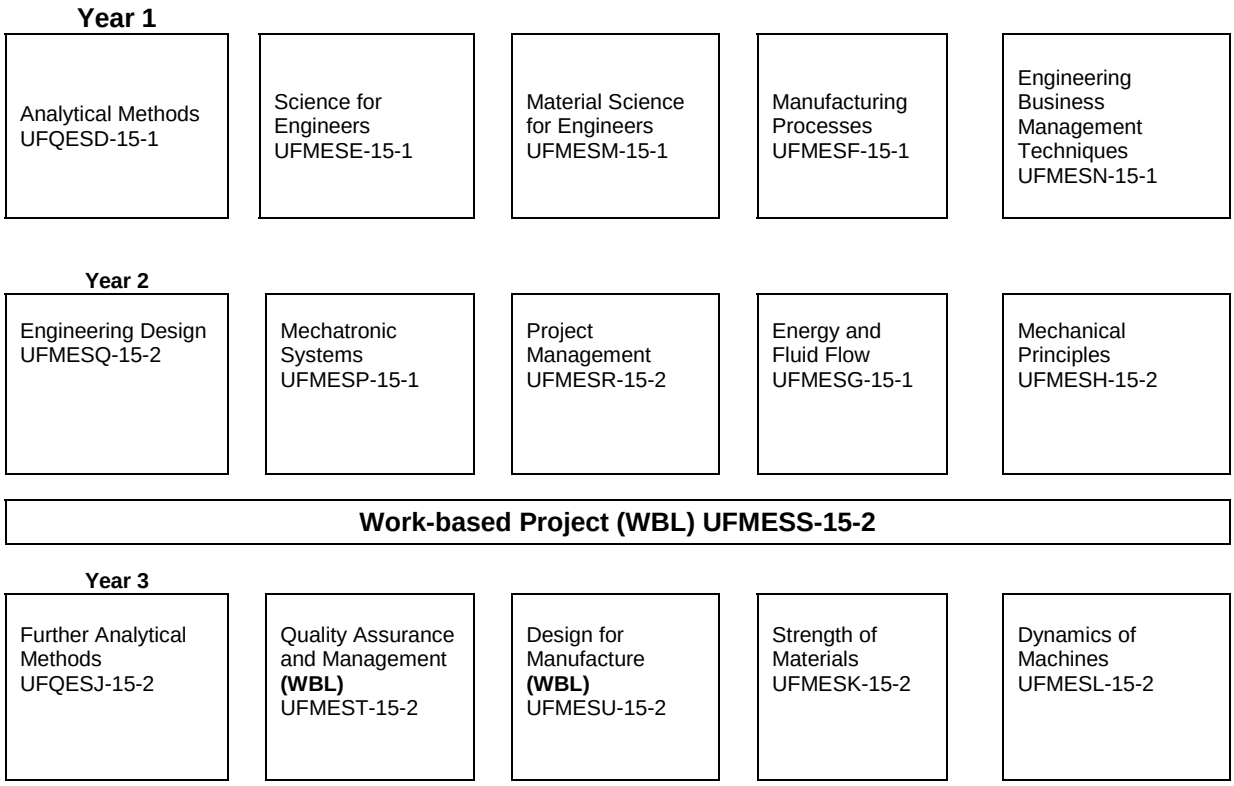
Module Code	Module Title	Weighting (credits)	Level
UFQESD-15-1	Analytical Methods	15	1
UFMESE-15-1	Science for Engineers	15	1
UFMESM-15-1	Material Science for Engineers	15	1
UFMESF-15-1	Manufacturing Processes	15	1
UFMESQ-15-1	Engineering Design	15	1
UFMESP-15-1	Mechatronic Systems	15	1
UFMESG-15-1	Energy and Fluid Flow	15	1
UFMESH-15-1	Mechanical Principles	15	1
UFQESJ-15-1	Further Analytical Methods	15	1
UFMESN-15-2	Engineering Business Management Techniques	15	2
UFMEST-15-2	Quality Assurance and Management (WBL)	15	2
UFMESL-15-2	Dynamics of Machines	15	2
UFMESU-15-2	Design for Manufacture (WBL)	15	2
UFMESS-15-2	Work-based Project (WBL)	15	2
UFMESR-15-2	Project Management	15	2
UFMESK-15-2	Strength of Materials	15	2

