DIRECTORATE GENERAL OF SHIPPING, MINISTRY OF SHIPPING, GOVERNMENT OF INDIA		
	TRAINING BRANCH	IS/ISO Clause No. 7.1
Ref.: QMS EACQP-07-1 Page No. 1 of 3	Sub: Guidelines on the Electronic Chart Display and Information Systems (ECDIS) Course - (Operational and Management Levels)	File No. TR/CIR/6(11)/2011
Approved by the; Director General of Shipping, GoI.	Circular No. :- STCW 2010 CIRCULAR No. 29 OF 2012	Date: 10.12.2012

The Manila amendments to the STCW Convention, as adopted on 25th June, 2010, have entered into force on 1st January 2012. In accordance with these amendments, all Navigational Officers (Operational and Management Levels), assigned to serve on vessels that are fitted with the Electronic Chart Display and Information Systems (ECDIS), shall be required to undergo approved training program in ECDIS.

2. Accordingly, the Directorate General of Shipping, GoI, the designated Indian Maritime Administration, for the purpose, inter-alia, has formulated the following Guidelines for the conduct of the ECDIS course, as profiled in the enclosure at Annexure - 1; 33 pages). The ID number assigned for this course is 147. The duration of this course is 40 hours (5 days) and the frequency of the course shall not exceed 48 in a calendar year.

3. Any training institute in compliance with the following criteria will be eligible to apply for the conduct of this course;

3.1. Conducting approved competency courses in the nautical discipline, or

3.2. Conducting any one of the approved modular courses relating to Navigational simulation, such as Radar Observer Simulator Course (ROSC), Automatic Radar Plotting Aids (ARPA), Radar, ARPA and Navigation Simulator course (RANSCO) and Ship Manoeuvering Simulator course (SMS), or

3.3. A ship-owning company, or a ship management company, or a ship manning company having a RPS License and conducting an ECDIS course, or manufacturer of an 'Electronic Chart Display and Information System' or its sole authorized representative (provided also that such representative(s) is authorized by the said Manufacturer for the conduct such of a training) , may be allowed to conduct the 5 days generic training course on ECDIS, subject to compliance with the requirements

an appropriate of classroom, faculty, equipment, infrastructure etc., as per the said enclosed guidelines.

4. Institutes falling in the categories specified in the foregoing para 3.1 and 3.2 are hereby allowed to start the said course immediately, **after intimating the Training Branch of this Directorate** along with a prescribed processing fee of ₹ 50,000/-. The date of receipt of a formal acknowledgement from the Training Branch of the DGS shall be treated as the date of deemed approval for the commencement of the said Course.

Such intimation shall contain the details of the arrangements made for the conduct of the course in the enclosed Check List [Annexure 2; 6 pages]. This shall also be accompanied with the stipulated application Form as in Enclosure III of the DGS Order No. 1 of 2003. The institute shall submit a self declaration as prescribed in Annexure – 3. Letter of formal approval shall be issued subsequently on completion of inspection and verification to done expeditiously.

5. Institutes falling in the category specified in para 3.3 above shall follow the normal procedure of the DGS for an approval of courses which shall include the check list [Annexure – 2; 6 pages] and application Form in Enclosure III of the DGS Order No. 1 of 2003, with the requisite processing fees.

6. The Training provider, on deemed approval or formal approval, shall be required to submit details of the number of students/ trainees trained by them; total fee collected on an annual basis, and pay the annual fee of 1% of the said total fee charged from the students,/trainees, which will include tuition and all other fee chargeable there from, every financial year from 1st April to 31st March, the minimum of which shall not be less than. ₹10,000/-.

7. The institute conducting this training program shall obtain a certification under the ISO 9001-2008 quality standard, within six months of the commencement of the course.

8. The aforesaid guidelines shall come into force with an immediate effect and until further orders.

9. This issues with the approval of the Director General of Shipping and ex-officio Additional Secretary to the Government of India.

(Mahua Sarkar)
Deputy Director General of Shipping [Trg.]

Encl: As above.

1. All approved Maritime Training Institutes.
2. Vice Chancellor, Indian Maritime University, Chennai.
3. All Academic Councils, DGS.
4. All Mercantile Marine Departments, DGS.
5. Shipping Masters, GSO, DGS, Mumbai /Kolkata /Chennai.
6. Director, Seamen & Employment Offices, DGS Mumbai /Chennai /Kolkata
7. INSA/ FOSMA /MASSA.
8. INDOS Cell, Mumbai.
9. Engineering Branch, DGS.
10. NT Branch, DGS.
11. Management Representative [QMS], EAC Branch, DGS.
12. Crew Branch, DGS.
13. Computer Cell,DGS.
14. Hindi Cell,DGS.
15. Guard File, DGS.

