



Course Specification Part A

MSc Petroleum and Environmental Technology EECT057

School of Energy Construction & Environment Faculty of Engineering, Environment & Computing Academic Year: 2021/22

Please note: This specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if s/he takes full advantage of the learning opportunities that are provided.

We regularly review our course content, to make it relevant and current for the benefit of our students. For these reasons, course modules may be updated.

More detailed information on the learning outcomes, content, and teaching, learning and assessment methods of each module can be found in the Module Information Directory (MID), student module guide(s) and the course handbook.

The accuracy of the information contained in this document is reviewed by the University and may be verified by the Quality Assurance Agency for Higher Education.

Coventry University's accreditation with CMI is currently ongoing for the relevant modules and is regularly reviewed and monitored by the CMI through their quality systems. Whilst Coventry University anticipates that these reviews will continue to be successful, if they were to be unsuccessful, the relevant module in this course would no longer be accredited and we would notify applicants and students of this change as soon as possible.

PART A Course Specification (Published Document)

MSc Petroleum and Environmental Technology

1. Introduction

The oil and gas industry is continuously developing, with evolving environmental/sustainability issues; the reservoirs from which oil and gas can be extracted have become more complex and the production and processing conditions have become more challenging in the Gulf of Mexico, Brazil, China, Australia and Africa, as well as the UK's North Sea. These have resulted in severe global environmental challenges.

In 2015, capital investment in the UK offshore oil and gas industry was £11.6 billion and the industry spent £8.2 billion operating its assets. As such the industry is expected to remain as a major contributor to the economy of many developed and developing regions, the oil and gas industry continues to be driven not only by new discoveries, but also by a constant demand to find newer, safer, more efficient and cost-effective methods of extracting and processing the resources.

However, the United Nations Sustainable Development Goals (SDGs), in particular those related to the environment, require strategic integration into the oil and gas industry. This is why petroleum technology specialists with environmental skills and competencies will become increasingly valued by the global oil and gas industry in the 21st century.

The course is specifically designed to address contemporary issues in the oil and gas industry and it is aimed at technical specialists including petroleum engineers. Fossil fuel consumption is projected to grow into the foreseeable future so our MSc PET course is designed to address skills gap brought by the changing industry dynamics and its need to adapt to increasing pressure to be more sustainable. This course will achieve this by considering sustainability as a source of engineering technology and improved business performance by limiting engineering project footprints on the environment (lithosphere, hydrosphere, atmosphere, biosphere and anthrosphere). These two themes and their associated modules in above will be complemented by two skills modules 0 credit to support students in bringing together the academic content bring it all together.

This course offers a unique, comprehensive and advanced level insights into the technical engineering operations of the petroleum industry linked to an assessment of the most important emerging environmental issues of concern to the sector. The course will build your skills in all major components of the upstream operation including Drilling Engineering, Reservoir Engineering, Process Safety & Reliability Engineering, and Petroleum Processing and Gas Technologies. It will also advance your expertise in key environmental areas such as Oil Spill Response and Remediation, Sustainability in the Oil and Gas Industry, Air Pollution Control & CO₂ Management and Produced & Industrial Water Treatment.

The course design supports the University strategy for quality teaching and research following the REF2014 exercise. Particular highlights of MSc PET include training in industry standard PETREL and ECLIPSE reservoir simulation software (often used by multinational oil companies like Shell, BP and ExxonMobil and kindly donated by Schlumberger to support your learning). MSc PET students are expected to participate in a vibrant Student Chapter of the Society of Petroleum Engineers (SPE).

To increase employability and students experience, all students enrolled in the programme are offered free complementary certification in Institution of Occupational Safety and Health (IOSH) Managing Safely after passing the IOSH Board examination. IOSH is the world's leading chartered professional body and largest membership organisation for professionals responsible for safety and health in the workplace.

As a part of the programme, students are required to undertake an international field trips to observe the activities and operations of key oil and gas equipment and technologies in real world. Evaluation of drilling facilities/operations, petroleum and gas processing plant, control rooms operations, key safety software and best practices reinforces the importance of safe working practices in the oil and gas industry and environment.