Note : (WBL) = Work Based Learning Module

4.2 Pattern and Mode of Attendance

- Table 2 is indicative of the pattern of course delivery although some modules may be delivered in a semester mode and others in a year-long mode[1]
- Students will attend the college for theory modules typically for one-day per week attendance each academic year
- Theory modules comprise of 150 hours for 15 CAT credits. The hours allocated to teaching and learning activities can be found in individual module descriptors.
- Work-based learning modules are based upon a 37.5-hour week (7.5 hours per day). In recognition of the nature of work-based learning, more hours per 15 CATs points are credited to these modules (see work-based learning module descriptors)

Table 2: Programme pattern



4.3 Work Based Learning

Students will explore issues within their organisation, using the knowledge gained on the course to address a problem(s) related to engineering and/or management processes and practice within their own working environment.

The aim is to foster independent learning that enhances lifelong learning and their own professional development. Tutor support in the form of tutorials will be provided and college staff will visit the student in the workplace particularly while s/he is undertaking the project module, UFMESR-15-2. Students will be further supported in the workplace by a work-based supervisor/mentor from within their own organisation. This supervisor will be approved by the College and will engage with the College visiting tutor to ensure that the student gains maximum benefit from the work-based learning opportunities.

The work based modules *UFMEST-15-2, UFMESU-15-2 and UFMESS-15-2* will use a problem-based learning approach. The modules will revolve around the development of knowledge and skills through a series of engineering/business problems/scenarios, which will be used to develop student skills, to allow the student to synthesise, further develop and apply knowledge acquired throughout the course and allow them to demonstrate higher level skills and attributes.

4.4 Award and Interim Awards

4.4.1 Award of the Foundation Degree

To be awarded the Foundation degree students must study and pass all modules as indicated in Table 2 and achieve a total of 240 CATS credits. Where certified APL/APEL has been granted on entry to the course then this requirement will be reduced according to the amount of APL/APEL awarded.

4.4.2 Alternative awards

A student who fails to meet the requirements for the Foundation Degree or wishes to withdraw from the course will be offered the following award if they meet university requirements;

CertHE Mechanical Engineering: 120 credits at level 1 or above

4.5 Progression

To progress automatically to the BEng (Hons) Mechanical Engineering course at the equivalent of Stage 2 entry on the full-time degree course at UWE students must successfully complete and be awarded the Foundation Degree. Whilst the Foundation Degree is offered in part-time mode, students may go on to complete the honours degree in full or part-time mode.

Section 5: Entry requirements

5.1 Minimum entry requirements

Relevant entry criteria for admissions to this programme are shown below. These constitute a normal minimum requirement for entry onto this programme.

- Passes in five subjects, which must include GCSEs (at grade C or above) in English Language and Mathematics (or equivalent) and at least 120 points on the national tariff in relevant subjects at GCE or VCE A-level (or a VCE double award) or a Merit-Merit grade in National Certificate or Diploma Engineering or equivalent.
- Appropriate Employment

Consideration will also be given to applicants who possess any of the alternative qualifications listed below:

- Scottish Vocational Education Council (SCOTVEC) awards in engineering or technology;
- Appropriate science/engineering-based Access and Foundation courses;
- International and overseas qualifications (including the International and European Baccalaureates);
- Other learning experience, (both certificated and uncertificated), including GNVQ.

Notwithstanding the above, the College at its absolute discretion may admit students who do not clearly fall within the aforementioned categories. In some cases the lack of formal academic qualifications will require an assessment at entry level based upon professional and practical experience.

In addition, all applicants, will be required to attend an assessment session and interview to establish their ability to successfully attempt the course.

5.2 Credit for Prior Learning

Accreditation for prior learning (APL) or experiential prior learning (APEL) may be granted for modules in accordance with UWE regulations.

Section 6: Assessment Regulations

The University Modular Assessment Regulations apply to this programme.

Section 7: Student learning: distinctive features and support

1. Staff

Academic staff who teach on this programme are academically well qualified up to MSc level, have relevant extensive industrial experience and have extensive teaching experience. They hold PGCE qualifications and are experienced in dealing with the needs of mature and part-time students.

2. Teaching Facilities

Students on this programme will benefit from excellent teaching facilities including well-equipped workshops and laboratories in the new Docklands campus, well equipped Electronics and Material Testing Labs and state-of-the-art classrooms with Interactive Whiteboards and Internet connections.