Guidelines

Electronic Chart Display and Information Systems (ECDIS) Course - (Operational and Management Level)

Part I. BASIC DETAILS OF THE COURSE

1. Aims

This course intends to provide the knowledge, skill and understanding of ECDIS and electronic charts to the thorough extent needed to safely navigate vessels whose primary means of navigation is ECDIS. The course emphasizes both the application and learning of ECDIS in a variety of underway contexts. The course is designed to meet the STCW requirements in the use of ECDIS, as revised by the 2010 Manila Amendments, specifically as these apply to Tables A-II/1, A-II/2 and A-II/3, and also to revised guidelines pertaining to training and assessment in the operational use of ECDIS in Table B-I, assessment in navigational watch keeping, and evaluation of competence, both in Table B-II. This course is also designed to meet the requirements of IMO Model Course 1.27 as revised (2012 Edition).

It should be understood that this is a generic course which requires a structured and complementary on-board ship specific ECDIS familiarization for each shipboard ECDIS system on which the navigating officer serves.

2. Objective

Those who successfully complete this course shall be able to demonstrate sufficient knowledge, skill and understanding of ECDIS navigation and electronic charts to undertake the duties of a navigational watch officer defined by STCW Code, as amended.

3. Course Certificate

Documentary evidence in the format attached (**Annex A**) shall be issued by the DGS approved maritime training institute to all trainees who have successfully completed the DGS approved modular course.

4. Entry Standards

4.1 The trainees undertaking this course shall have undergone pre-sea training for deck cadets and sea service of not less than six months as Deck Cadet, OR

Other trainees such as deck rating who has completed sea service for Certificate of Competency as Second Mate FG or NWKO- NCV and has attended the relevant competency course for the respective grade

4.2 All trainees shall be in possession of Certificate of proficiency for ROSC and ARPA and have at least three months sea service associated with bridge watch keeping duties under supervision of a qualified officer.

4.3 All trainees should also have considerable familiarization with personal computing operating systems, keyboards and mice or trackballs.

5. Required Attendance

100% attendance is compulsory. If the attendance of the trainee is less than 100%, the student shall be required to undertake training in the same module(s) of the course in any subsequent batches, within 3 months to qualify for attendance and re-assessment. If a candidate is absent for more than one day, he needs to repeat the entire course.

6. Course intake limitations

The maximum number of trainees per batch shall not exceed 12. In particular, class size shall be limited to 1 trainee per ECDIS workstation. For example, where a classroom training environment has 12 ECDIS workstations, the maximum class size is 12 trainees.

The ratio of trainees to the faculty for teaching and practical exercises shall be limited to 12:1, and therefore for each batch of 12 trainees there shall be a minimum of two faculties to enable efficient conduct of the Classroom and Simulator training sessions.

7. Teaching Facilities and equipment

7.1 ECDIS Classroom and Simulator stations

Option A: Integrated Classroom cum Simulator station: One Trainee per work station (12 workstations/ 12 trainees) (The minimum number of faculty requirement: 2).

Lecturing with practical demonstration is to be conducted in an integrated ECDIS classroom cum simulator station setting, where each trainee has independent use of a mini simulator with a resident installation of ECDIS with ENC data. All workstations should be networked to faculty station running an integrated navigation simulation application that delivers to each workstation high-fidelity own ship conning controls, navigational aids including GPS, Echo sounder, speed log, Autopilot, AIS and Radar/ARPA , and a visual scene, all of which are interfaced to the ECDIS.

Trainees shall demonstrate proficiencies in independent navigation where each trainee has use of an on-ship ECDIS.

Provision should be made for plotting on standard paper chart(one chart table and relevant charts per batch)Instructor should be able to monitor each trainee's performance on his instructor station, and playback exercise of any trainee for the purpose of debriefing

Or

Option B: Stand-alone ECDIS workstations in Class Room + Independent Navigation in Simulators [12 ECDIS workstations + 6 RANSCO Simulators]/ 12 trainees) (The minimum number of faculty requirement: 2).

Stand –alone ECDIS work stations (1 monitor) per trainee shall be available in Class Room.

Each simulator shall be as per the requirements of RANSCO simulator or higher or mini simulator and shall have high-fidelity own ship conning controls, navigational aids including GPS, Echo sounder, speed log, Autopilot, AIS and Radar/ARPA, and a visual scene, all of which are interfaced to the ECDIS. All simulator workstations shall be networked to instructor station.

Trainees shall demonstrate proficiency in independent navigation using ECDIS in the simulator setting, where each trainee has use of an independent ECDIS. A RANSCO simulator (as a minimum) + 26" visualization may be used as a simulator station. Provision should be made for plotting on standard paper chart (one chart table and relevant charts per batch)Instructor should be able to monitor each trainee's performance on his instructor station, and playback exercise of any trainee for the purpose of debriefing

Or

Option C: Stand-alone ECDIS workstations in Class Room + Independent Navigation in Mini simulators [12 ECDIS workstations + 6 Mini- Simulators]/ 12 trainees) (The minimum number of faculty requirement: 2).

Stand –alone ECDIS work stations (1 monitor) per trainee shall be available in Class Room

Each mini simulator shall have high-fidelity own ship conning controls, navigational aids including GPS, Echo sounder, speed log, Autopilot, AIS and Radar/ARPA, all of which are interfaced to the ECDIS. All simulator workstations shall be networked to instructor station. Trainees shall demonstrate proficiency in independent navigation using ECDIS in the mini simulator setting, where each trainee has use of an independent ECDIS.

