



MSc in Subsea Engineering and Management: Continuing Professional Development Programme

In conjunction with leading subsea firms in the region and with support from One North East's Higher Level Skills Fund, Newcastle University has developed an industrially relevant MSc in Subsea Engineering and Management. We are now accepting applications for September 2010 entry (full-time or part-time) or January 2010 (part-time only) - for more details see <http://www.ncl.ac.uk/marine/postgrad/taught/subsea.htm>

For those who want to study selected areas of subsea engineering/management for Continuing Professional Development, we are also offering individual modules from the Masters Degree as short courses with the option to take the appropriate assessment and gain credit towards a postgraduate qualification.

Modules in Semester 2 of academic year 2009-2010

Module 1A (MAR8055) Fundamentals of Subsea Engineering	20th – 27th January 2010
Module 6 (MAR8050) Deepwater Pipeline Design	8th – 12th February 2010
Module 7 (MST8020) Subsea Project Management Application	22nd – 26th February 2010
Module 8 (MAR8048) Subsea Surveying, Positioning & Installation	8th -12th March 2010
Module 9 (MAR8047) Reliability & Integrity Management of Subsea Systems	22nd – 26th March 2010
Module 10 (MAR8052) Dynamics of Subsea Installations	10th – 14th May 2010

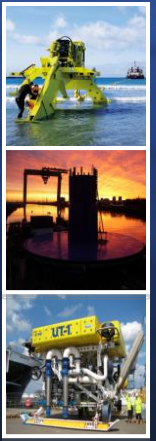
While no formal qualifications are required for entry on to a CPD short course, it should be noted that the module on offer is part of a Masters Degree Programme and teaching is delivered at this level. It would be of benefit if you held qualifications in an appropriate engineering subject, or had relevant engineering work experience.

Please apply for any of the modules above through the University online portal at:
<http://www.ncl.ac.uk/postgraduate/apply/>.

Please contact Michelle Unger at michelle.unger@ncl.ac.uk for further information about the application process.



Images courtesy of CTC Marine Projects and HIC Engineering Business



Fundamentals of Subsea Engineering: 6 day course - 20th-27th January 2010

Fee £850

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For those who want to study selected areas of subsea engineering/management for Continuing Professional Development, we are also offering individual modules from the Masters Degree as short courses with the option to take the appropriate assessment and gain credit towards a postgraduate qualification.

The first of these modules is **Fundamentals of Subsea Engineering** which provides the students with an overview of the main aspects of subsea engineering, from the origins of oil and gas through the design, installation and integrity management of subsea equipment.

Detailed Syllabus*

1. Origin of Oil and Gas: Overview of the generation of oil and gas, including; types, sources, characteristics and transport in source rock.
2. Reservoir Geochemistry: Principles of reservoir geochemistry and applications to exploration, production and appraisal.
3. Drilling Engineering: Overview of the drilling process including rig, hoisting and drill string design, drill bits, fluid flow, rig hydraulics, straight hole drilling, directional drilling, slant and horizontal drilling, well control, well bore completion, subsea tree and blow out prevention.
4. Metocean and Environmental Conditions: Overview of the determination of metocean conditions (meteorological and oceanographic) and the influence of wave, wind, tide and current on marine operations. Introduction to marine ecology and its impact on marine operations.
5. Subsea Structures and Architecture: A description of each of the pieces of the subsea infrastructure, their use and interconnection including subsea trees, flowlines, umbilicals, risers, moorings and pipelines.
6. Subsea Installation and Intervention: Overview of the installation of subsea plant, risers and pipelines and the main intervention methods including AUVs, ROVs and divers.
7. Subsea Operation and Control: An overview of the principle methods of subsea control including electrical, acoustic and hydraulic systems.
8. Field Economics and Future Challenges: An overview of economic decision making in field development and a view of future challenges such as deep water, high temperature, remote fields. Other uses for the subsea infrastructure will also be introduced including carbon capture and storage.

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Please apply for the **Fundamentals of Subsea Engineering** module by **Monday 28th December 2009** through the University online portal at: <http://www.ncl.ac.uk/postgraduate/apply/>.

Please contact Michelle Unger at michelle.unger@ncl.ac.uk for further information about the application process.



*This syllabus may be subject to change before the course start.

Images courtesy of IHC Engineering Business Ltd and CTC Marine Projects.



Deepwater Pipeline Design: 5 day course – 8th - 12th February 2010

Fee £850

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For those who want to study selected areas of subsea engineering/management for Continuing Professional Development, we are also offering individual modules from the Masters Degree as short courses with the option to take the appropriate assessment and gain credit towards a postgraduate qualification.