3. Equipment

The educational experience of students on this programme will be enhanced by the use of equipment such as Hydraulics Workbenches, a Rapid Prototyping Machine, CNC Lathe and Mills, a Scanning Electron Microscope and specialist software, including Electronics, Logic, Computer Aided Design.

4. Student Support

The College is committed to widening participation in learning, including enhancing progression into HE provision. It has high quality learning support services which are used to address the barriers to learning faced by many learners in the area, including ESOL needs, child care barriers, physical disability barriers, financial and personal problems and cultural barriers. There are specific learner support arrangements for flexible learners in the workplace and extensive support mechanisms for managing mentoring programmes. 'Well organised additional learning support for students' was identified as a key strength in our last inspection report. All students receive tutorials for academic and pastoral support Additional support will be provided through:

- The Learning Gateway (i.e. a library)
- IT suites used for tutorial sessions
- An HE Student Support Pack
- A Work-Based Learning department to support work placements

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5. Industrial Support

The College has strong employer links which are used to inform the curriculum by identifying changing skill needs and gaps in provision. Employers also actively participate in aspects of course delivery.

6. Support by UWE

The course will be fully supported by UWE in accordance with its partnership agreement framework. Students will be enrolled as UWE students and have access to all facilities on the University campus including physical and on-line access to the library, IT facilities and all professional services provided by the University.

Section 8 Reference points/benchmarks

The following external reference points have been used to design this programme:

1. The QAA Foundation Degree qualifications benchmarks (2004).
2. The QAA Guidelines for preparing programme specifications.
3. The QAA Framework for Higher Education Qualifications in England, Wales and Northern Ireland
4. The QAA Benchmark Statement for Engineering (2006)
5. UWE's Learning & Teaching Strategy
6. UWE's Regulations on assessment (section 2.3 of the general regulations)
7. Feedback and advice from employers including representatives from members of Gloscat's Employers Forum

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 module specifications. These are available on the University Intranet.

Programme monitoring and review may lead to changes to approved programmes. There may be a time lag between approval of such changes/modifications and their incorporation into an authorised programme specification. Enquiries about any recent changes to the programme made since this specification was authorised should be made to the relevant Faculty Administrator.

ANNEX 1 – PROGRAMME LEARNING OUTCOMES MAPPING

		Knowledge and Understanding						Intellectual Skills				Professional & Practical Skills				Transferable	
Code	**Module**	**A1**	**A2**	**A3**	**A4**	**A5**	**A6**	**B1**	**B2**	**B3**	**B4**	**C1**	**C2**	**C3**	**C4**	**D1**	**D2**
UFMESN-15-1	Engineering Business Management Techniques				✓		✓		✓			✓				✓	✓
UFQESD-15-1	Analytical Methods	✓						✓				✓				✓	✓
UFMESE-15-1	Science for Engineers	✓	✓					✓					✓	✓	✓		✓
UFMESM-15-1	Material Science for Engineers	✓	✓					✓				✓		✓	✓		✓
UFMESF-15-1	Manufacturing Processes				✓	✓	✓				✓	✓	✓				
UFMESP-15-1	Mechatronic Systems		✓	✓				✓					✓	✓	✓		✓
UFMESG-15-1	Energy and Fluid Flow	✓	✓					✓				✓		✓		✓	
UFMESQ-15-2	Engineering Design	✓		✓			✓				✓		✓			✓	✓
UFMEST-15-2	Quality Assurance and Management (WBL)				✓	✓	✓		✓	✓			✓				✓
UFQESJ-15-2	Further Analytical Methods	✓						✓				✓				✓	✓
UFMESL-15-2	Dynamics of Machines	✓	✓					✓				✓		✓			✓
UFMESU-15-2	Design for Manufacture (WBL)	✓	✓	✓		✓		✓		✓	✓		✓			✓	✓
UFMESS-15-2	Work-based Project (WBL)							✓	✓	✓	✓	✓			✓	✓	✓
UFMESR-15-2	Project Management							✓	✓			✓	✓	✓			✓
UFMESH-15-2	Mechanical Principles	✓	✓					✓				✓					✓
UFMESK-15-2	Strength of Materials	✓	✓					✓			✓	✓		✓			