Provision should be made for plotting on standard paper chart (one chart table and relevant charts per batch)Instructor should be able to monitor each trainee's performance on his instructor station, and playback exercise of any trainee for the purpose of debriefing

Annex B: Sketch of Classroom and Simulator station layout for Options A, B, and C.

7.2 Materials - Screen projection through PC, CBT or PC presentations, hard-copy handouts,

7.3 Simulation software - The integrated navigation simulation application installed in the ECDIS simulator station as outlined above shall include type-approved ECDIS software to which the simulation delivers sensor input in an underway context.

The navigation simulators should run the same ECDIS software as on the ECDIS workstations.

8 Electronic Charts:

8.1 The S-57 ENC/ SENC of

3 charts each for at least four of the following training areas, such as -, Dover straits, Malacca straits, Singapore straits, New York, Bosporus straits, San Francisco approaches, Felixstowe approaches, Strait of Bab-al-mandeb (Red Sea), Strait of Hormuz (Persian Gulf) and Strait of Gibraltar shall be installed in the ECDIS workstation as well as in the Navigation simulator

8.1.1 Best scale charts for that area shall be used

8.1.2 Three different scale charts of any one area to demonstrate the variations in contents of the chart

8.2 The proprietary vector chart may be used to demonstrate the differences between the ENC and proprietary chart as well as to show smooth transition when navigating from one chart cell to the next.

8.3 ARCS – 1 chart for any one of the above areas. The ARCS chart cell should be adjacent to the ENC chart to enable demonstrate the differences between the two as well as to show smooth transition when navigating from one chart cell to the next.

9. Assessment and evaluation

Assessment and evaluation systems may be in-built into the simulation software (optional).

10. ECDIS simulation performance standards-

10.1 ECDIS simulation equipment shall be capable of simulating the operational capabilities of ECDIS which meet all applicable performance standards adopted by the IMO, which should be type approved by IACS member, and

10.2 shall comply with the Performance Standards for Simulators as specified in Regulation I/12 and Section A-I/12 taking into account B-I/12 of STCW 2010, and

10.3 approval / license from the manufacturer (of type approved shipboard ECDIS concerned) to the manufacturer of the simulation equipment, and

10.4 shall incorporate the means to :

10.4.1 Handle ENC data, licenses and update files

10.4.2 Interface with the following :

10.4.2.1 Position indicator, including emulation of fix quality and, in the instance of GNSS, satellite constellation

10.4.2.2 Alternative position source

10.4.2.3 Heading indicator, true and magnetic, with graphic course recording

10.4.2.4 Speed indicator

10.4.2.5 depth indicator

10.4.2.6 ARPA tracked target data

10.4.2.7 AIS, including control of static data and messaging

10.4.2.8 Radar data including raw video, cursor, EBL and VRM

10.4.2.9 Autopilot capable of control by heading (course), COG and track, where monitored track may be provided through both instructor control and alternatively through ECDIS at own ship

10.5 Provide radar overlay, with functions operating independently through ECDIS at own ship

10.6 Provide audio for navigation and assessment systems when fitted

10.7 Provide communications between all own ships and instructor

10.8 Permit all own ships to interact with one another, depending on the exercise design

10.9 Provide for viewing visual scene by scrolling in all directions horizontally and vertically, or horizontally without scrolling where fixed visual channels cover 360 degrees

10.10 Provide for taking accurate visual bearing

10.11 Permit simultaneous navigation on paper charts associated with area databases as appropriate to ECDIS watch standing

10.12 Provide adequate ad well-lit for plotting on paper charts as the required means of back-up required for single ECDIS installation.

11. ECDIS training environment

The following minimum description of the classroom and equipment is based on an ideal maximum of 12 trainees in a given iteration of the ECDIS training course, such that the entire group could be coached and instructed at once. Simulation training may be divided into groups, each group undertaking the route monitoring exercise at different times.

11.1 OPTION A: - Integrated ECDIS classroom cum Simulator station

Part	Function
12 workstations (one chart table for every batch with all relevant paper charts)	Each workstation shall have Three monitors, One of atleast 19" (270 x 270 mm display) for ECDIS. ECDIS-integrated own ships in lab network, with total navigational and ship control (virtual) functionality in either independent or interactive underway contexts One of atleast 19" (270 x 270 mm display) for Radar/ ARPA / AIS data One of atleast 26" for steering/ engine controls / Echo-sounder, AIS, Speed Log, Auto-pilot, GPS and visualization, ECDIS software and chart data installed on each ECDIS PC; a compatible O.S. on all, to provide: ECDIS, steering / engine controls and visual scene, radar/ ARPA/ are displayed separately and continuously
1 instructor station	Instructor station shall have three monitors, each of atleast 19" (270 x 270 mm displays), , compatible O.S., simulator instructor control and monitoring software installed, to provide:

