# Hydrographic Surveying Training Course

Professional Development Training Course Outline

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|---|---|---|---|
| **Category** | Construction Institute | **Duration** | 5 Days |
| **Base Fee** | $1,500 USD | **Delivery Mode** | Online / On-site Hybrid |

## Course Introduction

Hydrographic Surveying Training Course is designed to develop advanced skills in marine geospatial data acquisition, seabed mapping, underwater surveying, and oceanographic measurement technologies. This industry-focused course equips participants with practical knowledge of modern hydrographic survey techniques, multibeam echo sounding (MBES), single beam echo sounding (SBES), GNSS positioning, LiDAR bathymetry, marine GIS, and digital ocean mapping solutions. With increasing demand for blue economy development, offshore engineering, coastal resilience, marine infrastructure, and environmental monitoring, skilled hydrographic survey professionals are essential for global maritime projects.

The course integrates theoretical concepts, field-based practical training, real-world case studies, and advanced survey workflows to prepare learners for careers in marine surveying, offshore construction, port development, dredging operations, coastal zone management, renewable energy projects, and underwater engineering. Participants gain expertise in hydrographic data processing, quality control, chart production, seabed classification, and international hydrographic standards, enabling them to deliver accurate and reliable marine survey outputs for modern maritime applications.

## Programme Curriculum

**Hydrographic Surveying Training Course**

**Introduction**

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**Course Duration**

5 days

**Course Objectives**

1. Develop advanced expertise in hydrographic surveying principles and marine geospatial technologies.
2. Understand modern bathymetric survey techniques and underwater mapping workflows.
3. Gain practical skills in single beam and multibeam echo sounder operations.
4. Master GNSS positioning and marine navigation systems for accurate offshore surveys.
5. Learn digital terrain modeling and seabed visualization techniques.
6. Apply marine GIS and geospatial analytics for hydrographic data interpretation.
7. Understand LiDAR bathymetry and remote sensing applications in coastal mapping.
8. Develop skills in hydrographic survey planning, execution, and reporting.
9. Learn international hydrographic standards and quality assurance procedures.
10. Improve competency in offshore engineering surveys and marine construction support.
11. Apply advanced data processing and visualization software technologies.
12. Understand environmental monitoring and sustainable marine surveying practices.
13. Build professional capability for careers in smart oceans, blue economy, and maritime innovation sectors.

**Target Audience**

1. Hydrographic Surveyors and Marine Survey Professionals
2. Civil Engineers involved in Coastal and Offshore Projects
3. GIS Specialists and Geospatial Analysts
4. Oceanographers and Marine Scientists
5. Port, Harbor, and Dredging Engineers
6. Offshore Oil, Gas, and Renewable Energy Professionals
7. Government Agencies and Maritime Authorities
8. Students and Professionals seeking careers in Marine Geospatial Technology

**Course Modules**

**Module 1: Fundamentals of Hydrographic Surveying**

- Introduction to hydrographic science, marine mapping, and seabed exploration
- Principles of bathymetry, tidal measurement, and underwater terrain analysis
- Overview of hydrographic survey equipment and technologies
- Understanding survey planning, field procedures, and safety standards
- Case Study: Coastal mapping project for harbor expansion and navigation improvement

**Module 2: Marine Positioning and Navigation Systems**

- GNSS positioning technologies for high-accuracy marine surveys
- Real-time kinematic (RTK) and differential GNSS applications
- Marine navigation systems and vessel positioning techniques
- Coordinate systems, datums, and geodetic reference frameworks
- **Case Study:** Offshore wind farm positioning and seabed investigation survey

**Module 3: Echo Sounding and Bathymetric Data Collection**

- Principles of Single Beam Echo Sounder (SBES) technology
- Advanced applications of Multibeam Echo Sounder (MBES) systems
- Sound velocity profiling and underwater acoustic correction
- Survey vessel setup and hydrographic equipment calibration
- Case Study: Deep-water bathymetric survey for submarine cable installation

**Module 4: Advanced Hydrographic Survey Technologies**

- Applications of **LiDAR bathymetry and remote sensing**
- Autonomous Surface Vehicles (ASVs) and unmanned survey platforms
- Artificial Intelligence (AI) applications in marine data processing
- Ocean mapping using advanced sensor integration
- **Case Study:** Autonomous marine survey for coastal hazard assessment

**Module 5: Hydrographic Data Processing and Analysis**

- Processing raw survey data from marine sensors
- Cleaning, filtering, and validating bathymetric datasets
- Creating digital elevation models (DEM) and seabed surfaces
- Data visualization using marine GIS platforms
- **Case Study:** Seabed modeling for offshore construction planning

**Module 6: Marine GIS and Digital Mapping Applications**

- Integration of hydrographic data with GIS technology
- Marine spatial data infrastructure (MSDI) concepts
- Creating nautical charts and digital marine maps
- Geospatial analysis for coastal and environmental management
- **Case Study:** GIS-based coastal erosion monitoring program

**Module 7: Hydrographic Survey Standards and Project Management**

- International hydrographic survey standards and guidelines
- Survey quality control and quality assurance procedures
- Hydrographic project planning and resource management
- Risk assessment and offshore survey safety practices
- **Case Study:** Port modernization project using international survey standards

**Module 8: Industry Applications and Professional Practice**

- Hydrographic surveying for ports, harbors, and dredging projects
- Offshore energy and marine infrastructure applications
- Environmental monitoring and conservation mapping
- Career pathways and professional development in hydrography

- **Case Study:** Offshore renewable energy site assessment using hydrographic surveys

### Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

**Register as a group from 3 participants for a Discount**

**Send us an email: info@fineskilltrainingcenter.org or call** *+254769199797*

***Certification***

*Upon successful completion of this training, participants will be issued with a globally- recognized certificate.*

***Tailor-Made Course***

*We also offer tailor-made courses based on your needs.*

**Key Notes**

**a.** The participant must be conversant with English.

**b.** Upon completion of training the participant will be issued with an Authorized Training Certificate

**c.** Course duration is flexible and the contents can be modified to fit any number of days.

**d.** The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

**e.** One-year post-training support Consultation and Coaching provided after the course.

**f.** Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

## Upcoming Scheduled Sessions

| Start Date | End Date | Location | Price |
|---|---|---|---|
| **23 Nov 2026** | 27 Nov 2026 | Online | $1,000 |
| **23 Nov 2026** | 27 Nov 2026 | Physical | $1,500 |

| Start Date | End Date | Location | Price |
|---|---|---|---|
| **23 Nov 2026** | 27 Nov 2026 | Physical | $3,000 |
| **23 Nov 2026** | 27 Nov 2026 | Physical | $3,000 |
| **23 Nov 2026** | 27 Nov 2026 | Physical | $6,000 |
| **23 Nov 2026** | 27 Nov 2026 | Physical | $4,500 |
| **23 Nov 2026** | 27 Nov 2026 | Physical | $6,000 |
| **23 Nov 2026** | 27 Nov 2026 | Physical | $6,000 |

Ready to enroll or request a customized program? Book online or contact us:

**Register Online Now**

Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com