One of these modules is **Deepwater Pipeline Design** which will describe students the pipeline design challenges associated with deepwater Oil and Gas developments. The syllabus covers all key issues associated with deepwater developments, including remote diverless installation technology, high external collapse loads, and HPHT (high-pressure and high-temperature) operating conditions. The module covers pipeline lateral buckling behaviour, which is often the critical design issue in deepwater. The course uses case studies and examples from the pipeline industry and includes an assignment to produce conceptual design of a deepwater pipeline. The module benefits from local external lecturers who are recognised industry experts in the area of deepwater and HPHT pipeline design.

Detailed Syllabus*

1. Overview of Deepwater Developments: Overview of deepwater Oil and Gas development. Summarises the current state of the art and highlights the design challenges. Outlines the way in which water depth influences the architecture and technology of Oil and Gas infrastructure.
2. Deepwater Field Architecture: Discusses the different ways in which deepwater oil and gas fields are developed. Provides an overview of the flow assurance challenges presented in deepwater regions, and how those challenges drive field architecture.
3. Deepwater Pipeline Installation: Outlines the different options for deepwater pipeline installation, and methods for remote diverless pipeline connection. Provides a brief overview of deepwater geotechnics.
4. Pipeline Structural Design: Discusses the challenge of hydrostatic collapse and buckle arrestor philosophy. Provides a detailed definition of pipeline global buckling behaviour; the main pipeline design challenge in deepwater. Introduction of the concept of effective axial force and show how this drives the pipeline design. Presents design methodologies and methods and current methodologies for buckle mitigation.
5. Deepwater Risers (2 lectures): Describes the different design options available for deepwater risers, and defines the key design drivers for each. General principles of stress analysis: An introduction to the principles of stress analysis and the principles of reliability based design, finite element analysis.

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Please apply for the **Deepwater Pipeline Design** module by **Monday 25th January 2010** through the University online portal at: <http://www.ncl.ac.uk/postgraduate/apply/>.

Please contact Michelle Unger at michelle.unger@ncl.ac.uk for further information about the application process.





Subsea Project Management Application: 5 day course – 22nd - 26th February 2010

Fee £850

In conjunction with leading subsea firms in the region and with support from One North East's Higher Level Skills Fund, Newcastle University has developed an industrially relevant MSc in Subsea Engineering and Management. We are now accepting applications for September 2010 entry (full-time or part-time) or January 2010 (part-time only) - for more details see <http://www.ncl.ac.uk/marine/postgrad/taught/subsea.htm>

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One of these modules **Subsea Project Management Application** is a general introduction to project management. It examines the role of the project manager, the structure of a project and the project team, the project planning process, how to set project aims and objectives, budgeting, risk analysis and how to employ a variety of useful project planning tools. It provides an introduction to and experience of key elements of current project management, focusing on the marine environment; including the application of work breakdown structures, hierarchical planning, the development of a project strategy, performance measurement and the value of computer aided planning tools. Novel methods are also debated. Many of today's organisations are constantly seeking informed and suitably qualified Project Managers to drive a project-based ethos and philosophy. Almost all industrial, commercial, financial, public sector (environment, defence, health, education, local authority) sectors subscribe to this view. As a result, career opportunities for project managers are continually increasing and an awareness of project management is essential.

Detailed Syllabus*

Teaching and learning is through intensive modular attendance for 5 days of lectures, seminars and interactive syndicate work. Both supervised and independent study and research is required of students in researching and submitting assignments. Assessment is by coursework and presentation of group work.

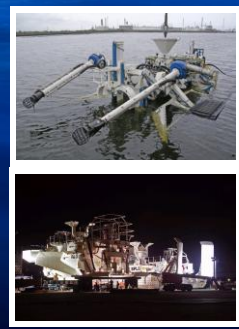
1. Introduction to the theory of project management
2. Project management in the workplace – Project management in practice
3. Risk Management
4. Monitoring and Evaluation
5. Completing the Project
6. Proposing Projects
7. Responding to calls and invitations to tender
8. Specific project planning tools
9. Project management summary

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Please apply for the **Subsea Project Management Application** module by **Monday 25th January 2010** through the University online portal at: <http://www.ncl.ac.uk/postgraduate/apply/>.

Please contact Michelle Unger at michelle.unger@ncl.ac.uk for further information about the application process.





Subsea Surveying, Positioning and Installation: 5 day course – 8th - 12th March 2010

Fee £850

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For those who want to study selected areas of subsea engineering/management for Continuing Professional Development, we are also offering individual modules from the Masters Degree as short courses with the option to take the appropriate assessment and gain credit towards a postgraduate qualification.

One of these modules is **Subsea Surveying, Positioning and Installation** which provides the student with an understanding of the key areas associated with subsea surveying, positioning and installation. The module will introduce the theory behind subsea surveying, geomatics and geotechnics and then describe how these principles are used in the installation of subsea equipment. The installation techniques will be described in detail, primarily by industry experts, including design for installation and the equipment used.

