UNIVERSITY OF CENTRAL LANCASHIRE

Programme Specification BEng (Honours) Mechanical Engineering (Well Engineering)

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 he/she takes full advantage of the learning opportunities that are provided.
Sources of information on the programme can be found in Section 17

1. Awarding Institution / Body	University of Central Lancashire
2. Teaching Institution	Year 1-4: International College of Engineering and Management, Oman Year 4: ICEM and UCLan
3. University Department/Centre	School of Engineering
4. External Accreditation	None
5. Title of Final Award	BEng (Honours) Mechanical Engineering (Well Engineering)
6. Modes of Attendance offered	Full Time, yrs 1-4 Part Time – Oman only
7. UCAS Code	
8. Relevant Subject Benchmarking Group(s)	Engineering
9. Other external influences	Petroleum Development Oman (PDO). Other drilling and service companies (e.g. Schlumberger, Nabors, Dalma)
10. Date of production/revision of this form	February 2017

11. Aims of the Programme

- To produce resourceful, competent, clear-thinking professional engineers with a range of skills and experience relevant to modern industry and in particular to develop a range of competences relevant to Well Engineering.
- To enable graduates to apply engineering principles to realistic situations by acquiring information, assimilating, analysing and applying it to new problems.
- To develop the skills and competences of:
  - communications e.g. report writing, giving presentations
  - use of information technology and appropriate computer-based tools
  - design through the use and selection of software and computer based tools
  - arithmetic, algebra and calculus appropriate to engineering to enable modelling physical systems for analysis and design
  - problem solving e.g. develop the ability to analyse and produce solutions to a particular problem
  - individual study skills e.g. time management, planning, use of different information sources.

12. Learning Outcomes, Teaching, Learning and Assessment Methods

A. Knowledge and Understanding

A1. Demonstrate knowledge of the main concepts and principles that underpin Well Engineering and Technology such as to enable a career in either drilling operations or the drilling service industry;
A2. Apply the fundamental concepts of engineering to enable the generation and evaluation of alternative solutions to solve engineering problems;
A3. Demonstrate the capability for independent and life long learning in a professional career

Teaching and Learning Methods

Traditional Lectures often followed by directed self study; Seminars/tutorials; Laboratory activities; Industrial visits and lectures from practising industrialists; Directed project and investigative work both individually and in groups; Group discussions.

Assessment methods

Written assessments; Integrated assignments; Examinations; Technical Reports; Case study work; Presentations.

B. Subject-specific skills

B1. Apply practical skills and techniques appropriate to working as a professional in well engineering
B2. Prepare reports relating to specific mechanical and well engineering problems
B3. Apply design methodology which integrates mechanical engineering considerations within a well engineering situation
B4. Engineer solutions to problems in drilling operations which demonstrate appropriate analytical skills
B5. Generate routes to solutions in unfamiliar mechanical and well engineering knowledge areas

Teaching and Learning Methods

Traditional Lectures often followed by directed self-study; Seminars/tutorials; Laboratory activities; Industrial visits and lectures from practising industrialists; Directed project and investigative work both individually and in groups; Group discussions.

Assessment methods

Group and individual presentations; Mini projects; Reports; Examinations; Assignments, Integrated assignments; Laboratory investigations.

C. Thinking Skills

C1. Select, collate, interpret and evaluate information from a range of sources
C2. Interpret and analyse qualitative and quantitative data relating to complex mechanical and well engineering problems
C3. Conduct and present individual research projects
C4. Formulate and produce creative and innovative technical solutions to problems by applying engineering principles to real situations
C5. Show originality in the development of design solutions, and to have flexibility in progression through the design process
C6. Communicate in an appropriate form (e.g. oral, written, drawing) the results of research and investigation

Teaching and Learning Methods

Directed self study; Seminars/tutorials; Laboratory activities; Industrial visits and lectures from practising industrialists; Project and investigative work both individually and in groups; Group discussions.

Assessment methods

Reports; Presentations (individual and group); Assignments; Integrated assignments; Case studies; Examinations.

