

## Programme specification

### 1. Overview/ factual information

<b>Programme/award title(s)</b>	<b>FD Engineering</b>
<b>Teaching Institution</b>	Hull College
<b>Awarding Institution</b>	Hull College
<b>Date of latest OU validation</b>	February 2013
<b>Next revalidation</b>	
<b>Credit points for the award</b>	Total Credit Value – 240 Credits
<b>UCAS Code</b>	H100
<b>Programme start date</b>	September 2017
<b>Underpinning QAA subject benchmark(s)</b>	Engineering (February 2015)
<b>Other external and internal reference points used to inform programme outcomes</b>	Engineering Council: UK-SPEC (January 2014) Engineering Council: AHEP (April 2014) QAA: The framework for higher education qualifications in England, Wales and Northern Ireland (November 2014)
<b>Professional/statutory recognition</b>	
<b>Duration of the programme for each mode of study (P/T, FT,DL)</b>	Part-Time 3 Years (6 Semesters)
<b>Dual accreditation (if applicable)</b>	
<b>Date of production/revision of this specification</b>	March 2017

## 2.1 Educational aims and objectives

It is the purpose of this programme to embrace the college mission of producing innovative and enterprising people, enabling excellent learning for employers, employability and social fulfilment. To this end, the FD Engineering will develop students with the knowledge and skills and systematic understanding, to be creative and innovative in the development of economically viable, and, ethically sound sustainable solutions, to engineering related problems in the work place.

The aims of this award have been developed using the Engineering Council's UK-SPEC (January 2014)/ AHEP (April 2014), the Quality Assurance Agency's (QAA November 2014) qualification descriptor for Bachelor's degree with honours, the QAA engineering subject benchmark statement (2015), and the framework for higher education qualifications in England, Wales and Northern Ireland (FHEQ November 2014).

*'Holders of qualifications at this level will have developed a sound understanding of the principles in their field of study, and will have learned to apply those principles more widely. Through this, they will have learned to evaluate the appropriateness of different approaches to solving problems.'*

*Their studies may well have had a vocational orientation enabling them to perform effectively in their chosen field. Holders of qualifications at this level will have the qualities necessary for employment in situations requiring the exercise of personal responsibility and decision-making.'* (QAA, November 2014)

The aims of this award have been developed using the Quality Assurance Agency's (QAA) National Qualification Framework, relevant QAA subject benchmark statements, the QAA Foundation Degree Qualification Benchmark and National Occupational Standards.

To enable students to work effectively in the engineering sector, the award focuses on knowledge and understanding of fundamental engineering concepts, as well as the development of practical, personal, professional and transferrable skills. In addition to developing the aims of the course around the previously stated benchmarks and standards are also in response to local demand from employers and also in line with government initiatives to improve STEM levels.

The FD Engineering core aims are contextualised and added to as follows:

- Provide a Foundation Degree suited to engineers and engineering companies in the Yorkshire and Humber region;
- Provide curricula which develop a range of technical, vocational and key skills relevant to individual engineering awards;
- Develop independent engineers;
- Widen participation in the areas included within the Engineering area of study;
- Increase access to higher education from under-represented groups in the local community;
- Provide a framework in which engineering employers, employer bodies and providers can collaborate to develop the curriculum;

- Produce capable and well-rounded engineering graduates who will make a contribution to the labour market needs of the local regional and national economies and have appropriate engineering knowledge and skills to fulfil their aspirations and potential;
- The relationship between this qualification and the sub qualification are that the work-based content is complementary to the overall Foundation Degree and provides the candidates with a rounded, robust qualification that prepares them for a job in the Engineering industry;
- Specific work-based modules along with the core engineering modules have been integrated into the foundation degree, to meet the demands of the local employment market the other modules complement the programme to allow the students to prepare for the demands of employment within an Engineering environment. The structure of the programme has been designed to fit into the Foundation Degree framework and has all of the required components.

The key engineering objectives of the programme, are for students to have a creative way of approaching all engineering challenges. This is being seen increasingly as a '*way of thinking*' which is generic across all disciplines. In order to operate effectively, engineering graduates thus need to possess the following characteristics.