As part of this course you will undertake a professional development module which is currently accredited by the Chartered Management Institute (CMI). Upon successful completion of the module, you will gain the CMI Level 7 Certificate in Strategic Management and Leadership Practice at no additional cost.

Work Placement

For students in today's competitive employment markets having work experience can significantly enhance employment prospects. For this reason, the course offers students the opportunity to undertake a work placement, extending the main provision to a two-year course. The work placement could be International or UK with a focus which may be industry or research. Following a selection process within the first semester and subject to securing an approved placement opportunity, students would move onto the two-year course. International students who are interested in a work placement will be supported in completing an application for extending their Student visa by international student support services. Upon completion of their placement, students will return to complete the course and the final project for the full award.

2 Available Award(s) and Modes of Study

Title of Award	Mode of attendance	UCAS Code	FHEQ Level
MSc Petroleum & Environmental Technology	1 year full time 2 years part time 2 years with Work Placement	NA	7
Fallback PgD Petroleum & Environmental Technology PgC Petroleum & Environmental Technology PG Cert (Unnamed)			

3 Awarding Institution/Body	Coventry University
4 Collaboration	N/A
5 Teaching Institution and Location of delivery	Coventry University, Faculty of Engineering, Environment & Computing
6 Internal Approval/Review Dates	Date of approval: 2018/2019 Date for next review: 2024/2025
7 Course Accredited by	
8 Accreditation Date and Duration	
9 QAA Subject Benchmark Statement(s) and/or other external factors	There is no benchmark statement for Petroleum & Environmental Technology at Masters level. However, the course is a response to the increasing demand for highly skilled engineers with strong environmental grounding in the international oil and gas industry.
10 Date of Course Specification	Jan 2021
11 Course Director	Dr Enobong Basse

12 Outline and Educational Aims of the Course

The MSc Petroleum & Environmental Technology course has been designed explicitly to meet the need of niche and highly specialised markets tailored to the requirements of an integrated upstream, downstream and environmental technology sector. The course provides an educational experience in which students can achieve an integrated understanding of the engineering, technology and environmental strategies within the context of the petroleum industry, while also developing appropriate intellectual and personal skills. In this regard, the educational aims are to:

- to provide an educational experience that meets students' needs and expectations and those of the oil, gas and environmental sectors' employers;
- to provide an up to date curriculum that articulates the current challenges and good practice in the energy and environmental industry
- foster an understanding of the fundamentals of petroleum engineering and environmental science including drilling, well completion, reservoir, oil spill analyses, facilities, environmental engineering and sustainability issues;
- enable students to evaluate and apply a variety of skills, operational strategies and techniques within the context of petroleum and environmental technology;
- develop the competence to safely and effectively manage projects in the petroleum industry within the context of increasingly stringent environmental and safety legislation;
- develop academic and professional competences of students, thus facilitating the mobility of professional employment and the application of professional knowledge and skills;
- facilitate independent investigation and research through the promotion of information management, communication and presentation skills;
- promote a culture of lifelong learning in the student community through critical self-reflection.

13 Course Learning Outcomes

On successful completion of the course a student will be able to:

1. Critically apply theories, concepts and processes in petroleum engineering and environmental science and technology,
2. Determine and apply global best practices (i.e. lab and field-based) and methods in managing environmental and sustainability concerns in exploration and production of oil and gas,
3. Evaluate processes and technologies including subsurface facilities, planning and development of oil and gas resources, and environmental considerations,
4. Demonstrate effective leadership and technical skills appropriate to petroleum technology & environmental management and appropriate business strategies within a changing operational and legislative context to meet stakeholders' interest,
5. Apply and evaluate the limitations of a range of research methods/techniques, both qualitative and quantitative for providing information and evaluating options in an uncertain and changing organisational environment,
6. The ability to conduct research, in an ethical manner, and analyse data using appropriate methods and communicate the output effectively, and
7. Critically evaluate the principles for leading and developing people and equality, diversity and inclusion at a strategic level.

14 Course Structure and Requirements, Levels, Modules, Credits and Awards

The course is designed for those who are interested in a career - or already working - in the energy and hydrocarbon industry. Modules in the course focus on theoretical, policy, design, scientific, technological and operational aspects of petroleum & environmental technology.