Detailed Syllabus*

1. Subsea Surveying and Geomatics: Introduction to the principles of subsea surveying and geomatics including bathymetry and seismic surveys, positioning systems (surface positioning, visual positioning, GPS and electromagnetic positioning techniques).
2. Offshore Geotechnics: Relevance of geotechnics to subsea engineering, including soil and rock formation, types of soil and rock, seabed stability and scour, trenching and protection.
3. Trenching and Backfill Equipment: Trenching, backfill and piling operations subsea, including the equipment used and the operation factors considered for a successful operation.
4. Installation of Fixed and Flexible Pipelines and Umbilicals: Pipelay techniques including J-lay, S-lay, reel-lay, towing and umbilical lay, detailing the principles of design for installation and including the procedures and equipment used for installation.

While no formal qualifications are required for entry on to a CPD short course, it should be noted that the module on offer is part of a Masters Degree Programme and teaching is delivered at this level. It would be of benefit if you held qualifications in an appropriate engineering subject, or had relevant engineering work experience.

Please apply for the **Subsea Surveying, Positioning and Installation** module by **Monday 8th February 2010** through the University online portal at: <http://www.ncl.ac.uk/postgraduate/apply/>.

Please contact Michelle Unger at michelle.unger@ncl.ac.uk for further information about the application process.





Reliability & Integrity Management of Subsea Systems: 5 day course – 22nd - 26th March 2010

Fee £850

In conjunction with leading subsea firms in the region and with support from One North East's Higher Level Skills Fund, Newcastle University has developed an industrially relevant MSc in Subsea Engineering and Management. We are now accepting applications for September 2010 entry (full-time or part-time) or January 2010 (part-time only) - for more details see <http://www.ncl.ac.uk/marine/postgrad/taught/subsea.htm>

For those who want to study selected areas of subsea engineering/management for Continuing Professional Development, we are also offering individual modules from the Masters Degree as short courses with the option to take the appropriate assessment and gain credit towards a postgraduate qualification.

One of these modules is **Reliability & Integrity Management of Subsea Systems** which will introduce the concepts of reliability and integrity management as applied to subsea systems and will include the application of risk assessment techniques to integrity management, monitoring and inspection methods (including ROVs, AUVs and intelligent inspection vehicles), Failure Modes, Effects and Criticality Analysis (FMECA) and data management systems.

Detailed Syllabus*

1. Introduction to Risk Assessment: Introduction to the concepts of risk including quantitative, semi-quantitative and qualitative approaches, ALARP criteria, individual and societal risk factors.
2. FMECA and HAZOPS: Use of failure modes and effects and criticality analysis to identify system and component failure. Hazard and operability studies to identify hazards in offshore and subsea processes.
3. Monitoring, Intervention and Inspection Methods: The use of ROV's, AUV's, inspection vehicles and divers to monitor and maintain the subsea system.
4. Data Management: The use of data management systems to maintain records and inform the integrity management process.
5. HAZOP tutorial: Group HAZOP study which will be assessed by group report.

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Please apply for the **Reliability & Integrity Management of Subsea Systems** module by **Monday 22nd February 2010** through the University online portal at: <http://www.ncl.ac.uk/postgraduate/apply/>.

Please contact Michelle Unger at michelle.unger@ncl.ac.uk for further information about the application process.



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Images courtesy of Penspen Ltd.



Dynamics of Subsea Installations: 5 day course – 10th - 14th May 2010

Fee £1000

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For those who want to study selected areas of subsea engineering/management for Continuing Professional Development, we are also offering individual modules from the Masters Degree as short courses with the option to take the appropriate assessment and gain credit towards a postgraduate qualification.

One of these modules is **Dynamics of Subsea Installations** which provides the student with an understanding of the key areas associated with dynamics of offshore and subsea installations. The module introduces metocean concepts and their influence on offshore structures and operations and shows how these affect the dynamic motion and structural response of bodies in and under the sea. Students will apply and investigate the theory that they learn using an industrial software packages.

Detailed Syllabus*

1. Metocean Issues: Introduction to wave theories and their influence on offshore operations including:
 - wave, wind and current force predictions,
 - sea states and regular and irregular wave analysis
2. Hydrodynamic Analysis: Study of the application of hydrodynamic principles to offshore and subsea structures including :
 - the analysis of single and multi-degree of freedom systems;
 - use of rigid-body equations of single and multi-body systems;
 - the study of natural frequencies and vortex shedding and vortex induced vibration in pipelines and riser systems;
 - the prediction of the dynamic motion and structural response of fixed and floating offshore structures;
 - hydro-elastic response analysis;
 - influence of floating installation motions on riser behaviour.
3. Orcaflex Software: Introduction to the use of the Orcaflex software to analysis problems in static and dynamic analysis of offshore and subsea systems.

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Please apply for the **Dynamics of Subsea Installations** module by **Monday 12th April 2010** through the University online portal at: <http://www.ncl.ac.uk/postgraduate/apply/>.

Please contact Michelle Unger at michelle.unger@ncl.ac.uk for further information about the application process.



Passionate about subsea

north east
england