They will:

- be pragmatic, taking a systematic approach and the logical and practical steps necessary for, often complex, concepts to become reality
- seek to achieve sustainable solutions to problems and have strategies for being creative, innovative and overcoming difficulties by employing their skills, knowledge and understanding in a flexible manner
- be skilled at solving problems by applying their numerical, computational, analytical and technical skills, using appropriate tools
- be risk, cost and value-conscious, and aware of their ethical, social, cultural, environmental, health and safety, and wider professional responsibilities
- be familiar with the nature of business and enterprise in the creation of economic and social value
- appreciate the global dimensions of engineering, commerce and communication
- be able to formulate and operate within appropriate codes of conduct, when faced with an ethical issue
- be professional in their outlook, be capable of team working, be effective communicators, and be able to exercise responsibility and sound management approaches.

QAA Engineering Subject Benchmark (February 2015: section 3.1)

The foundation degree has been designed to meet the local needs of the Yorkshire and Humber region; whilst meeting the objectives of the Foundation Degree qualification benchmark (February 2015) and Engineering Council's UK-SPEC (January 2014) / AHEP (April 2014).

Historically, the majority of HE students enrolled, will work in the areas of project management, design and manufacturing, with others working on maintenance operations.

Employers are normally keen for their engineers to be multi-skilled. So a general engineering curricula, tailored to the local business needs, has been maintained (the FD Engineering will replace the existing HNC/HND top-up in General Engineering) as well as core modules including engineering mathematics and science delivered at levels 4 and 5. In particular, the work-based project management modules delivered at level 5 are recognised very positively by many employers.

The foundation degree will be delivered in a part-time modes. The part-time course will take three years to complete. Level 4 will be completed in three semesters (18 months); similarly, level 5 will be completed in three semesters.

There will be an opportunity for part-time students to leave at the end of level 4, with a certificate of higher education award (CERT HE).

## **2.2 Relationship to other programmes and awards**

The programme relates directly to the BEng (Hons) Engineering Technology which provides a direct progression route to level 6.

Students not wishing to progress on to the BEng (Hons) Engineering Technology; will have developed a range of specialist, professional and transferable skills which will allow for employment within the engineering sector.

### 3. Programme outcomes

The programme outcomes were designed to meet the local needs as discussed in section 2.1, whilst also matching the **objectives** of the Foundation Degree qualification benchmark (May 2010) and Engineering Council’s UK-SPEC (January 2014) / AHEP (April 2014). The QAA ‘s “Engineering subject benchmarks (February 2015),” and their “The framework for higher education qualifications in England, Wales and Northern Ireland (November 2014),” have also informed the programme development.

The curriculum maps in Annexe 1, show how the level 4 / CERT HE modules contribute to meeting the programme outcomes. The level 5 modules are shown in a similar manner.

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, inter-personal and professional qualities, key skills and other attributes in the following areas:

#### Knowledge & Understanding

##### **A: Knowledge and understanding of:**

1. key scientific and engineering principles relevant to your discipline and field of work;
2. how theory and practical studies are utilised by practising engineers;
3. how your knowledge is limited and the way this affects your ability to analyse and interpret information relevant to your discipline and field of work.

##### **A: Teaching, Learning and Assessment Methods:**

###### *Teaching styles:*

- Lectures
- Workshops
- Tutorials (group and individual)

###### *Learning activities:*

- Learning texts and other media;
- Resource-based learning;
- Application of learning in the workplace;
- Self-reflection exercises.

### *Assessment tasks*

- Examinations;
- Written assignments, laboratory and other technical reports;
- Oral presentations;
- Learning journal;
- Portfolio.

### Cognitive Skills

#### **B: Cognitive skills - students will be able to:**

1. apply engineering ideas and methods, outside the context in which you first studied them;
2. apply a range of established analytical and problem solving techniques to issues in your study and your workplace.

#### **B: Teaching, Learning and Assessment Methods:**

- Examinations;
- Written assignments, laboratory and other technical reports;
- Work-based and work-related mini-projects.

