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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 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 1-3: 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-4 years, Full Time with Sandwich year- 5 years Part Time – 6 years
7. UCAS Code 7b. JACS/HECOS Code	N/A H850/100178
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	June 2022
11. Aims of the Programme	
• Provides a range of skills and experience relevant to modern industry. • Develops a range of competencies relevant to Well Engineering. • Enables graduates evaluate engineering principles to realistic situations related to field problems.	

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. Understand the fundamental concepts of engineering to enable alternative methods to solve engineering problems; A3. Demonstrate the capability for independent and lifelong learning in a professional career
Teaching and Learning Methods
Each module will adopt a range of learning and teaching strategies that aim to meet the needs of students with diverse practice and educational experiences. • Traditional lectures introduce themes and concepts often followed by directed self-study; • Class room based tutorials; • Laboratory activities; • Student seminar – individual and group; • Industrial visits and lectures from practising industrialists; • Directed project and investigative work both individually and in groups; • Group discussions, case studies and presentations. • Use of Blackboard/Ms Teams to provide supplemental reading, module information and a student discussion board.
Assessment methods
A variety of methods of assessment appropriate to the learning outcomes of the individual modules are utilised. The range of assessments experienced by the students will include: • Written Examinations; • Assignments; • Portfolios; • Student presentations; • Technical Reports; • Integrated assignments; • Case study analysis; • Essays; • Continuous assessment; • Directed project and investigative work both individually and in groups, • Scenario based analysis, • Mini projects.
B. Subject-specific skills
B1. Apply practical skills and techniques appropriate to working as a professional in well engineering (mechanical engineering). B2. Prepare reports relating to specific practical mechanical and well engineering problems B3. Apply design methodology that integrates mechanical engineering within a well engineering situation. B4. Engineer solutions to problems in drilling operations which demonstrate appropriate analytical skills B5. Use information and communication technology in application to mechanical (well) engineering including the use of computer aided design and simulation softwares.
Teaching and Learning Methods
Traditional lectures often followed by directed self-study; Classroom based tutorials; Laboratory activities; Student seminar – individual and group; Industrial visits and lectures from practising industrialists; Directed project and investigative work both individually and in groups; Group discussions, case studies and presentations; Use of Blackboard/Ms Teams to provide supplemental reading, module information and a student discussion board.
Assessment methods
Written Examinations; Assignments; Portfolios; Student presentations; Technical Reports; Integrated assignments; Case study analysis; Essays; Continuous assessment; Directed project and investigative work both individually and in groups, Scenario based analysis, Mini projects, 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; Use of Blackboard/Ms Teams to provide supplemental reading, module information and a student discussion board.
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	
Level 6	MP3995	Project*	20	BEng (Honours) Mechanical Engineering (Well Engineering) Requires 480 credits with 360 credits at Stage 2, including a minimum of 480 credits at level 4 or above, 360 credits at level 5 or above and 160 credits at level 6 or above.
	MP3713	Mechanics and Materials *	20	
	MP3705	Manufacturing Technologies and Sustainable Manufacturing*	20	
		<u>3 options:</u>		
	MP3701	EITHER Mechanical Systems Reliability		
	OM3045	OR Well Design Technology*	20	
	MP3672	EITHER Engineering Simulations		
	OM3046	OR Well Testing and Enhanced Oil Recovery*	20	
	MP3703	EITHER Project Management		Students who successfully complete OM3000 will receive the award with Industrial Placement.
	MP2721	OR Operations Management A*	20	
		<i>*Modules offered at Oman</i>		
	OM3000	Industrial Placement	120 notional credit	
Level 5/6	OM3043	Drilling Technology	20	Advanced Diploma in Well Engineering Requires 360 credits with 240 credits at stage 2, including a minimum of 360 credits at level 4 or above, 240 credits at level 5 or above and 60 credits at level 6 or above. Students who successfully complete OM1040 will receive the award with Industrial Experience
	OM3044	Advanced Drilling Technology	20	
	OM2045	Applied Mathematics for Engineers	20	
	OM2055	Personal and Professional Development 2	20	
	OM2043	Engineering Design and CAD/CAM	20	
	OM3047	Design and Analysis of Engineering Systems	20	
Level 5	OM2046	Well Engineering Operations	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 120 credits at Level 5 or above. Students who successfully complete OM1040 will receive the award with Industrial Experience
	OM2047	Well Engineering Management	20	
	OM2049	Metallurgy and Manufacturing Science	20	
	OM2048	Mechanics of Solids and Fluids	20	
	OM2053	Mathematics B	20	
	OM2094	Professional Development and Entrepreneurship	20	
Level 4	OM1041	Fundamentals of Drilling Equipment	20	Certificate of Higher Education Requires 120 credits at Level 4.
	OM1042	Fundamentals of Drilling Operations	20	
	OM1053	Mathematics A	20	
	OM1043	Engineering Science	20	

