UNIVERSITY OF CENTRAL LANCASHIRE

Programme Specification

This Programme 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 taking full advantage of the learning opportunities that are provided.

1. Awarding Institution / Body	University of Central Lancashire
2. Teaching Institution and Location of Delivery	Hugh Baird College
3. University School/Centre	School of Engineering
4. External Accreditation	None
5. Title of Final Award	Foundation Degree in Engineering (Advanced Manufacturing)
6. Modes of Attendance offered	Full Time and Part Time
7. UCAS Code	F1M3
8. Relevant Subject Benchmarking Group(s)	QAA Subject Benchmarking Statement: Engineering (2014)
9. Other external influences	Engineering Council UK-SPEC 3, QAA Academic Infrastructure Codes of Practice, Science, Technology, Engineering & Mathematics (STEM) government initiatives.
10. Date of production/revision of this form	7th May 2019

11. Aims of the Programme

- To provide an access route to BEng programmes in Engineering for students either lacking the required formal qualifications with appropriate analytical content or UCAS points.
- To equip students with appropriate knowledge, skill and experience of the concepts of Engineering analysis and problem solving, at a level suitable for progression on to BEng Engineering programmes.
- To develop the key personal and transferrable skills required to enable students to successfully progress on a BEng programme of study.
- To provide a stimulating and rewarding learning environment to cultivate a confident, pragmatic and resourceful approach to the solution of engineering problems.
- To introduce awareness of the Engineer's role in industry and the societal impact of Advanced Manufacturing in Engineering.
- To develop and equip students with appropriate transferrable skills and knowledge of the concepts of Engineering analysis and problem solving, at a level suitable for progression into the Engineering Industry
- To provide an access route to employment in Engineering for students lacking the required formal qualifications with appropriate analytical content.

12. Learning Outcomes, Teaching, Learning and Assessment Methods

A. Knowledge and Understanding

A1. Use mathematical principles required for study of engineering disciplines at Higher Education level.
A2. Apply fundamental scientific concepts applicable to electrical and electronic systems.
A3. Apply fundamental scientific concepts of mechanics (static and dynamic systems).
A4. Develop skills in information technology.
A5. Communication of technical information using written, oral and visual techniques.

Teaching and Learning Methods

Core knowledge acquisition occurs principally through tutor-led lectures (teaching) and directed study of textbooks. This is followed up by student led learning activity using text (books and e-resources), media (software, video, technical articles).

The understanding comes by way of application. This is aided by tutorials (incorporating worked examples and guided student work) and laboratory experiments. The use of independent study to consolidate understanding is encouraged through research based tasks built into assignments.

The Teaching and Learning strategies employed deliver opportunities for the achievement of the learning outcomes, demonstrate their attainment and recognise the range of student backgrounds. Delivery methods, activities and tasks are aligned with the learning outcomes for this programme, taking account of the learning styles and stage of the student.

Assessment methods

Assessment of knowledge is through examination of key facts using unseen papers (A1 to A3). These may be formal end of year examinations, or 'phase tests' during the year, focussing on a limited range of material.

Assessment of Skills and Experience of the knowledge (and knowledge itself where appropriate) is through assignment or other coursework. These include individual and team reports (A4, A5), presentations (A4, A5) and formal written laboratory reports (A2, A5). This is a structured application of knowledge derived from the tutor-led and individual student activities.

B. Subject-specific skills

B1. Employ technical and commercial management skills to Engineering problems.
B2. Make effective use of information technology tools for presentation and analysis.
B3. Demonstrate a logical approach to problem solving and design.
B4. Use technical writing in the preparation of technical reports.

Teaching and Learning Methods

The subject-specific practical and intellectual skills are developed through the teaching and learning programme as outlined above.

A combination of tutorials, practical design work and laboratory experiments are used to bolster the skill development. For all coursework pre-submission support and timely feedback post-submission is used to reinforce the specific learning outcomes, nurture confidence and facilitate engagement with the learning process. In the second semester of the course greater emphasis is placed on independent learning.

Assessment methods

Assessment of subject-specific skills is made by assessing the results of applying that skill.
Analytical skills are assessed through unseen examination papers (B1, B3) and coursework assignments (B1 to B4). Practical problem solving skills are assessed within context of assignment tasks – both individually and team based – by use of observation (B3) and formal written reports (B2 to B4).

C. Thinking Skills

C1. Recognise appropriate mathematical techniques to solution of analytical problems.
C2. Effective decision making for the identification, formulation and solution of design problems.
C3. Appreciate the broader context of engineering in business and the impact of engineering on society and the environment.

Teaching and Learning Methods

General intellectual skills are developed through the teaching and learning programme as outlined above.