### Key Skills

#### **C: Key skills - students will be able to:**

1. evaluate critically the appropriateness of different approaches to solving engineering problems.
2. effectively communicate information, arguments, and analysis, in a variety of forms, to specialist and non-specialist audiences;
3. exercise personal responsibility and decision making skills necessary for your educational and career progression;
4. identify and pursue your continuing personal development needs through education and training.

**C: Teaching Learning and Assessment Methods:**

- Personal development plan;
- Written assignments, laboratory and other technical reports;
- Learning journal;
- Portfolio.

**Practical and / or Professional skills****D: Practical and/or professional skills - students will be able to:**

1. apply, in your workplace, the range of knowledge, skills and understanding developed throughout the programme;

***D: Teaching Learning and Assessment Methods:***

- Work-related projects and work-related mini-projects;

#### 4. Programme Structure

Part-Time delivery takes 3 years, 6 semesters:

Level	Module Title	Module Size	Semester Delivery
4	Mathematics for Engineers	20 Credits	1 & 2
	Communications for Engineers	20 Credits	1 & 2
	Science for Engineers 1 (Electrical)	20 Credits	1 & 2
	Science for Engineers 1 (Mechanical)	20 Credits	1 & 2
	Professional Practice (Academic Skills)	20 Credits	3
	WBL1: Engineering Materials	20 Credits	3
5	Applied Engineering Mathematics	20 Credits	4 & 5
	WBL2: Project Management Planning	20 Credits	4 & 5
	Science for Engineers 2	20 Credits	4 & 5
	Enterprising Futures	20 Credits	6
	WBL3: Project Management Implementation	20 Credits	6
	Professional Practice (Research)	20 Credits	6

## 5. Distinctive features of the programme structure

This award is made up of 12 Core Modules each with a 20 credit point value. Each level comprises 6 modules, totalling 120 credits. Of the overall 240 credits, 100 credits are dedicated to mathematics/science modules.

The award will be available in part-time mode and on a modular basis.

### Work-Based Learning

Work-based learning is integral to the achievement of the award aims and its learning outcomes. Work-based learning enables students to use and evaluate their skills (including such transferable skills as communication and problem solving) and knowledge in practice, and to share and reflect on experience.

### Requirement for 60 credits of Work-Based Learning

The modules WBL1, WBL2 and WBL3 have been designed to satisfy the requirement for 60 credits of work based learning; the following work-based modules were designed to address this, specifically:

#### Engineering Materials in the Workplace (20 credits)

LO1 - Appreciate the physical properties of materials in the work place.

LO2 - Apply appropriate tools and strategies, in the selection of materials in the workplace.

LO3 - Carry out a practical *work-based* material selection using proprietary software.

#### Project Management Planning in the Workplace (20 credits)

LO1 - Critically analyse and reflect upon current project management planning practice and possible future developments.

LO2 - Relate project management planning knowledge and understanding to practice in relevant employment situations.

LO3 - Critique the work based project planning activity and its impact on the organisational or professional context.

#### Project Management Implementation in the Workplace (20 credits)

LO1 - Using appropriate project implementation toolsets, propose and appraise a solution to a work based problem.

LO2 - Predict and evaluate the potential or actual outcomes of the proposal and impact on future working practices.

LO3 - Critique the work based project implementation activity and its impact on the organisational or professional context, in relation to their future career path.

On completion of the work the industrial mentor will be consulted to ensure that any reference to company details are correct and also to establish the level of confidentiality of the work.

## **Work-Based Learning for Students in Full-Time Employment**

If students are already in paid or unpaid employment, they will be able to learn through their current work, and use their learning to enhance their current and future work performance.

## **Work-Based Learning for Students not in Full-Time Employment / International Students**

If students are not already in employment, they will undertake work placements during the programme or work on projects proposed by employers sponsoring other students. This will enable students to learn through their work experience and acquire knowledge and skills to enhance their employability and future work performance.

The following companies have agreed to supply work placement projects, for non-employed / international students FD Engineering students on an annual basis:

BAE (Brough), Howdens Joinery, Hull College, Logan Teleflex, Reckitt Benkeiser, Shipham Valves, Smith & Nephew and Swift Caravans. We have collaborated with most of these companies, since 2007.