	One monitor for Parameter settings and bird's eye view One monitor for Design and execution of exercises One monitor for ECDIS Screen and Should be able to project on screen (size atleast 48") for demonstration purpose
1 server / network	Single PC, compatible O.S., simulator system software installed, including a suitable number of own ship models and the specified minimum training areas, to provide: Full network control (self-contained within classroom setting) Site for simulation software and all hydrodynamic modeling data

11.2 Option B:-ECDIS classroom and separate Simulators (RANSCO and above)

ECDIS Classroom:

Part	Function
12 Stand-alone ECDIS workstations	Each workstation shall have one monitor size atleast 19" with 270x270mm display, ECDIS software and chart data installed on PC;, a compatible O.S. on all.
1 Instructor station	Instructor station shall have three monitors, each of atleast 19" (270 x 270 mm displays), compatible O.S., simulator instructor control and monitoring software installed, to provide: One monitor, (270x270mm display) ECDIS Screen One monitor for Design and execution of exercises One monitor for Parameter settings and bird's eye view And Should be able to project on screen (size atleast 48")for demonstration purpose Shall be networked to student stations thereby allowing display(s) of ARPA and ECDIS information (or other training material) for the benefit of the trainees.

Simulator Station

Part	Function
6 Simulators workstations (one chart table per batch with all the relevant paper charts)	Each simulator workstation shall be as per the requirements of RANSCO simulator or higher or mini simulators with atleast a 19" monitor with 270x270 mm ECDIS display and one visualization display. Minimum 19" monitor for ECDIS: to provide 270x270 mm display, minimum 19" monitor for Radar/ ARPA / AIS data, and minimum 26" monitor for steering / engine controls / Echo-sounder, AIS, Speed Log, Auto-pilot, GPS and visualization, ECDIS-integrated own ships in lab network, with total navigational and ship control (virtual) functionality in either independent or interactive underway contexts; ECDIS, steering / engine controls and visual scene, radar/ ARPA/ AIS are displayed separately and continuously
1 instructor station	Instructor station shall have minimum two monitors minimum 19", compatible O.S., simulator instructor control and monitoring software installed, to provide: One monitor for Design and execution of exercises, Parameter settings and bird's eye view One monitor for remote monitoring of the trainee
1 server / network	Single PC, compatible O.S., simulator system software installed, including a suitable number of own ship models and the specified minimum training areas, to provide: Full network control Site for simulation software and all hydrodynamic modeling data

11.3 Option C: ECDIS classroom and separate Mini Simulators

ECDIS Classroom:

Part	Function
12 stand-alone ECDIS workstations	Each workstation shall have one monitor size atleast 19"with 270x270mm display, ECDIS software and chart data installed on each ECDIS PC;, a compatible O.S. on all.
1 instructor station	Instructor station shall have three monitors, each of atleast 19" (270 x 270 mm displays), compatible O.S., simulator instructor control and monitoring software installed, to provide: One monitor, (270x270mm display) ECDIS Screen One monitor for Design and execution of exercises One monitor for Parameter settings and bird's eye view And

	Should be able to project on screen (size atleast 48") for demonstration purpose Shall be networked to student stations thereby allowing display(s) of ARPA and ECDIS information (or other training material) for the benefit of the trainees.

Mini Simulators

Part	Function
6 mini simulator workstations one chart table for every batch with all relevant paper charts)	Each mini simulator workstation shall have three monitors, One of atleast 19" (270 x 270 mm display) for ECDIS. ECDIS-integrated own ships in lab network, with total navigational and ship control (virtual) functionality in either independent or interactive underway contexts One of atleast 19" (270 x 270 mm) for Radar/ ARPA / AIS data One of atleast 26" for steering/ engine controls / Echo-sounder, AIS, Speed Log, Auto-pilot, GPS and visualization, ECDIS software and chart data installed on each ECDIS PC;, a compatible O.S. on all, to provide: ECDIS, steering / engine controls and visual scene, radar/ ARPA/ AIS are displayed separately and continuously
1 instructor station	Instructor station shall have two monitors, minimum 19" , compatible O.S., simulator instructor control and monitoring software installed, to provide: Design and execution of exercises- Parameter settings and bird's eye view Remote monitoring of the trainee
1 server / network	Single PC, , compatible O.S., , simulator system software installed, including a suitable number of own ship models and the specified minimum training areas, to provide: Full network control Site for simulation software and all hydrodynamic modeling data

Any other combination of equipments may be acceptable to the directorate provided the system can deliver equal functionality as per these guidelines.

12. **Class Room Infrastructure (Carpet Area in square meters):**

12.1 Option A (Classroom cum Navigation Lab):
Not less than 30 sq. m for capacity of 6 trainees; 45 sq. m for capacity of 12 trainees; and pro rata between 6 and 12 trainees.

12.2 Option B (ECDIS classroom and separate navigation simulators):
12.2.1 Class Room- Not less than 15 sq. m and Navigation simulator- Not less than 15 sq. m for capacity of 6 trainees;
12.2.2 Class Room- Not less than 25sq. m and Navigation simulator- Not less than 20 sq. m for capacity of 12 trainees; and pro rata between 6 and 12 trainees.

