

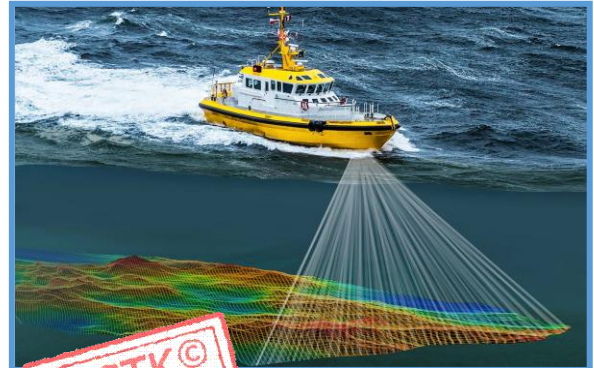
COURSE OVERVIEW OE0096
Introduction to Hydrography: Principles and Applications

Course Title

Introduction to Hydrography: Principles and Applications

Course Date/Venue

Session 1: August 10-14, 2025/Boardroom 1,
 Elite Byblos Hotel Al Barsha,
 Sheikh Zayed Road, Dubai, UAE
 Session 2: December 08-12, 2025/Fujairah
 Meeting Room, Grand Millennium
 Al Wahda Hotel, Abu Dhabi, UAE



Course Reference

OE0096

Course Duration/Credits

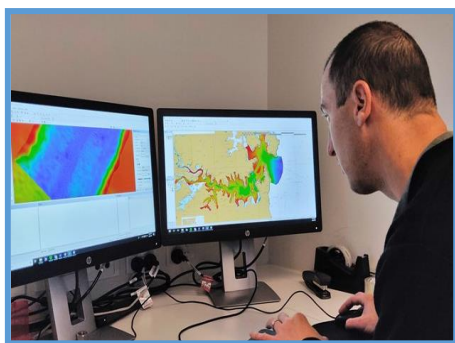
Five days/3.0 CEUs/30 PDHs



Course Description



This practical and highly-interactive course includes real-life case studies and exercises where participants will be engaged in a series of interactive small groups and class workshops.



This course is designed to provide participants with a detailed and up-to-date overview on the Introduction to Hydrography: Principles and Applications. It covers the scope of hydrography and its importance in petroleum exploration; the purpose of hydrographic surveys including hydrographic survey standards and regulations; the geodesy and coordinate systems in hydrography; the fundamentals and data acquisition of bathymetry; the hydrographic data quality control and management; and the hydrographic survey platforms.



Further, the course will also discuss the bathymetric survey techniques; the tides and water levels in hydrography; the positioning and navigation in hydrography and sonar and acoustic systems; integrating remote sensing in hydrography; the data acquisition and pre-processing as well as bathymetric data processing and visualization; the seabed classification, sediment analysis, hydrographic charting and nautical mapping; and the error analysis, data correction techniques and GIS applications in hydrography.

During this interactive course, participants will learn the role of hydrography in offshore drilling; the seabed mapping for pipeline routing and platform installation; the underwater infrastructure inspection and maintenance; the coastal and marine environmental monitoring; the hydrographic risk assessment for offshore operations; and the hydrographic surveying for port and harbor development through depth measurement and dredging planning as well as navigational safety and ship channel maintenance.

Course Objectives

Upon the successful completion of this course, each participant will be able to:-

- Apply and gain a fundamental knowledge on the principles and applications of hydrography
- Discuss the scope of hydrography and its importance in petroleum exploration
- Explain the purpose of hydrographic surveys including hydrographic survey standards and regulations
- Recognize geodesy and coordinate systems in hydrography as well as the fundamentals and data acquisition of bathymetry
- Carryout hydrographic data quality control and management and discuss hydrographic survey platforms
- Employ bathymetric survey techniques and identify tides and water levels in hydrography
- Illustrate positioning and navigation in hydrography and discuss sonar and acoustic systems
- Integrate remote sensing in hydrography and apply data acquisition and pre-processing as well as bathymetric data processing and visualization
- Apply seabed classification, sediment analysis, hydrographic charting and nautical mapping
- Carryout error analysis, data correction techniques and GIS applications in hydrography
- Define the role of hydrography in offshore drilling and illustrate seabed mapping for pipeline routing and platform installation
- Employ underwater infrastructure inspection and maintenance, coastal and marine environmental monitoring and hydrographic risk assessment for offshore operations
- Illustrate hydrographic surveying for port and harbor development through depth measurement and dredging planning as well as navigational safety and ship channel maintenance

Exclusive Smart Training Kit - H-STK®



Participants of this course will receive the exclusive “Haward Smart Training Kit” (H-STK®). The H-STK® consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.