## **The Assessment of Work Based Learning**

In the work-based module WBL1 Engineering Materials, students will typically be required to investigate/evaluate a component. A typical *work-based* assessment, could be to select a material for an existing component at work.

WBL2 Project Management Planning (incorporates a group presentation on a project management task) and WBL3 Project Management Implementation modules are also 100% work-based. The student will be required to investigate/evaluate a piece of equipment/process/system within their company. The nature of the project will be negotiated with the academic tutor to ensure that the work will provide sufficient academic rigor, whilst the industrial mentor will be consulted to maximise the benefits to the company.

Assessment of work-based learning will be based on the following principals:

- The diverse range of students, whose prior skills and knowledge will be considered and factored into the delivery of the programme;
- The outcomes of all relevant work-based learning, past, present and future will be used to inform the continuing development of work-based learning;
- A programme of learning and assessment will be developed in consultation with employers.
- Students will be supported by the College whilst in their place of work by the provision of a named tutor who will supervise their placement from an academic and pastoral perspective;
- Progress will be reviewed at regular intervals;
- Work-based learning will be documented, for example in students log books, to

enable it to be assessed against standards set out in the Module specifications.

The outcomes of work-based learning provide a basis for assessing the student's work-based achievements. Negotiated learning agreements are drawn up for each student's work-based learning within their own individual learning plan, setting out what they have to do to achieve their outcomes.

Work-based learning tutors, administer and assess the work-based learning. This will consist of setting negotiated assignments to be done in the work place and provision of tutorial support and assessment at a modular level.

A variety of formative and summative assessment including briefing papers, critiques, reflective summaries, explorative papers, investigative technical reports, group work, research tasks, blogs and, oral presentations and campaigns. Work based learning will be assessed by:

- Student's capability which includes underpinning knowledge and understanding and development of personal skills and relevant qualities;
- Student's actual performance (which includes the skills and qualities they demonstrate in practice).

Evidence of capability and performance will be obtained through observation and questioning; assignments based on case studies; projects and logbooks/diaries and feedback from employers.

Work based supervisors/mentors are an important feature of the programme. The college has a mentor training programme which has been successfully utilised in the past, and will hence continue.

Each student will normally have a work based mentor to offer support and guidance when needed. Dependent upon the subject area, the most appropriately qualified person from the staff team will liaise with the work-based mentor. The mentor will comment and discuss on the progress of the student. The mentor's input, will inform the tutor and act as an aid to assessment grading (mentors will not assess students). This will be a vital link between the employment and education of the student.

Integrated support will be through a virtual learning environment where students will have online materials and collaborative tools for communication between tutor and mentors, tutor and student, placement tutor and student and between students themselves.

This process has proved very useful for staff development and knowledge updating of staff as well as students. The work-based components do indeed help us to maintain and update the programme.

Students not in a sector relevant employment will still be supported in their work based learning.

This operate as follows:

- Students are matched either individually or in small group of two to three to a suitable organisation;
- A project brief is developed in collaboration with the business, tutor and students to identify a business issue that the students can address and resolve;
- The project brief acts as a starting point for the work to be done on a consultancy basis within negotiated hours and timeframe;
- Each student is assessed individually on the basis of their negotiated learning agreement. As an example, this normally takes the form of either a learning contract, or a set of SMART objectives.
- The projects chosen normally relate to the practical application of the theory and principles covered by at least one of the Modules studied on the course;
- Work based learning will also be assessed at a modular level through the use of work related learning outcomes. These learning outcomes are as stated above.

### **Organisation of Work Based Experience**

During the first semester, as part of the *Communications for Engineers* module, students will agree a Personal Development Plan that will identify their strengths, learning needs and priorities. Students will be able to use this to help them identify appropriate work-based learning opportunities.

If students are already in relevant paid or unpaid employment they may negotiate with the tutor and employer a specific project/area within their own work that will enable students to meet the Module learning outcomes, personal objectives and the needs of the organisation. Supported by the tutor, students will negotiate clear objectives, support mechanisms and timings for their work-based activity.