12.3 Option C (ECDIS classroom and separate mini simulators):
12.3.1 Class Room- Not less than 15 sq. m and Navigation Lab- Not less than 15 sq. m for capacity of 6 trainees;
12.3.2 Class Room- Not less than 25 sq. m and Navigation Lab- Not less than - 20 sq. m for capacity of 12 trainees; and pro rata between 6 and 12 trainees.

12.4 1 White board

12.5 Provision for Projector and screen.

12.6 Communication facilities between simulator station and the instructor station. The Class room and Navigation simulator shall be fully air conditioned.

N.B. No approval for less than 6 trainees shall be considered.

For all the options, the minimum number of full-time designated faculty requirement for each course is 2 or equivalent.

13. Faculty qualifications

The following are the minimum qualification for faculty of an ECDIS course that adheres to the recommendations of this modular course. The faculty should:

13.1 The Course in charge and the faculty shall hold a Certificate of Competency as Master (FG) issued or recognized by Government of India.

13.1.1 Have successfully completed the Training for Trainers and Assessors course or successfully complete within 6 months of joining the institute.

13.1.2 Have successfully completed an approved ECDIS course **which meets the requirements of STCW regulation I/6 and I/12**.

13.1.3 Have completed type specific familiarization relevant to the equipment used for training.

13.1.4 Have a detailed knowledge of the requirements of SOLAS chapters V/2, V/19, and V/27-20, as amended;

13.1.5 Have an up-to-date knowledge of the IMO ECDIS Performance Standards currently in force and knowledge of relevant STCW requirements and guidance;

13.1.6 Have an up-to-date knowledge of ENC's.

13.1.7. Be fully aware of current ENC data transfer standards and presentation libraries of the IHO, methods of ENC licensing and updating and current IMO recommendations on ECDIS software and other issues;

14. Course Outline and Timetable

14.1 Overview

The following section presents the topics of the 40-hour ECDIS course in a simplified outline format. The 37 topics are organized into 5 general Subject Areas. The total hours are allocated in the following manner:

Practice & Lecture	Independent navigation ECDIS	Evaluation
29.0 hrs	8.0 hrs	3.0 hrs

The duration allocated to each topic is presented in the Course Timetables, and is repeated in Detailed Teaching Syllabus.

14.2 Course Outline - Total 40.0 hours

Subject Area and topics	1. Hours
Elements of ECDIS 1. Course introduction & familiarization plan 2. Purpose of ECDIS 3. Value to navigation 4. Correct & incorrect use 5. Work station start, stop & layout 6. Vessel position 7. Position source 8. Basic navigation 9. Heading & drift vectors Ex.1 Simulator exercise – open sea (basic integrated navigation) 10. Understanding chart data 11. Chart quality & accuracy 12. Chart organization	2. 9.5
Watch keeping with ECDIS 13. Sensors	3. 9.0

Subject Area and topics	1. Hours
14. Ports & data feeds 15. Chart selection 16. Chart information 17. Changing the settings 18. Chart scaling 19. Information layers Ex.2 Simulator exercise – coastal waters (chart display settings) 20. System & position alarms 21. Depth & contour alarms	
ECDIS Route Planning and Monitoring 22. Vessel maneuvering characteristics 23. Route planning by table 24. Route planning by chart 25. Track limits 26. Checking plan for safety Ex.3 Simulator exercise – coastal & restricted waters (navigation alarms & route scheduling) 27. Additional Navigation Information 28. Route schedule 29. User charts in route planning	4. 9.0

Subject Area and topics	1. Hours
ECDIS Targets, Charts & System 30. ARPA/ Radar overlay 31. AIS functions 32. Procuring & installing chart data 33. Installing chart corrections Ex.4 Simulator exercise – restricted waters (advanced integrated navigation with ECDIS) 34. System reset & backup 35. Archiving ECDIS data and data logging	5. 6.5
ECDIS Responsibility & Assessment 36. Responsibility 37. Effective navigation with ECDIS Ev.1 Written evaluation Ev.2 Simulator exercise – coastal & restricted waters (underway ECDIS navigation assessment)	6. 6.0

14.3 Course Timetable – 5 days, 40.0 hours minimum, OPTION A

Period Day	1st Period (2.0 hours)	2nd Period (2.0 hours)	3rd Period (2.0 hours)	4th Period (2.0 hours)
Day 1	**Elements of ECDIS** 1. Course introduction & familiarization plan 2. Purpose of ECDIS 3.Value to navigation 4. Correct & incorrect use	5. Work station start, stop & layout 6. Vessel position 7. Position source	8. Basic navigation 9. Heading & drift vectors 10. Understanding chart data	Ex.1 Simulator exercise – open sea (basic integrated navigation)