D. Other skills relevant to employability and personal development

D1. Research and evaluate a wide range of sources of information from text books, journals, the media, CD-ROM, newspapers, internet, technical indexes, catalogues, Standards
D2. Complete reports in a succinct and coherent format
D3. Communicate ideas
D4. Demonstrate Presentation skills, IT skills, high level analytical skills, written and oral English language skills
D5. Work independently and within a team
D6. Manage time to meet deadlines over both short and long time periods

Teaching and Learning Methods

Traditional Lectures often followed by directed self study; Seminars/tutorials; Directed project and investigative work both individually and in groups; Group discussions.

Assessment methods

Reports, Presentations, Working in teams, Integrated assignments, Mini projects.

13. Programme Structures*				14. Awards and Credits*
Level	**Module Code**	**Module Title**	**Credit rating**	
Year 4 Level 5/6	MP3995 (core)	Project	20	**BEng (Honours) Mechanical Engineering (Well Engineering)** Requires 480 credits with 300 credits at Stage 2, including a minimum of 480 credits at level 4 or above, 280 credits at level 5 or above and 140 credits at level 6 or above. **Classification of award is based on stage 2 modules, not including those identified as LL2 (60 credits), with the 2 lowest graded modules (40 credits) being discounted in APM calculation.**
	MP3713	Mechanics and Materials	20	
	MP3705	Manufacturing Technologies and Sustainable Engineering	20	
		3 options:		
		EITHER		
	MP3701	Mechanical Systems Reliability	20	
		OR		
	OM3045	Well Design Technology		
		EITHER		
	MP3672	Engineering Simulations	20	
		OR		
	OM3046	Well Testing and Enhanced Oil Recovery		
		EITHER	20	
	MP3703	Project Management		
		OR		
	MP2721	Operations Management A		
		NB Not all options will be available in each year.		
Year 3 Level 5/6	OM3043	Drilling Technology (SLL3)	20	**Advanced Diploma in Well Engineering** Requires 360 credits with 200 credits at stage 2, including a minimum of 320 credits at level 4 or above, 180 credits at level 5 or above and 60 credits at level 6 or above. .
	OM3044	Advanced Drilling Technology (SLL3)	20	
	OM2045	Applied Mathematics for Engineers	20	
	OM2056	PDP **(LL2)**	20	
	OM2043	Engineering Design and CAD/CAM **(LL2)**	20	
	OM3042	Design of Engineering Systems	20	
Year 2 Level 5	OM2046	Well Engineering Operations (SLL2)	20	**Diploma of Higher Education in Well Engineering** Requires 240 credits with 120 credits at stage 2, including a minimum of 240 credits at Level 4 or above and 100 credits at Level 5 or above. .
	OM2047	Well Engineering Management (SLL2)	20	
	OM 2049	Metallurgy and Manufacturing Science	20	
	OM 2048	Mechanics of Solids and Fluids	20	
	OM2053	Mathematics B	20	
	OM2055	PPD-2 **(LL2)**	20	
Year 1 Level 4	OM1041	Fundamentals of Drilling Equipment	20	**Certificate of Higher Education in Well Engineering** Requires 120 credits including a minimum

	OM1042 OM 1053 OM 1043 OM1044 OM1055	Fundamentals of Drilling Operations Mathematics A Engineering Science Computer Aided Drafting and Design PPD -1	20 20 20 20 20	of 120 at Level 4.

15. Personal Development Planning

The modules at each level provide students with the opportunity to engage with their own personal development planning and to recognise that learning is a lifelong process.

Following appropriate introduction and induction, the Course Team will support students in reflecting on their learning, performance and achievement, and in their planning for personal, educational, and career development.

Skills in PDP such as self-reflection, recording, target setting, action planning and monitoring will be highlighted as key lead indicators of success in securing and successfully completing the Industrial Placement Period and in securing employment in the industry on graduation.

Over the duration of the course, and including reference to extra-curricular student activities, Module Tutors for Communications and Personal Tutors will take formal responsibility for supporting students through their personal development in the following areas:

- Self Awareness
- Study Skills
- Reviewing Progress
- Career Plans
- Making Applications

For students who undertake the Industrial Placement module, the tutors for this module will also focus attention on PDP.