If students are not already in relevant employment, academic staff will help them to find suitable experience. Students should use their own networks and contacts to find their own work experience wherever possible. In the past, students have been able to carry out work on college based projects/mini-projects. In these cases, the students would liaise with appropriate college staff, in exactly the same way to the mentor liaison in another workplace.

The Faculty of Business and Science has established good placement links (both employed and other students can be accommodated) with external employers including:

AAK, ABB, ABP, Anglia Oil, BAE, Centrica, Hull City Council, Logan Teleflex, Reckitts Benckiser, Shiphams Valves, Smith & Nephew and Swift Caravans.

Availability of placements will depend on employer need and successful student interview and therefore it is not possible to guarantee placements with these organisations. Alternatively, placement opportunities may be organised independently by individual students. If students organise such a placement, it must be approved by the Course Leader and Project Management (Work-based Learning) tutor.

The objectives and support for the work experience, including any induction and health and safety and confidentiality requirements will be negotiated before the experience commences. The exact timing of the work experience may be negotiated to suit students' personal and academic needs, the academic schedule, and the needs of the employer.

When a student has successfully negotiated work experience they will be assigned a placement tutor who will support the student during this period.

All student work-based learning opportunities will be organised to comply with the QAA Code of Practice for Work-based and Learning Placement.

### **Work Related Learning**

All students on the FD Engineering will gain 60 credits of work based learning. This will be supplemented by work-related assessments through the modules they study at level 4 and 5. These modules will provide students with further opportunities to develop practical, transferrable and life-long learning skills. Working with an allocated tutor, work-related learners will plan, negotiate and manage their own study. The student will be able to examine appropriate learning of direct relevance to their work place.

To fully address the objectives of the Foundation Degree qualification benchmark (2010), module assessments, both formative and summative, will be strongly linked to the workplace. Employers have been made aware of this link, many can see potential benefits for now and for the future.

For example:

#### **Work Related learning at Level 4:**

Formative and summative tasks will employ a work-related context. This is evidenced within section 7 of the module descriptors. The format of the work-related learning for each of the level 4 modules is summarised here:

The *Mathematics for Engineers* module will draw upon existing work-related case studies, to provide a practical and realistic framework for the application of mathematics to address formative engineering problems.

The *Communications for Engineers* will contain at least one piece of assessed work-related learning. This could involve delivering a skills audit group presentation.

The *Science for Engineers 1* module, will contain at least one piece of assessed work-related learning, this could require students to investigate the principle of operation of a machine/process/system in the work place.

The Professional Practice (*Academic Skills*) module will contain at least one piece of assessed work-related learning. This could, for example, involve the evaluation of a document in the workplace.

### **Work Related learning at Level 5:**

Formative and summative tasks will employ a work-related context. This is evidenced within section 7 of the module descriptors. The format of the work-related learning for each of the level 5 modules is summarised here:

The *Applied Engineering Mathematics* module will draw upon existing work-related case studies, to provide a practical and realistic framework for the application of mathematics to address formative engineering mathematics problems.

The Enterprising Futures module will contain at least one piece of assessed work-related learning. This could, for example, involve the evaluation of project management in the workplace.

The Professional Practice (*Research*) module will contain at least one piece of assessed work-related learning. This could, for example, involve the a research task in the workplace.

## 6. Support for students and their learning

Students will be inducted at the beginning of each level of study through a study day.

Students receive pastoral and academic support through the Hull College Tutorial System which includes group and individual tutorial entitlements.

All students are allocated a named personal tutor. The tutorial process incorporates Personal Development Planning, including individual target setting, planning and progress review. Personal Development Planning is embedded in all Awards.

Academic tutorials and guidance are provided for each module on a continual basis providing academic support.

The Library staff provide support for learners during the induction period and throughout the programme. Library stock is being updated continuously and a range of books and resources suitable for this programme are already in stock or shortly to be purchased.

There are HE study areas within the Queens Gardens site, e.g., within the library. It should also be noted that there is a dedicated HE librarian (Linda Heads) for this programme.