Numerical and analytical skills (C1) are developed by tutorial support and independent students led consolidation is encouraged. Experimental and design skills (C2) are developed by applying them to specific design tasks and practical exercises in the laboratory and workshop. An appreciation of the wider context of engineering (C3) is developed through directed research, seminars and assignment work.

Formative and evaluative feedback is used as an essential part of the learning process.

Assessment methods

Analytical skills are assessed through unseen examination papers and coursework assignments (C1). Problem solving skills are assessed within context of practical and experimental work (C2). Much of the assessment in Introduction to Communications tests the understanding of business and societal implications of engineering (C3).

D. Other skills relevant to employability and personal development

D1. Manage and apply safe systems of work in an engineering environment.
D2. Demonstrate a working knowledge of all relevant legislation and professional standards.
D3. Reflect on and employ sustainable and ethical practises relevant to the Advanced Manufacturing Industry.
D4. Demonstrate the ability to keep abreast of emerging technologies and changes to industry practises.

Teaching and Learning Methods

The teaching and learning methods applied throughout the programme, as outlined above, are used to assist the progress of transferrable skills development.

Assessment methods

The direct assessment of transferable skills related to study and communications is addressed with clearly labelled learning outcomes in 'Study Skills' and 'Introduction to Communications'. Indirectly it is addressed by measuring developing engineering competence in all other modules.

The range of assessment techniques employed across modules on the course allow students sufficient opportunity to demonstrate competencies in their transferrable skills. Written communication skills are developed and assessed through the context for the assessment; examples include the requirements for formal laboratory report (Engineering Science (Electrical)), business or technical justification (Introduction to Communications), and critical evaluation (Study Skills). Group based activity (in Problem Solving Skills) requires reflection on the performance and contribution of the individual toward the outcome.

13. Programme Structures*				14. Awards and Credits*
Level	**Module Code**	**Module Title**	**Credit rating**	
Level 5	ER2101	Digital Systems	20	**FdEng Engineering (Advanced Manufacturing)** Requires 240 credits including a minimum of 100 at Level 5 and 120 at Level 4
	ER2102	Computer Aided Design for Manufacturing	20	
	ER2103	Design and Development for Manufacturing	20	
	ER2104	Mechanics, Kinematics and Materials	20	
	ER2105	Robotic Systems	20	
	ER2106	Work Based Study	20	
	MP2576	Thermo-fluids	20	
	SC2153	Further Engineering Mathematics And Simulation	20	
Level 4	ER1101	2D & 3D Computer Aided Design	20	**Foundation Certificate Engineering (Advanced Manufacturing)** Requires 120 credits at a minimum of Level 4
	ER1102	Manufacturing Engineering	20	
	ER1103	Further Mathematical Methods and Analysis	20	
	ER1104	Electronics and Instrumentation	20	
	ER1105	Introduction to Mechanics	20	
	ER1106	Introduction to Programming in Engineering	20	
Level 3	ERC101	Core Study Skills for Engineers	20	Requires completion of 120 credits at Level 3. Successful completion of the course leads to progression on to Year 1 of FdEng Engineering (Advanced Manufacture). Students may be considered for progression to other Engineering programmes at UCLan. An interview will be required. Students who exit after successful completion of 120 credits at level 3 will receive a transcript of their modules and grades.
	ERC102	Creative Problem Solving	20	
	ERC103	Technical Communication Skills	20	
	ERC104	Mathematical Methods	20	
	ERC105	Electronic Engineering for Advanced Manufacturing	20	
	ERC106	Mechanical Engineering for Advanced Manufacturing	20	

15. Personal Development Planning

The concept of Personal Development Planning (PDP) will be introduced and monitored through the FdEng Engineering (Advanced Manufacturing) programme at Level 4. The integration of PDP will enable students to:

- develop skills of reflection on their academic, personal and professional development within clear and guided boundaries
- increase self-awareness of their own skills, capabilities and attitudes
- improve individual learning, capabilities and aptitude through taking responsibility for their own personal development and self-directed learning
- identify personal development needs, areas of strength and areas for improvement in order to direct change
- set goals, plan, action and review personal progress
- compile records of learning achievements and experiences including progress reviews, personal reflections and action plans
- plan realistically for career progression and manage individual career progression and lifelong learning

In order to facilitate PDP and ensure that it is fully embedded in to the students' learning experience all students on the programme will be required to attend a personal tutorial session once a week.

Development of the range of study skills necessary to succeed in the assessment process will be addressed in the 'Work Based Study' module and the topics covered here will underpin the academic advancement of students as they progress throughout the programme.

Personal tutor sessions will also incorporate one-to-one reviews where each student will be encouraged to reflect on their own strengths and weaknesses and the progress they are making towards their personal goals.