Who Should Attend

This course provides an overview of all significant aspects and considerations of introduction to hydrography: principles and applications for marine professionals, geospatial and geomatics experts, researchers and academics, government and military personnel, environmental and conservation professionals, industry professionals, technology developers, policy makers and planners, hobbyists and enthusiasts and other technical staff.

Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

- 30% Lectures
- 20% Practical Workshops & Work Presentations
- 30% Hands-on Practical Exercises & Case Studies
- 20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

Course Fee


US\$ 8,000 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours

Certificate Accreditations

Certificates are accredited by the following international accreditation organizations: -

- 

British Accreditation Council (BAC)

Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

- 

The International Accreditors for Continuing Education and Training (IACET - USA)

Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

Haward Technology’s courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

Haward Technology Middle East will award **3.0 CEUs** (Continuing Education Units) or **30 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant’s involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant’s CEU and PDH Transcript of Records upon request.

Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:



Captain Sergey Kole, is an **International Expert** in **Port Operations & Management** with over **25 years** of **onshore** and **offshore** experience within the **Oil & Gas, Petroleum** and **Refinery** industry. His expertise widely covers in the areas of **Tanker Vetting & Inspection, International Ship and Port Facility Security Code (ISPS) Code, Marine Vetting & Audit Criteria Manual for Tank Ships, Marine & Ship Vetting, Vetting Process & Marine Safety Criteria, Tanker Vetting for Terminals, Ship Vetting, Marine Terminal Operations & Management, Marine Hazards Prevention & Control, Marine Communication Systems, Marine Safety, Ship Management, Oil Terminal Planning, Vessels Operations, Terminal Management & Support Operations, Oil Spill Contingency & Emergency Response Plan, Qualitative & Quantitative Risk Assessments, Terminal Planning, Oil Tanker Storage Planning, Cargo Transfer Handling, Loading & Discharging, Ballasting, Tank Cleaning, Crude Oil Washing, Ship Handling, Radar Navigation, Navigational Aids, Meteorological Data Review, Sea & Weather Condition Monitoring, ERT Vessel Coordination and Transport & Distribution Carrier.** Further, he is well-versed in **Sea-going Personnel Human Resource Management, Survival Craft & Rescue Boats, Dynamic Positioning, Anti-Piracy Preparedness & Response, Shipping Maintenance System, Oil & Chemical Tanker, Liquefied Gas Tanker, Inert Gas System, Crude Oil Tanker & Gas Carrier, Offshore Logistics & Supply Management, Marine Fleet Management & Operations, International Maritime Conventions & Codes, Marine Radar, Port Traffic Control Systems & Instrumentation, H²S Hazard Awareness, Firefighting, Medical Care Onboard, Carriage of Dangerous & Hazardous Substances and Ballast Water & Sediment Management.**

During his career life, Captain Sergey has gained his technical and marine expertise through various challenging key positions such as being the **Captain, Operations Director, Project Manager, Port Supervisor, Master** of General Cargo Ship, **Master** of Container Ship, **Chief Officer, Marine Operations Specialist, Marine Coordinator, On-call Duty Officer, Crewing Consultant, 2nd Officer, Ship Chandler** and **Senior Instructor/Trainer** for several international companies such as **ZADCO, AMEC Foster Wheeler, Fircroft Engineering Services, Ltd., Rusalina Yacht Company, Van Oord Offshore, Exxon Neftegaz Ltd (ENL), Jr Shipping, Carisbrooke Shipping, Unicorn Petrol ve Kimya, Q Shipping BV, m/v Tradeport, Miedema Shipping CV, Rah Management BV, Petrobulk Maritime Inc., Empross Lines Ship Management, Melcard Ltd., Aquarian Shell Marine Inc., Mercy Baaba and Square Ltd.**

Captain Sergey has a **Bachelor's** degree in **Navigation in Nautical Studies** from the **Kiev State Academy of Water Transport, Ukraine** and holds a **Master Mariner (Unlimited)** Certificates of Equivalent Competency from the MCA, UK and NSI, Netherlands. Further, he is a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management (ILM)** and has delivered various trainings, courses, seminars, workshops and conferences internationally.

Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the workshop for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1

0730 – 0800	<i>Registration & Coffee</i>
0800 – 0815	<i>Welcome & Introduction</i>
0815 – 0830	PRE-TEST
0830 – 0930	Introduction to Hydrography <i>Definition and Scope of Hydrography • Importance of Hydrography in Petroleum Exploration • Applications in Offshore Operations • Hydrography's Role in Environmental Monitoring</i>
0930 – 0945	<i>Break</i>
0945 – 1030	Hydrographic Surveying Basics <i>Purpose and Objectives of Hydrographic Surveys • Key Principles of Hydrographic Data Collection • Hydrographic Surveying Workflow • Relationship Between Hydrography and Geodesy</i>
1030 – 1130	Hydrographic Survey Standards & Regulations <i>International Hydrographic Organization (IHO) Standards • Maritime Safety and Legal Frameworks • Hydrographic Standards for Offshore Petroleum Operations • Specific Hydrographic Guidelines</i>
1130 – 1215	Geodesy & Coordinate Systems in Hydrography <i>Understanding Geodetic Reference Systems • Horizontal and Vertical Datums • Global Navigation Satellite System (GNSS) Integration • Transformation Between Coordinate Systems</i>
1215 – 1230	<i>Break</i>
1230 – 1330	Bathymetry: Fundamentals & Data Acquisition <i>Definition and Principles of Bathymetric Surveys • Methods of Bathymetric Data Collection • Equipment Used for Bathymetric Surveys • Depth Measurement Techniques (Single-Beam versus Multi-Beam)</i>
1330 – 1420	Hydrographic Data Quality Control & Management <i>Principles of Hydrographic Data Quality Control • Identifying and Minimizing Errors in Data Collection • Quality Assurance in Hydrographic Surveying • Post-Processing and Validation of Hydrographic Data</i>
1420 – 1430	Recap <i>Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow</i>
1430	<i>Lunch & End of Day One</i>

Day 2

0730 – 0830	Hydrographic Survey Platforms <i>Survey Vessels and Their Classifications • Unmanned Surface Vehicles (USVs) and Autonomous Systems • Airborne and Satellite-Based Hydrographic Surveys • Offshore Structures and Their Role in Hydrographic Studies</i>
0830 – 0930	Bathymetric Survey Techniques <i>Single-Beam and Multi-Beam Echo Sounders • Lidar Bathymetry and Airborne Bathymetric Surveys • Side-Scan Sonar Applications • Data Acquisition and Processing</i>
0930 – 0945	<i>Break</i>



0945 – 1100	Tides & Water Levels in Hydrography Principles of Tidal Measurements • Tide Gauges and Water Level Recording Systems • Tidal Corrections in Hydrographic Surveys • Requirements for Tidal Monitoring in Offshore Projects
1100 – 1215	Positioning & Navigation in Hydrography Use of GNSS in Hydrographic Positioning • Differential GNSS and Real-Time Kinematic (RTK) Methods • Vessel Motion Compensation Techniques • Underwater Positioning Technologies
1215 – 1230	Break
1230 – 1330	Sonar & Acoustic Systems for Hydrography Principles of Underwater Acoustics • Side-Scan Sonar Applications in Seabed Mapping • Sub-Bottom Profilers and Sediment Classification • Challenges and Limitations of Sonar-Based Surveys
1330 – 1420	Integration of Remote Sensing in Hydrography Satellite-Based Hydrographic Mapping • Lidar Applications in Hydrography • Optical and Radar Imagery for Water Depth Estimation • Case Studies of Remote Sensing Applications in Offshore Projects
1420 – 1430	Recap Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow
1430	Lunch & End of Day Two