Day 2	1. Chart quality & accuracy 2. Chart organization **Watch keeping with ECDIS** 3. Sensors 4. Ports & data feeds	5.Chart selection 6.Chart information	7.Changing the settings 8.Chart scaling 9. Information layers	Ex.2 Simulator exercise – coastal waters (chart display settings)
Day 3	1.System & position alarms 2.Depth & contour alarms	**ECDIS Route Planning and Monitoring** 3.Vessel maneuvering characteristics 4.Route planning by table	5.Route planning by chart 6.Track limits 7.Checking plan for safety	Ex.3 Simulator exercise – coastal & restricted waters (navigation alarms & route scheduling)
Day 4	1.Additional Navigational Information 2.Route schedule 3.User charts in route planning	**ECDIS Targets, Charts & System** 4.ARPA/ Radar overlay 5. AIS functions	6.Procuring & installing chart data 7.Installing chart corrections	Ex.4 Simulator exercise – restricted waters (advanced integrated navigation with ECDIS)
Day 5	1.System reset & backup 2.Archiving ECDIS data and data logging	**ECDIS Responsibility & Assessment** 3.Responsibility	4.Effective navigation with ECDIS Ev.1 Written evaluation	Ev.2 Simulator exercise – coastal & restricted waters (underway ECDIS navigation assessment)

NOTE: Typically the Simulator Exercise time will be divided as follows: Briefing, Passage Planning and Debriefing (1 hr) and Simulator Exercise (1 hr). Teaching staff should note timetables are suggestions only as regards sequence and length of time allocated to each objective. These factors may be adapted by instructors to suits individual groups of trainees depending on their experience and ability and on the equipment and staff available for training.

14.4 Course Timetable – 5 days, 40.0 hours minimum, OPTIONS B, C

Day 1

TIME	SUBJECT	Class Room/ Simulator	TIME	SUBJECT	Class Room/ Simulator
	Group 1 (6 trainees)			**Group 2 (6 trainees)**	
0900 - 1100	Elements 1,2,3,4				Class Room
1100-1115	***Tea Break***				
1115-1315	Elements 5,6,7				Class Room
1315-1345	***Lunch Break***				
1345-1545	Elements 8,9,10				Class Room
1545-1600	***Tea Break***				
1600-1630	Planning of Exercise no. 1	Class Room	1600-1630	Planning of Exercise no. 1	Class Room
1630-1730	Carrying out Exercise no. 1	Simulator			

Day 2

TIME	SUBJECT	Class Room/ Simulator	TIME	SUBJECT	Class Room/ Simulator
	Group 1 (6 trainees)			**Group 2 (6 trainees)**	
			0800-0900	Carrying out Exercise no. 1	Simulator
0900-0930	Debriefing of Exercise no. 1				Class Room
0930 - 1030	Elements 11, 12, 13, 14				Class Room
1030-1045	***Tea Break***				
1045-1145	Elements 11, 12, 13, 14 (Contd)				
1145-1345	Elements 15, 16				Class Room
1345-1415	***Lunch Break***				
1415-1615	Elements 17, 18, 19				Class Room
1615-1630	***Tea Break***				
1630-1700	Planning of Exercise 2	Class Room	1630-1700	Planning of Exercise 2	Class Room
1700-1800	Carrying out Exercise 2	Simulator			

Day 3

TIME	SUBJECT	Class Room/ Simulator	TIME	SUBJECT	Class Room/ Simulator
	Group 1 (6 trainees)			**Group 2 (6 trainees)**	
			0800-0900	Carrying out Exercise 2	Simulator
0900-0930	Debriefing of Ex 2				Class Room
0930 - 1130	Elements 20,21				Class Room
1130-1145	***Tea Break***				
1145-1345	Elements 22,23				Class Room
1345-1415	***Lunch Break***				
1415-1615	Elements 24,25,26				Class Room
1615-1630	***Tea Break***				
1630-1700	Planning of Exercise 3	Class Room	1630-1700	Planning of Exercise 3	Class Room
1700-1800	Carrying out Exercise 3	Simulator			

Day 4

TIME	SUBJECT	Class Room/ Simulator	TIME	SUBJECT	Class Room/ Simulator
	Group 1 (6 trainees)			**Group 2 (6 trainees)**	
			0800-0900	Carrying out Exercise 3	Simulator
0900-0930	Debriefing of Ex 3				Class Room
0930 - 1130	Elements 27,28,29				Class Room
1130-1145	***Tea Break***				
1145-1345	Elements 30,31				Class Room
1345-1415	***Lunch Break***				
1415-1615	Elements 32,33				Class Room
1615-1630	***Tea Break***				
1630-1700	Planning of Exercise 4	Class Room	1630-1700	Planning of Exercise 4	Class Room
1700-1800	Carrying out Exercise 4	Simulator			

Day 5

TIME	SUBJECT	Class Room/ Simulator	TIME	SUBJECT	Class Room/ Simulator
	Group 1 (6 trainees)			**Group 2 (6 trainees)**	
			0800-0900	Carrying out Exercise 4	Simulator
0900-0930	Debriefing of Ex 4				Class Room
0930 - 1130	Elements 34,35				Class Room
1130-1145	***Tea Break***				
1145-1345	Element 36				Class Room
1345-1415	***Lunch Break***				
1415-1515	Element 37				Class Room
1515-1615	Evaluation 1 (Written Evaluation)	Class Room	1515-1545	Evaluation 2 (Passage Planning for the Exercise)	Class Room
1615-1630	***Tea Break***		***1545-1600***	***Tea Break***	
1630-1700	Evaluation 2 (Passage Planning for the exercise)	Class Room	1600-1730	Evaluation 2 (Simulation Evaluation)	Simulator
1730-1900	Evaluation 2 (Simulation Evaluation)	Simulator	1730-1830	Evaluation 1 (Written Evaluation)	Class Room