16. Admissions criteria

For students entering via the optional Foundation Entry route, the following admission criteria will apply: -

Individual interview

- Entrants must be aged over 18 years.
- Given the nature of the programme as an access course, applications from individuals with non-standard qualifications, or relevant work/life experience and who have aspirations for professional careers in the field of engineering, but lack the requisite academic qualifications for direct entry onto the engineering degree course of interest, are welcome.
- Applicants will normally be expected to hold one or more A-Level passes in non-technical subjects plus GCSE grade C or above in Mathematics, English and a technical subject. Students with a BTEC in Engineering will also be considered. Other applicants such as mature students with vocational qualifications will be considered.
- Mature students may not meet the standard entry requirements but they may still be considered for a place on the course. Mature students with no qualifications may offer experience in other forms such as life experience, work experience and continued personal and professional development. All students are interviewed and selected on merit. This course offers the opportunity for mature students who may have been out of education for a while, or without traditional qualifications, to up-skill.

UK and EU Entry: Equivalent international qualifications will be considered towards meeting the general entry requirements. Additionally, EU students, for whom English is not the first language, will be required to evidence an IELTS score or 6.0 or equivalent. Equivalences include:

- TOEFL written examination score of 550 plus a test of written English (at 4)
- TOEFL Computer Equivalent score of 230
- Proficiency in English (Cambridge) at Grade C or above

For students entering directly onto the Foundation Degree, the following admission criteria will apply: -

Applicants will normally be accepted who hold

- 80 new UCAS tariff points at A2 level, comprising one or more A-Level passes in non-technical subjects plus GCSE grade C or above in Mathematics, English and a Science.
- 80 new UCAS tariff points from a technical vocational qualification plus GCSE grade C or above in Maths
- Mature students may not meet the standard entry requirements but they may still be considered for a place on the course. Mature students with no qualifications may offer experience in other forms such as life experience, work experience and continued personal and professional development. All students are interviewed and selected on merit. This course offers the opportunity for mature students who may have been out of education for a while, or without traditional qualifications, to up-skill.
- **UK and EU Entry:** Equivalent international qualifications will be considered towards meeting the general entry requirements. Additionally, EU students, for whom English is not the first language, will be required to evidence an IELTS score or 6.0 or equivalent. Equivalences include:
  - TOEFL written examination score of 550 plus a test of written English (at 4)
  - TOEFL Computer Equivalent score of 230
  - Proficiency in English (Cambridge) at Grade C or above

17. Key sources of information about the programme

- www.hughbaird.ac.uk
- Hugh Baird College
- www.ucas.com
- Student handbook
- www.uclan.ac.uk

18. Curriculum Skills Map

Level	Module Code	Module Title	Core (C), Compulsory (COMP) or Option (O)	Programme Learning Outcomes															
				Knowledge and understanding					Subject-specific Skills				Thinking Skills			Other skills relevant to employability and personal development			
				A1	A2	A3	A4	A5	B1	B2	B3	B4	C1	C2	C3	D1	D2	D3	D4
LEVEL 4	ER1101	2D & 3D Computer Aided Design	COMP				✔	✔		✔		✔	✔			✔		✔	
	ER1102	Manufacturing Engineering	COMP				✔	✔	✔	✔		✔		✔	✔	✔	✔	✔	✔
	ER1103	Further Mathematical Methods and Analysis	COMP	✔			✔	✔		✔	✔	✔	✔			✔		✔	
	ER1104	Electronics and Instrumentation	COMP	✔	✔		✔	✔	✔	✔	✔	✔	✔			✔	✔	✔	
	ER1105	Introduction to Mechanics	COMP	✔		✔	✔	✔		✔	✔	✔	✔			✔	✔	✔	
	ER1106	Introduction to Programming in Engineering	COMP				✔	✔		✔	✔	✔		✔		✔		✔	
				A1	A2	A3	A4	A5	B1	B2	B3	B4	C1	C2	C3	D1	D2	D3	D4
LEVEL 5	ER2101	Digital Systems	OPTION	✔	✔		✔	✔		✔		✔	✔	✔		✔	✔	✔	
	ER2102	Computer Aided Design for Manufacturing	OPTION	✔	✔		✔	✔		✔		✔	✔	✔		✔	✔	✔	
	ER2103	Design and Development for Manufacturing	COMP				✔	✔	✔	✔	✔	✔		✔	✔	✔	✔	✔	✔
	ER2104	Mechanics, Kinematics and Materials	COMP	✔		✔	✔	✔	✔	✔		✔	✔			✔	✔	✔	
	ER2105	Robotic Systems	OPTION	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	ER2106	Work Based Study	OPTION		✔	✔	✔	✔	✔	✔		✔			✔	✔	✔	✔	✔
	MP2576	Thermo-fluids	OPTION	✔	✔	✔		✔			✔								✔
	SC2153	Further Engineering Mathematics And Simulation	OPTION	✔		✔		✔			✔		✔						