	OM1044	Computer Aided Drafting and Design	20	
	OM1055	Personal and Professional Development 1	20	
	OM1040	Industrial Experience (Optional)	20 notional credits	

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 for Omani General Diploma Certificate. 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 (Mathematics and Science).

APL will be assessed through standard University procedures.

17. Key sources of information about the programme

- ICEM Marketing Brochure
- ICEM Website at www.icem.edu.om
- School web site at www.uclan.ac.uk/schools/engineering/index.php
- University courses information at www.uclan.ac.uk/courses/index.php

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 5/6	MP3995	Project*	Comp		☐	☐	☐	☐			☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	MP3705	Manufacturing Technologies and Sustainable Manufacturing*	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		☐			☐	☐				☐			☐							
	MP2721	Operations Management A*	O				☐						☐										☐
LEVEL 5/6	OM3044	Advanced drilling Technology	Comp	☐					☐	☐													
	OM3047	Design and Analysis of Engineering Systems	Comp	☐	☐			☐	☐				☐										
	OM3043	Drilling Technology	Comp	☐					☐	☐													
	OM2043	Engineering Design and CAD/CAM	Comp		☐				☐	☐					☐	☐							
	OM2055	Personal and Professional Development 2	Comp					☐				☐									☐		
	OM2045	Applied Mathematics For Engineers	Comp		☐					☐	☐				☐								
Level 5	OM2094	Professional Development and Entrepreneurship	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							☐	☐		☐										

*Modules offered at Oman

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19. LEARNING OUTCOMES FOR EXIT AWARDS:

Learning outcomes for the award of Certificate of Higher Education (120 Credits)

- 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. Understand the fundamental concepts of engineering to enable alternative methods to solve engineering problems;
- B1. Apply practical skills and techniques appropriate to working as a professional in well engineering (mechanical engineering).
- B2. Prepare reports relating to specific practical mechanical and well engineering problems
- 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
- D3. Communicate ideas

Learning outcomes for the award of: Dip HE in Mechanical Engineering (Well Engineering) (240 credits)

- 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. Understand the fundamental concepts of engineering to enable alternative methods to solve engineering problems;
- B1. Apply practical skills and techniques appropriate to working as a professional in well engineering (mechanical engineering).
- B2. Prepare reports relating to specific practical mechanical and well engineering problems
- B3. Apply design methodology that integrates mechanical engineering within a well engineering situation.
- B4. Engineer solutions to problems in drilling operations which demonstrate appropriate analytical skills
- B5. Use information and communication technology in application to mechanical (well) engineering including the use of computer aided design and simulation softwares
- 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
- 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

Learning outcomes for the award of: Advanced Dip HE in Mechanical Engineering (Well Engineering) (360 credits)

- 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. Understand the fundamental concepts of engineering to enable alternative methods to solve engineering problems;
- A3. Demonstrate the capability for independent and lifelong learning in a professional career
- B1. Apply practical skills and techniques appropriate to working as a professional in well engineering (mechanical engineering).
- B2. Prepare reports relating to specific practical mechanical and well engineering problems
- B3. Apply design methodology that integrates mechanical engineering within a well engineering situation.

- B4. Engineer solutions to problems in drilling operations which demonstrate appropriate analytical skills
- B5. Use information and communication technology in application to mechanical (well) engineering including the use of computer aided design and simulation softwares
- 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
- C5. Show originality in the development of design solutions, and to have flexibility in progression through the design process
- 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
- 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