Note :Typically the **Simulator** Exercise time will be divided as follows: Briefing, Passage Planning and Debriefing (1 hr) and Simulator Exercise (1 hr). Teaching staff should note timetables are suggestions only as regards sequence and length of time allocated to each objective. These factors may be adapted by instructors to suit individual groups of trainees depending on their experience and ability and on the equipment and staff available for training.

15. Holidays

15.1 Sundays shall be holidays.

15.2 Independence Day (15th August) and Republic Day (26th January) shall be compulsory holidays.

15.3 Students shall normally enjoy the holidays observed by the Govt. of the State in which the institute is located.

16. Assessment

16.1 As per requirements of IMO Model course 1.27 as revised (2012 Edition).

16.2 All the independent navigation exercises conducted during the course shall be capable of being recorded and replayed during debriefing. Provisions shall be made by the institutes for unsuccessful trainees for providing additional hands-on training and records shall be maintained.

16.3 Unsuccessful trainees shall be re-assessed on the subsequent batch assessments. Every candidate shall be permitted to a maximum of three attempts at the assessment. If any trainee is unsuccessful after three assessment attempts, he shall repeat the entire course.

17. Quality Standards

As per DGS guidelines

18. Inspections

As per DGS guidelines.

19. Fees to Government

As per DGS guidelines.

20. Teaching Aids

A1 IMO Model Course 1.27 (2012 Edition), Electronic Chart Display and Information Systems (ECDIS)
A1.1 Course Framework (Part A of the course)
A1.2 Instructor Manual (Part D of the course)
A2 Audiovisual aids: Video/DVD player, visual presentation, document projector, etc.
A3 Simulator providing on-ship functionality in an underway navigational context
A4 ECDIS workstation including ENC data, deriving inputs from simulation or live sensors
A5 Electronic Navigational Chart (ENC) data, various, including permits, update files
A6 Raster Navigational Charts (RNC) including permits and updates

21. **Recommended Text Books**

T1 *ECDIS and Positioning, by Dr Andy Norris, Publisher: The Nautical Institute, Edition: 2010, ISBN 9781906915117

T2 ECDIS Procedures Guide by Malcolm Instone, Publishers Witherby Seamanship International Ltd., ISBN-10: 1856095355, Ed:March, 2012

T3 *The Electronic Chart, 3rd Edition,
Authors: Horst Hecht, Bernhard Berking, Mathias Jonas and Lee Alexander,
Publisher: Geomares Publishing, 2011T4

T4 The ECDIS Manual, ECDIS Ltd, Witherby Seamanship International, Edition 2012.

22. **Bibliography (B)**

B1 NMEA Interface Standard 0183 v.3.01 (Severna Park, MD, National Marine Electronic Association, 1/2002)

B2 Facts about electronic charts and carriage requirements, 2nd Ed. (Finnish Maritime Administration: Primar Stavanger and IC-ENC, 5/2007)

B3 Gale, H. (2009) From Paper Charts to ECDIS. London: Nautical Institute

B6 *Simulator reference manual (Manufacturer, Date)

B7 *User's manual accompanying the ECDIS software utilized during the training course

B8 IEC 61174- Maritime navigation and radio-communication equipment and systems- Electronic chart display and information system (ECDIS)- Operational and performance requirements, methods of testing and required test results, Edition 3.0, International Electro-technical Commission

B9 IHO S-66, Facts about electronic charts and carriage requirements, Jan 2010 Edition.

B10 IHO S-61, Product specifications for Raster Navigational Charts, Edition 1.0

B11 *IHO S-52 *Specifications for chart content and display aspects of ECDIS*, 5th ed., as amended (IHB, 12/2001)

B12 IHO S-100 *Universal Hydrographic Data Model*, Ed. 1.0.0 (Monaco: IHB, 1/2010)

B13 *IHO S- 57, Electronic Navigational Chart (ENC), Edition 3.1

B14 ECDIS: An Operational Handbook, Adam Weintrit, Faculty of Navigation, Gdynia Maritime University, Poland, Balkema Book, CRC Press, Taylor & Francis Group, ISBN: 9780415482462, publishing date August 2009.

