Electronic Chart Display and Information Systems (ECDIS) Training Course

2027 □□□□□ 20 – 16
Kigali (Rwanda)



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Introduction:

Electronic Chart Display and Information Systems ECDIS training instructs navigational personnel in the operation of certified bridge equipment to plan passages and monitor vessel progress against digital hydrographic charts. This one-week course prepares bridge watchkeeping officers and passage planners to construct a validated multi-leg voyage plan and real-time execution logbook. Operating at practitioner depth through structured navigation simulation, the syllabus applies IMO Model Course 1.27 alongside STCW Table A-II/1 to establish verified watchkeeping competence. Delegates complete this Electronic Chart Display and Information Systems ECDIS training with Blackbird Training Centre to reinforce operational navigational safety across electronic waterways.

Course Objectives:

- Distinguish between Raster Navigational Charts and vector Electronic Navigational Charts to determine appropriate data layers for passage monitoring.
- Apply IHO S-52 display categories and safety contour formulas to maintain required under-keel clearance across varying tidal depths.
- Compare primary GNSS position data against secondary radar overlay inputs to detect sensor drift, offset errors, and signal anomalies.
- Select appropriate CATZOC bathymetric data quality classifications to establish realistic vessel safety margins along restricted fairways.
- Interpret ECDIS navigational alarms, isolated danger symbols, and cross-track limits to maintain anti-grounding protection throughout transit.
- Justify route safety check approvals by evaluating system hazard detections against manual visual cross-checks on verified digital charts.

Target Audience:

- Navigational watch officers responsible for bridge operations who must decide when to switch between primary GNSS fixes and radar overlays.
- Passage planning mariners responsible for voyage routing who must choose between manual contour settings and automated safety vector parameters.
- Marine safety superintendents responsible for fleet audit governance who must evaluate whether bridge teams adhere to mandatory ECDIS alarm configurations.
- Harbour pilotage liaisons responsible for fairway navigation who must determine when chart display layers require selective decluttering in port approaches.



Course Outline:

Day 1: System Architecture and Vector Chart Specifications

- Raster Charts vs Vector Charts: Evaluating Display Resolution and Layered Data Interactivity Across Workstations
- IMO Performance Standards: Reviewing Carriage Mandates Under SOLAS Chapter V Regulations V/18 and V/19
- ENC Cell Hierarchies: Navigating Hydrographic Scale Bands from Berthing to Ocean Usage Classifications
- ECDIS Hardware Architecture: Verifying IEC 61174 Operational Testing Requirements and Uninterruptible Power Supplies
- Presentation Library Formats: Examining Symbol Geometries Defined Under the IHO S-52 Display Standard

Day 2: Data Security, ENC Maintenance, and Hydrographic Standards

- IHO S-57 vs IHO S-101: Comparing Established Digital Chart Formats with Next-Generation Hydrographic Specifications
- IHO S-63 Data Protection: Managing Security Authentication Keys and Decryption Permits Across Chart Servers
- Electronic Notice Updates: Applying Cumulative Chart Revisions and Manual Corrections to System Databases
- CATZOC Quality Assessment: Evaluating Positional Uncertainty and Depth Accuracy Indicators Across Navigational Cells
- ECDIS Cyber Vulnerabilities: Implementing Removable Media Infection Controls for Critical Bridge Navigation Terminals

Day 3: Passage Planning and Safe Contours Calculation

- Safety Depth vs Safety Contour: Calculating Under-Keel Clearances and Dynamic Draught Settlement Margins
- Cross-Track Distance Setting: Establishing Route Off-Track Limits Based on Spatial Fairway Constraints
- Automated Route Verification: Reviewing Vector Geometry Scans for Submerged Obstructions and Regulated Zones
- Schedule and Waypoint Optimization: Calculating Estimated Time of Arrival Sequences and Wheel-Over Turn Points
- Isolated Danger Displays: Configuring Visual Indicators for Underwater Hazards Lying Within Safe Navigable Waters