Web based resource materials to be used include:
Personal Development Planning www.uclan.ac.uk/ldu/resources/pdp/intro1.htm
Skills Learning Resources www.uclan.ac.uk/lskills/TLTP3/entersite.html

The work in PDP will not be assessed.

16. Admissions criteria

Programme Specifications include minimum entry requirements, including academic qualifications, together with appropriate experience and skills required for entry to study. These criteria may be expressed as a range rather than a specific grade. Amendments to entry requirements may have been made after these documents were published and you should consult the University's website for the most up to date information.
Students will be informed of their personal minimum entry criteria in their offer letter.

1. Applicants will normally have completed 12 years of secondary schooling and having followed Pure Mathematics stream, or the equivalent, with a grade of D or higher in Mathematics, Physics, Chemistry and English. In addition, all applicants will be interviewed and complete a diagnostic entry test in English Language, Mathematics and Science to assess their ability to complete the programme. Applicants will be required to have a minimum average level of proficiency in English Language equivalent to IELTS band 5.0 with no band in any of the four skills (reading, listening, speaking writing) lower than 4.5. The programme includes structured provision for further development of English language skills.

OR

2. Students who have successfully completed a Foundation year at the International College of Engineering & Management in Oman will have undertaken final assessments in English Language (equivalent to IELTS band 5.0 with no band in any of the four skills - reading, listening, speaking writing, lower than 4.5) and will have demonstrated the level of proficiency in all areas required for admission onto the programme.

APL will be assessed through standard University procedures.

17. Key sources of information about the programme

- ICEM Marketing Brochure
- ICEM Website

18. Curriculum Skills Map

Please tick in the relevant boxes where individual Programme Learning Outcomes are being assessed

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	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	C6	D1	D2	D3	D4	D5	D6
LEVEL 6	MP3995	Project	C		✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	MP3705	Manufacturing Technologies and Sustainable Engineering	Comp		✓			✓							✓								
	OM3045	Well Design Technology	O		✓			✓	✓		✓		✓		✓	✓							
	MP3672	Engineering Simulations	O		✓	✓			✓		✓		✓		✓								
	MP3701	Mechanical Systems Reliability	O	✓	✓		✓		✓		✓		✓			✓							
	MP3713	Mechanics and Materials	Comp		✓			✓	✓		✓				✓								
	MP3703	Project Management	O	✓	✓		✓		✓							✓			✓		✓		
	OM3046	Well Testing and Enhanced Oil Recovery	O		✓			✓	✓				✓			✓							
	OM3043	Drilling Technology	Comp	✓					✓	✓													
	OM3044	Advanced drilling Technology	Comp	✓					✓	✓													
	OM3042	Design of Engineering Systems	Comp	✓	✓			✓	✓				✓										
LEVEL 5	MP2721	Operations Management A	O				✓						✓										✓
	OM2043	Engineering Design and CAD/CAM	Comp		✓				✓	✓					✓	✓							
	OM2045	Applied Mathematics For Engineers	Comp		✓					✓	✓				✓								
	OM2056	PDP	Comp			✓	✓												✓	✓	✓		
	OM2046	Well Engineering Operations	Comp	✓			✓	✓		✓												✓	✓
	OM2047	Well Engineering Management	Comp	✓			✓	✓		✓												✓	✓
	OM2048	Mechanics of Solids and Fluids	Comp	✓	✓					✓			✓	✓									
	OM2049	Metallurgy and Manufacturing Science	Comp	✓	✓					✓			✓	✓									
	OM2053	Mathematics B	Comp							✓	✓		✓										
	OM2055	PPD-2	Comp			✓		✓				✓					✓	✓			✓		

LEVEL 4	OM1041	Fundamentals of Drilling Equipment	Comp					✓															
	OM1042	Fundamentals of Drilling Operations	Comp					✓															
	OM1043	Engineering Science	Comp	✓																			
	OM1044	Computer Aided Drafting and Design	Comp		✓		✓						✓							✓			
	OM1053	Mathematics A	Comp		✓					✓			✓										
	OM1055	PPD-1	Comp			✓						✓					✓						