



## **External Training Course**

### **Subsea & Marine Design, Operation and Maintenance**

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**From 07 Jul. To 11 Jul. 2025**  
**From 06 Oct. To 10 Oct. 2025**  
**From 08 Dec. To 12 Dec. 2025**

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## **External Training Course:**

### **Subsea & Marine Design, Operation and Maintenance**

**From 07 Jul. To 11 Jul. 2025**

**Fees: 1750 KD**

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## **Course Introduction:**

The offshore oil and gas industry increasingly relies on advanced subsea and marine systems to develop deepwater fields safely and efficiently. These systems must withstand harsh environments while maintaining long-term integrity and performance. As operations move to deeper and more complex locations, professionals must be equipped with a comprehensive understanding of subsea and marine design, operational practices, and maintenance strategies. This intensive 5-day training course is designed to provide participants with a thorough grounding in the essential elements of subsea engineering and marine operations. From the fundamentals of subsea production systems to advanced maintenance techniques and integrity management, the course delivers a balanced mix of theoretical knowledge and practical insights. Participants will explore real-world case studies, gain exposure to industry standards (such as API, DNV, and ISO), and engage in hands-on workshops to reinforce their learning. Whether involved in the design phase, operations, or lifecycle maintenance of subsea assets, this course will enhance participants' ability to ensure safe, reliable, and cost-effective offshore developments.

## **Course Overview:**

**By the end of the course, participants will be able to:**

- Understand key principles of subsea and marine system design.
- Gain insights into operational requirements and risk management.
- Apply best practices in maintenance and inspection of subsea equipment.
- Analyze failure modes and implement integrity management strategies.
- Navigate applicable industry standards and technologies for subsea operations.

## **Course Outline:**

### **Day 1: Fundamentals of Subsea and Marine Systems**

- Introduction to subsea and marine environments.
- Key components of subsea production systems (SPS).
- Marine infrastructure (FPSOs, floating platforms, vessels).
- Design considerations (hydrodynamics, corrosion, fatigue, etc.).
- Materials selection and environmental compatibility.

### **Day 2: Subsea Equipment Design & Installation**

- Wellhead systems, Xmas trees, manifolds.
- Flowlines, risers, umbilicals – types and configurations.
- Design and layout of subsea fields.
- Pipeline installation methods (S-lay, J-lay, reel-lay).
- Subsea intervention systems and ROV/AUV integration.

### **Day 3: Operations and Lifecycle Management**

- Subsea control systems and communication protocols.
- Operational challenges in deepwater environments.
- Flow assurance: wax, hydrates, and asphaltenes.
- Operational readiness and commissioning.
- Health, Safety, and Environmental (HSE) considerations.

### **Day 4: Maintenance, Integrity & Inspection**

- Asset integrity management.
- Inspection techniques: ROV-based, acoustic, and visual.
- Non-destructive testing (NDT) in subsea conditions.
- Condition monitoring and predictive maintenance.
- Cathodic protection systems for marine equipment.

### **Day 5: Case Studies, Risk Management & Workshop**

- Case studies of failure incidents and lessons learned.
- Risk analysis and mitigation strategies.
- Compliance with ISO, API, DNV, and IMCA standards.
- Workshop: Design review and operational scenario planning.
- Group discussion and Q&A.

## **Training Methodology:**

Interactive presentations.

Real-world case studies and problem-solving.

Videos and animations for equipment visualization.

Hands-on exercises and workshops.

Group discussions and knowledge-sharing.

## **Program Agenda:**

### **(1<sup>st</sup> Day) Agenda**

8.30	9.00	Opening Remarks (30 Min.).
9.00	11.30	<u>DISCUSS COURSE OBJECTIVES:</u> <ul style="list-style-type: none"> <li>• Fundamentals of Subsea and Marine Systems.</li> <li>• Subsea Equipment Design &amp; Installation.</li> <li>• Operations and Lifecycle Management.</li> <li>• Maintenance, Integrity &amp; Inspection.</li> <li>• Case Studies, Risk Management &amp; Workshop.</li> </ul>
11.30	12.00	Coffee Break
12.00	14.00	<u>Fundamentals of Subsea and Marine Systems:</u> <ul style="list-style-type: none"> <li>• Introduction to subsea and marine environments.</li> <li>• Key components of subsea production systems (SPS).</li> <li>• Marine infrastructure (FPSOs, floating platforms, vessels).</li> <li>• Design considerations (hydrodynamics, corrosion, fatigue, etc.).</li> <li>• Materials selection and environmental compatibility.</li> </ul>
14.00	14.30	Questions and Discussion
14.30		Buffet Lunch

### **(2<sup>nd</sup> Day) Agenda**

9.00	11.30	<u>Subsea Equipment Design &amp; Installation:</u> <ul style="list-style-type: none"> <li>• Wellhead systems, Xmas trees, manifolds.</li> <li>• Flowlines, risers, umbilicals – types and configurations.</li> <li>• Design and layout of subsea fields.</li> </ul>
11.30	12.00	Coffee Break
12.00	14.00	<u>Subsea Equipment Design &amp; Installation:</u> <ul style="list-style-type: none"> <li>• Pipeline installation methods (S-lay, J-lay, reel-lay).</li> <li>• Subsea intervention systems and ROV/AUV integration.</li> </ul>
14.00	14.30	Questions and Discussion
14.30		Buffet Lunch

## (3<sup>rd</sup> Day) Agenda

9.00	11.30	<u>Operations and Lifecycle Management:</u> <ul style="list-style-type: none"> <li>• Subsea control systems and communication protocols.</li> <li>• Operational challenges in deepwater environments.</li> <li>• Flow assurance: wax, hydrates, and asphaltenes.</li> </ul>
11.30	12.00	Coffee Break
12.00	14.00	<u>Operations and Lifecycle Management:</u> <ul style="list-style-type: none"> <li>• Operational readiness and commissioning.</li> <li>• Health, Safety, and Environmental (HSE) considerations.</li> </ul>
14.00	14.30	Questions and Discussion
14.30		Buffet Lunch

## (4<sup>th</sup> Day) Agenda

9.00	11.30	<u>Maintenance, Integrity &amp; Inspection:</u> <ul style="list-style-type: none"> <li>• Asset integrity management.</li> <li>• Inspection techniques: ROV-based, acoustic, and visual.</li> <li>• Non-destructive testing (NDT) in subsea conditions.</li> </ul>
11.30	12.00	Coffee Break
12.00	14.00	<u>Maintenance, Integrity &amp; Inspection:</u> <ul style="list-style-type: none"> <li>• Condition monitoring and predictive maintenance.</li> <li>• Cathodic protection systems for marine equipment.</li> </ul>
14.00	14.30	Questions and Discussion
14.30		Buffet Lunch

## (5<sup>th</sup> Day) Agenda

9.00	11.30	<u>Case Studies, Risk Management &amp; Workshop:</u> <ul style="list-style-type: none"> <li>• Case studies of failure incidents and lessons learned.</li> <li>• Risk analysis and mitigation strategies.</li> <li>• Compliance with ISO, API, DNV, and IMCA standards.</li> </ul>
11.30	12.00	Coffee Break
12.00	14.00	<u>Case Studies, Risk Management &amp; Workshop:</u> <ul style="list-style-type: none"> <li>• Workshop: Design review and operational scenario planning.</li> <li>• Group discussion and Q&amp;A.</li> </ul>
14.00	14.30	Questions and Discussion
14.30		Buffet Lunch