Day 4: Route Monitoring, Sensor Integration, and Alarm Handling

- GNSS Inputs vs Dead Reckoning: Managing Position Sensors and Validating Sensor Reliability Offsets
- Radar Overlay Alignment: Correlating ARPA Targets and AIS Identification Data Against Vector Bathymetry
- Lookahead Detection Vectors: Configuring Anti-Grounding Guard Cones and Ahead Danger Vector Sectors
- ECDIS Alarm Management: Diagnosing Critical Navigational Alerts While Mitigating Bridge Acoustic Alarm Fatigue
- Fallback Navigation Procedures: Handling Complete Sensor Blackouts, Jamming Interference, and Secondary Display Failure

Day 5: Simulation Exercises and Voyage Plan Deliverable Compilation

- Standard Display vs Custom Overlays: Selecting Contextual Layers During Simulated Restricted Visibility Approaches
- Simulated Narrow Channel Transit: Applying Previous Anti-Grounding Lookahead Vectors Across Tight Traffic Separation Schemes
- Sensor Failure Recovery Drills: Operating Fallback Position Fixing Modes Under Active Scenario Simulator Stress
- Passage Plan Safety Audit: Cross-Checking Simulator Route Files Against Hydrographic Chart Assessment Checklists
- Final Deliverable Compilation: Finalising the Validated Multi-Leg Passage Plan and Navigational Execution Logbook

Skills You Will Gain:

- ENC Cell Loading
- Safety Contour Calculation
- CATZOC Quality Assessment
- Lookahead Vector Configuration
- Radar Overlay Correlation
- ECDIS Alarm Management
- Route Safety Verification

Why Attend This Course:

- From relying on baseline paper chart habits to executing fully compliant electronic route planning on certified vector systems.
- From misinterpreting ambiguous electronic chart bathymetry to accurately configuring safety contours and CATZOC data margins.
- From struggling with overwhelming bridge acoustic alarms to systematically prioritizing critical anti-grounding warnings.
- From unstandardized voyage documentation to producing a validated multi-leg passage plan and navigational execution logbook.



Conclusion:

Operating electronic charts requires a disciplined methodology for managing navigational data, hydrographic accuracy limits, and live sensor feeds. This course establishes clear operational distinctions between safety depths and safety contours, primary GNSS inputs and auxiliary radar position validation, and standard display profiles versus task-specific chart overlays. Tailored for bridge officers, passage planners, and marine superintendents seeking reliable bridge management capabilities, this practitioner-level course equips delegates with the practical simulation skills necessary to execute safe voyages while avoiding chart misinterpretation and alarm complacency.

Frequently Asked Questions FAQ:

What is an Electronic Chart Display and Information Systems ECDIS course?

An ECDIS course is a professional navigation curriculum instructing bridge officers in the compliant operation of certified electronic chart systems. It covers digital voyage planning, safety contour calculation, sensor integration, alarm management, and electronic chart maintenance to ensure safe maritime transits.

What is the difference between safety depth and safety contour in ECDIS?

Safety depth highlights soundings equal to or shallower than a vessel's dynamic draft, whereas the safety contour creates an unmistakable visual boundary separating safe water from unsafe navigable areas, triggering automated anti-grounding alarms when penetrated by the vessel's lookahead vector.

Which international framework governs this ECDIS training?

This course follows the structure of IMO Model Course 1.27 and aligns with mandatory watchkeeping competencies defined in STCW Tables A-II/1 and A-II/2. Equipment operational requirements and chart display conventions follow IEC 61174, IHO S-52, and IHO S-57 standards.

Is this ECDIS training appropriate for operational navigational watch officers?

Yes, operational navigational watch officers are the primary audience. The practitioner-level syllabus directly develops their required competence in route planning, automated hazard checking, sensor validation, and real-time simulator monitoring under active bridge watchkeeping conditions.