Day 3

0730 – 0830	Data Acquisition & Pre-Processing Data Logging and Management Strategies • Hydrographic Survey Data Formats • Raw Data Filtering and Noise Reduction • Common Challenges in Hydrographic Data Acquisition
0830 – 0930	Bathymetric Data Processing & Visualization Digital Elevation Models (DEM) for Bathymetric Mapping • Gridding and Interpolation Techniques • 3D Visualization and Seabed Modeling • Software Tools for Bathymetric Data Analysis
0930 – 0945	Break
0945 – 1100	Seabed Classification & Sediment Analysis Identifying Seabed Features from Hydrographic Data • Sediment Classification Based on Acoustic and Physical Properties • Ground-Truthing Techniques for Seabed Characterization • Case Studies in Seabed Mapping for Offshore Petroleum Operations
1100 – 1215	Hydrographic Charting & Nautical Mapping Fundamentals of Nautical Chart Creation • International Charting Standards and Symbols • Producing Navigational Charts for Offshore Platforms • Digital Hydrographic Charting and GIS Applications
1215 – 1230	Break
1230 – 1330	Error Analysis & Data Correction Techniques Common Sources of Errors in Hydrographic Surveys • Motion Compensation and Correction Methods • Applying Corrections for Refraction and Sound Velocity Variations • Quality Control in Bathymetric Mapping





1330 – 1420	GIS Applications in Hydrography Role of Geographic Information Systems (GIS) in Hydrography • Integrating Hydrographic Data into GIS Platforms • Spatial Analysis of Hydrographic Datasets • Case Studies on GIS-Based Offshore Project Planning
1420 – 1430	Recap Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow
1430	Lunch & End of Day Three

Day 4

0730 – 0830	Hydrography in Offshore Oil & Gas Exploration Role of Hydrography in Offshore Drilling • Seabed Mapping for Pipeline Routing and Platform Installation • Environmental Considerations in Hydrographic Studies • Case Studies on Hydrography in Petroleum Exploration
0830 – 0930	Underwater Infrastructure Inspection & Maintenance Pipeline and Subsea Structure Monitoring • Seabed Stability Assessment • Applications of ROVs and AUVs in Hydrographic Surveys • Predictive Maintenance Strategies for Offshore Infrastructure
0930 – 0945	Break
0945 – 1100	Coastal & Marine Environmental Monitoring Hydrography's Role in Marine Habitat Assessment • Oil Spill Monitoring and Response Planning • Coastal Erosion and Sediment Transport Studies • Environmental Monitoring Programs
1100 – 1215	Hydrographic Risk Assessment for Offshore Operations Hazard Identification Using Hydrographic Data • Submarine Landslides and Seabed Instability • Risk Mitigation Strategies for Offshore Structures • Safety Protocols and Hydrographic Data Integration
1215 – 1230	Break
1230 – 1330	Hydrographic Surveying for Port & Harbor Development Depth Measurement and Dredging Planning • Navigational Safety and Ship Channel Maintenance • Hydrographic Considerations for LNG Terminals • Port Development Case Studies
1330 – 1420	Future Trends & Innovations in Hydrography Autonomous Hydrographic Surveying Systems • AI and Machine Learning Applications in Hydrography • Advances in Deep-Sea Mapping Technologies • Future Challenges in Offshore Hydrography
1420 – 1430	Recap Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow
1430	Lunch & End of Day Four



Day 5

0730 – 0930	Hydrographic Survey Planning <i>Defining Survey Objectives and Requirements • Selecting Appropriate Survey Equipment and Techniques • Planning Survey Lines and Positioning Strategies • Safety Considerations in Hydrographic Operations</i>
0930 – 0945	Break
0945 – 1100	Data Acquisition & Processing <i>Collecting Bathymetric and Positioning Data • Processing and Filtering Raw Hydrographic Data • Analyzing Bathymetric Features and Seabed Morphology • Practical Exercises in Hydrographic Software Tools</i>
1100 – 1230	Hydrographic Data Interpretation <i>Identifying Seabed Anomalies and Structures • Mapping Sediment Distribution and Seabed Conditions • Using GIS for Hydrographic Analysis • Case Study Exercises on Real Hydrographic Datasets</i>
1215 – 1230	Break
1230 – 1345	Case Study Analysis: Offshore Hydrographic Applications <i>Reviewing Hydrographic Survey Case Studies • Best Practices in Hydrographic Data Integration • Lessons Learned from Offshore Survey Challenges • Team-Based Problem-Solving and Discussion</i>
1330 – 1345	Course Conclusion <i>Using this Course Overview, the Instructor(s) will Brief Participants about Topics that were Covered During the Course</i>
1400 – 1415	POST-TEST
1415 – 1430	<i>Presentation of Course Certificates</i>
1430	<i>Lunch & End of Course</i>

Practical Sessions

This practical and highly-interactive course includes real-life case studies and exercises:-



Course Coordinator

Mari Nakintu, Tel: +971 2 30 91 714, Email: mari1@haward.org