### ***Student Liaison Officers***

#### **Student Services:**

*Susan Peskey*

Internal Number: 2265

External Number: 381965

#### ***Student Services (HE Support)***

*Chesters-Foyer*

#### **Careers**

Internal Number: 2035, External Number: 598735

Student Services

Chester's-Foyer

#### **Counselor**

Internal Number: 2036, External Number: 598736

Contact: Sarah Wortley

Room 702

### ***Disabilities Support***

**Services for Student with Physical/Mental Difficulties or less well known**

**Difficulties & Learner Support Manager – Lesley Mills ext. 2232**

**Services for Students who are Deaf and Hard of Hearing – Shirley Longbone ext. 2183 or Minicom 01482 598888**

**Services for Students who are Visually Impaired – Caroline Berriman ext. 2933**  
Curriculum Leader for Sensory Impairment

**Services for Students who are recovering from Mental Health Illness – Kathleen Maw ext. 2232**

**Services for Students with Dyslexia – Joy Bennett ext. 2251**

## 7. Criteria for admission

Admission criteria is 64 UCAS points.

### Accreditation of Prior [Experiential] Learning

Credit is given to mature students regarding previous experience. The programme conforms to the Hull College procedures for the accreditation of prior learning.

An interview process in place; designed to ensure rigorous and fair recruitment.

The following minimum criteria are common to all University Foundation Degrees:

- GCE/VCE Advanced Level and New Nationals. One 6-unit qualification at Advanced level, plus three other subjects at GCSE grade C or above;
- National Certificate/Diploma or suitable bridging course in a qualification relevant to the course chosen;
- SQA Advanced Highers. One band C Advanced Higher Pass plus three other subjects at standard grade (grade 3) or above;
- International Baccalaureate. Award of the Certificate with a minimum of 20 points;
- Irish Leaving Certificate. Three higher/honours passes at grade C;
- Access courses.

The following qualifications are *normally* welcomed (subject to mathematics being studied and achieved at level 3) and will be taken into consideration by the Admissions Team, but may enable entry on to the Award only in conjunction with other qualifications (such as a bridging mathematics qualification at level 3).

- GNVQs/NVQs or other Level 3 vocational qualifications within the relevant QCA framework;
- City and Guilds qualifications at Level 3 or above;
- Advanced Modern Apprenticeships with Level 3 qualifications.

Applicants are not necessarily expected to have formal qualifications. For example, they may have had appropriate work experience, paid, or unpaid.

Students may be admitted onto the Award on the basis of non-certificated learning. However, in the absence of formal learning qualifications, applications are welcomed from persons who can demonstrate relevant work experience, including work in a voluntary capacity.

All programmes of study are conducted and assessed in the English languages. Hence, applicants seeking admission may be required to provide evidence that they can communicate effectively in the English language, for example, by achieving a minimum of IELTS 6.5, or equivalent.

## 8. Language of study

This Award is conducted and assessed in the English language.

## 9. Information about assessment regulations

### A Summary of Assessment Requirements

The programme adopts in full the College Academic Principles and Regulations. Students will be provided with a copy of the College Assessment Regulations at the point of registration for their award.

### B External Examiners

External examiners are an essential part of the College's framework for quality assurance. All approved courses leading to an award of the College must have external examiners.

The role of external examiners is to assure the quality of students' learning experience and ensure that they are assessed fairly in relation to other students on the same course and to all students across the College and nationally. External examiner/adviser reports are an integral part of the College's quality assurance processes. They form part of the requirements for course annual review and in all cases course teams must demonstrate how they have responded to the views and comments made by external examiners/advisers.

## 10. Methods for evaluating and improving the quality and standards of teaching and learning.

This award is managed and operated in accordance with College regulations and procedures. This will include representation and input from employers who will contribute to curriculum development and review.

The following methods are used to evaluate and improve the quality and standards of teaching and learning:

- External examiners reports;
- Cohort statistics e.g. gender, ethnicity, age and disability;
- Student feedback;
- Module reviews;
- Curriculum planning ;
- Course team minutes and the course team rolling action plan;
- Modifications of the course;
- National student survey and other surveys which are administered by the college;
- Teaching observations grade profile.