All students will have the Chartered Management Institute (CMI) accredited module, Leading Diverse Workforces. Students who successfully complete the module and meet the CMI learning outcomes will gain a Level 7 Certificate in Strategic Management and Leadership Practice based on the following CMI units: Leading and developing people to optimise performance (unit 702); Strategic approaches to diversity and Inclusion (unit 715).

Students who successfully complete this module will be awarded Foundation Chartered Manager status and be able to use the designation 'fCMgr' after their name.

Work Placement

During semester 1, students who have expressed an interest in undertaking a work placement should begin the application process for placement opportunities. Students have the responsibility for securing a placement, but they will be supported throughout the application process by a specialist employer engagement team. The university will work with employers to identify opportunities. Subject to securing a placement, the International Student Support team will work with international students to obtain UK study visa extensions. Visas required to work in other countries will be the responsibility of the student.

The course is structured so that students complete two semesters of taught modules and then spend three semesters on placement. During this time students would be enrolled onto modules 7102CEM Extended Masters Work Placement A, 7103CEM Extended Masters Work Placement B and 7104CEM Extended Masters Work Placement C. The modules are zero credit and do not contribute to the classification or name of the award but must be passed to complete the placement. Upon completion of the work placement, students are expected to return to Coventry to complete the final semester during which time they undertake their project module. Successful completion of the Work Placement is reflected in the final student transcript.

Credit level	Module Code	Title	Credit Value	Mandatory/ Optional	Course Learning Outcomes
Subject to securing an appropriate placement opportunity and fulfilling the selection requirements, students will be transferred to the two-year course and the Work Placement modules listed below are to be taken.					
7	7102CEM	Extended Masters Work Placement A	0	Optional	
7	7103CEM	Extended Masters Work Placement B	0	Optional	
7	7104CEM	Extended Masters Work Placement C	0	Optional	

The work placement is to be taken over three semesters and prior to the final semester of the course.

14.1 Patterns and modes of attendance

This course is available for study on either a part-time or full-time basis. A student normally begins their studies at the commencement of semester 1 in September.

Awards:

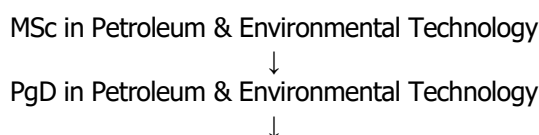
For the award of an MSc in Petroleum & Environmental Technology a student must have 180 credits from the course and these must include passes in all the modules.

For the award of a PgD in Petroleum & Environmental Technology a student must have 120 credits from any module

For the award of a PgC in Petroleum & Environmental Technology a student must have 60 credits from the course and these must include passes in 7138EXQ, 7133EXQ, 7132EXQ and 7146EXQ.

For the award of an unnamed PgC a student must have 60 credits from the course.

Cascade of Awards



PgC in Petroleum & Environmental Technology

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Pg Certificate (unnamed)

14.2 Course Structure

Modules within the course, and credit value are given in Table 1 below.

Students studying for a Masters in Petroleum & Environmental Technology will take eight mandatory modules, along with a CMI (10 credit), Tutorial and field/lab based learning, zero credit modules and the project/dissertation module.

The course may accept three intakes per year (September, January and May), the primary intake is in September. To accommodate three starts per year the order in which a student undertakes their taught modules may change as modules are taught in a rolling pattern of delivery. However, the dissertation will always be undertaken in the Students' 3rd semester.