This award will be evaluated against the following criteria:

### **Benchmark alignment:**

The award will be reviewed against appropriate benchmarks and professional frameworks. Namely:

- QAA: Foundation Degree qualification benchmark (May 2010);
- QAA: subject benchmark for Engineering (February 2015);
- Engineering Council: UK-SPEC (January 2014) / AHEP (April 2014) ;
- QAA: The framework for higher education qualifications in England, Wales and Northern Ireland (November 2014).

### **Quality Improvement:**

The award will be subject to peer review as part of the College quality improvement processes.

### **Student Perceptions**

The award will be subject to Student Consultation Meetings and anonymous 'How are we doing' questionnaires and National Student Survey results and evaluation. Student representation will be encouraged on all Award Committees, at a cross college level and through student representation on Course Team Meetings, HE Committee and College Council and Academic Board.

## **Recruitment Retention and Achievement**

The award will be measured against annually agreed college targets.

**Annexe 1:** Curriculum maps

**Annexe 2:** Exemplar year 1 Assessment map

**Annexe 1 - Curriculum map (part 1 of 4)**

Indicates which study modules assume responsibility for developing (shaded) and assessing (●) particular programme learning outcomes.

		Level 4 / CERT HE					Level 5					
	Modules	M.F.E	C.F.E	S.F.E.1	PP(AS)	E.M	A.E.M	P.M.P	S.F.E.2	EF	P.M.I	PP(R)
<b>A</b>	<b>Knowledge &amp; Understanding</b>											
<b>A1</b>	of key scientific and engineering principles relevant to your discipline and field of work	●	●	●		●	●		●	●		
<b>A2</b>	of how theory and practical studies are utilised by practising engineers	●	●	●		●	●	●	●	●	●	●
<b>A3</b>	of how your knowledge is limited and the way this affects your ability to analyse and interpret information relevant to your discipline and field of work		●	●	●				●	●		●

**Annexe 1 - Curriculum map (part 2 of 4)**

Indicates which study modules assume responsibility for developing (shaded) and assessing (●) particular programme learning outcomes.

		Level 4 / CERT HE					Level 5					
	Modules	M.F.E	C.F.E	S.F.E.1	PP(AS)	E.M	A.E.M	P.M.P	S.F.E.2	EF	P.M.I	PP(R)
<b>B</b>	<b>Cognitive Skills</b>											
<b>B1</b>	apply engineering ideas and methods, outside the context in which you first studied them				●	●		●		●	●	
<b>B2</b>	apply a range of established analytical and problem solving techniques to issues in your study and your workplace	●		●	●	●	●	●	●	●	●	●

### Annexe 1 - Curriculum map (part 3 of 4)

Indicates which study modules assume responsibility for developing (shaded) and assessing (●) particular programme learning outcomes.

		Level 4 / CERT HE					Level 5					
	Modules	M.F.E	C.F.E	S.F.E.1	PP(AS)	E.M	A.E.M	P.M.P	S.F.E.2	EF	P.M.I	PP(R)
<b>C</b>	<b>Key Skills</b>											
<b>C1</b>	evaluate critically the appropriateness of different approaches to solving engineering problems	●		●	●	●	●	●	●		●	●
<b>C2</b>	effectively communicate information, arguments, and analysis, in a variety of forms, to specialist and non-specialist audiences	●	●	●	●	●	●	●	●		●	●
<b>C3</b>	exercise personal responsibility and decision making skills necessary for your educational and career progression				●			●		●	●	
<b>C4</b>	identify and pursue your continuing personal development needs through education and training				●			●		●	●	

**Annexe 1 - Curriculum map (part 4 of 4)**

Indicates which study modules assume responsibility for developing (shaded) and assessing (●) particular programme learning outcomes.

		Level 4 / CERT HE					Level 5					
	Modules	M.F.E	C.F.E	S.F.E.1	PP(AS)	E.M	A.E.M	P.M.P	S.F.E.2	EF	P.M.I	PP(R)
<b>D</b>	<b>Practical and/or professional skills</b>											
<b>D1</b>	apply, in your workplace, the range of knowledge, skills and understanding developed throughout the programme		●		●	●		●		●	●	●