Table 1: MSc Petroleum and Environmental Technology modules
The delivery pattern below is an indication and can be subject to change

Module Code	Module title	Credit Value	Course Learning Outcomes	Semester *	MSc
7138EXQ	Oil Spills Science, Response and Remediation	15	1,2,4	1	M
7146EXQ	Air Pollution Control & CO ₂ Management	15	1,2,4	1	M
7163EXQ	Process Safety Concepts and Practical Approaches	15	1,2,5	1	M
7133EXQ	Drilling Engineering	15	1,3,4	1	M
7147EXQ	Produced & Industrial Water Treatment	15	1,2,3,4	2	M
7132EXQ	Petroleum Processing & Gas Technologies	15	1,2,3,4	2	M
7164EXQ	Sustainability in Energy Exploitation Production & Transport	15	1,2,5	2	M
7085EXQ	Reservoir Engineering	15	1,3,4	2	M
7165EXQ	Research Project	50	1-6	3	M
7074EXQ	Preparing to Research	0	5	2	M
7084EXQ	Supporting Transition to Post Graduate Study	0	5,6,7	1	M
7049CRB	Leading Diverse Workforces	10	7	3	M

Key: M – Mandatory; N/A – Not Applicable; * – indicative only,

15 Criteria for Admission and Selection Procedure

A good UK honours degree or an international equivalent (a 2.1 is most preferred but 2.2 may be considered) in environmental science, engineering or numerate physical sciences, geosciences and mathematics. HND holders (Upper) with at least five years working experience in the oil and gas industry may also be considered. Applicants whose first language is not English or who have not completed a first degree in which English was the main language of tuition must provide evidence of English language ability. An IELTS score of 6.5 or higher (and at least 5.5 in each component) or equivalent qualification is the accepted criterion for admission.

For students entering with advanced standing, the RP(E)L procedure should be outlined. This is a standard university defined process.

16 Academic Regulations and Regulations of Assessment

This Course conforms to the standard [University Academic Regulations](#) Postgraduate Mode R

17 Indicators of Quality Enhancement

The Course is managed by the School of Energy, Construction & Environment Board of Study of the Faculty of Engineering, Environment & Computing.

The Programme Assessment Board (PAB) for Energy, Construction & Environment is responsible for considering the progress of all students and making awards in accordance with both the University and course-specific regulations.

The assurance of the quality of modules is the responsibility of the Boards of Study which contribute modules to the course.

External Examiners have the opportunity to moderate all assessment tasks and a sample of assessed work for each module. They will report annually on the course and/or constituent modules and their views are considered as part of the Course Quality Enhancement Monitoring (CQEM). Details of the CQEM process can be found on the Registry's web site. Students are represented on the Student Forum, Board of Study and Faculty/School Board, all of which normally meet two or three times per year. Student views are also sought through module and course evaluation questionnaires.

There is a strong and regular industry input to the subject-base. This is achieved in many ways, for example through the long-standing industry advisory boards, industry-focused collaborative research initiatives and use of guest speakers from industry. The award is intended to offer students the opportunity to develop their knowledge/understanding of relevant aspects of Petroleum Technology and Environmental issues. This is a unique offering not readily available from other providers. The course concentrates on the application of techniques and interdisciplinary skills (with key contribution from the industry), within the wider context of higher education learning. This brings together academic and professional skills that enhance learning in the contemporary areas of petroleum technology and environmental science.

The teaching team includes staff with research and industrial experience in Petroleum Engineering, Numerical Simulation of CO₂ Storage; Hydrocarbon Extraction, Geology, Reservoir Simulation and Engineering; Formation Evaluation; Drilling, Well Testing, Completion, Workover and Cementation; Sustainability; Oil Spill Science, Response & Remediation; Reliability Engineering & Process Safety; Produced and Industrial Waste Water treatment; Environmental Impact Assessment; Improved Oil and Gas Recovery; Oilfield Chemistry; Materials Engineering and so on. Staff working experience cuts across international oil companies, national oil companies, and oil & gas service providers etc. in Europe, the Americas, Africa, Asia and New Zealand.

QAA

The report of QAA's Institutional Audit undertaken in 2015 confirmed that

1. The maintenance of the threshold academic standards of awards offered on behalf of degree-awarding bodies and/or other awarding organisations meets UK expectations.
 2. The quality of student learning opportunities at the provider meets UK expectations
 3. The quality of the information produced by the provider about its provision meets UK expectations.
 4. The enhancement of student learning opportunities at the provider meets UK expectations.
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18 Additional Information

Enrolled students have access to additional, key sources of information about the course and student support including:

- Faculty/School Handbook
- Student Handbook
- Module Guides
- Module Information Directory
- Study Support information