23. **IMO & regulatory references (R)**

R1 *Standards of Training, Certification and Watchkeeping for Seafarers (STCW Convention), as amended

R2 *1974 SOLAS Convention, Regulations V/19, V/20 and V/27, as amended 2009, IMO Res. MSC 282(86)

R.3 *Revised ECDIS Performance Standards, MSC.232 (82), IMO, 12/2006

R4 *ECDIS Performance Standards, IMO Resolution A.817(19) as adopted 11/1995, including Appendices 1 – 5, Appendix 6 as adopted 11/1996 Res. MSC.64(67), and Appendix 7 as adopted 12/1998 Res. MSC.86(70)

R5 *IMO MSC.1/ Circ.1391, Operating anomalies identified within ECDIS

R6 *IMO SN.1/ Circ.266/ Rev. 1, Maintenance of Electronic Chart Display and Information System (ECDIS) software

R7 *Guidelines for Voyage Planning, IMO Res. A.893 (21)

R8 *COLREGS - International Regulations for Preventing Collisions at Sea, 1972, as amended

24. **Electronic media (E)**

E1 ECDIS, Seagull CBT, CD #64
E2 AIS, Seagull CBT, CD #109 v.A, 8/2003
E3 ECDIS Training Course, Videotel CBT #871, 5/2008

Note: Publications marked with '*' are mandatory and must be available in the institute.

25. **Detailed Teaching Syllabus**

The detailed teaching syllabus has been written in learning objective format in which the objective describes what the trainee should do to demonstrate that knowledge has been transferred. All objectives are understood to be prefixed by the words, "The expected learning outcome is that the trainee..."
In order to assist the instructor, reference publications are shown against the learning objectives in addition technical material and teaching aids, which the instructor may wish to use when preparing course material. The material listed in the course framework has been used to structure the detailed teaching syllabus; in particular, teaching aids (indicated by A) and references (indicated by B, E, R, or T) will provide valuable information to instructors. The abbreviations used are:

add.:	Addendum	p.:	Page
app.:	Appendix	pa.:	Paragraph
art.:	Article	reg.:	Regulation
ch.:	Chapter	sect.:	Section
encl.:	Enclosure	tab.	Table

26. **Learning Objectives**

Subject Areas and topics have been outlined in Course Outline and Time Table. In Detailed Teaching Syllabus, the Learning Objectives associated with each topic are provided.

Learning Objectives	Teaching Aid	Reference
Elements of ECDIS (9.5 hours) 1. Course introduction & familiarization plan (0.5 hours) 1.1. General introductions 1.2. Administration 1.3. Familiarization with ECDIS learning environment	A1.1 A3 A4	T3 ch 1 B6 B7
2. Purpose of ECDIS (0.5 hours) 2.1. Introduce revised IMO Performance Standards for ECDIS (June 2006, Resolution MSC.232(82)) 2.2. Differentiate between display options 2.3. Identify information types and areas on navigation display 2.4. Apply presentation of ECDIS data	A1 A1.2 A2 A3 A4 A5	R3 T1 ch.3 & 10.3 T3 ch 2
3. Value to navigation (0.5 hours) 3.1. Recognize factors that characterize and modify chart presentation 3.2. Recognize factors that characterize and modify the data quality 3.3. Manually change scale, area & position of ownship 3.4. Evaluate the route monitoring mode of ECDIS operation 3.5. Explain the value of ECDIS to navigation	A1.2 A2 A3 A4 A5	T1 ch.6.8 T1 ch.8.5 T3 ch 11.1 & 11.2
4. Correct & incorrect use (0.5 hours) 4.1. Use ECDIS within the prevailing navigation situation 4.2. Recognize ways to avoid over-reliance on ECDIS 4.3. Proficiency in the use of ECDIS includes assessing the integrity of the system and all data at all times	A1.2 A2 A3 A4 A5	T1 ch.8.7 T3 ch 7.5,8.1.1 & 11.3.2, B2 B3 B9

Learning Objectives	Teaching Aid	Reference
5. Work station start, stop & layout (0.5 hour) 5.1. Perform standard ECDIS workstation start 5.2. Interpret the ECDIS start windows for sensors requested, sensors found, and selected chart data initializing 5.3. Examine alarms (if any) and determine initial conditions of ECDIS readiness for navigation	A1.2 A2 A3 A4 A5	T1 ch.1 T3 ch 7.3 B7
Learning Objectives	**Teaching Aid**	**Reference**
6. Vessel position (0.5 hours) 6.1. Review user interface methods 6.2. Review display of vessel's position 6.3. Examine position information in the display panels 6.4. Determine a position fix on the ECDIS chart display panel	A1.2 A2 A3 A4 A5	T1 ch.6.7 B7
7. Position source (1.0 hour) 7.1. Review basics of GNSS 7.2. Coordinate GNSS antenna position settings 7.3. Select position system 7.4. Determine fix quality (status) of GNSS	A1.2 A2 A3 A4 A5	T1 ch.2 T3 ch 7.5.5 & 8.1.1 B7
8. Basic navigation (1.0 hour) 8.1. Activate display categories and information layers 8.2. Monitor vessel safety 8.3. Activate route monitoring features	A1.2 A2 A3 A4 A5	T1 ch.6.2 B7
Learning Objectives	**Teaching Aid**	**Reference**
9. Reading & drift vectors (0.5 hours) 9.1. Activate vessel's motion vectors 9.2. Obtain vessels' course and speed from the positioning system 9.3. Interpret the movement of the vessel	A1.2 A2 A3 A4 A5	T1 ch.8.1 R3 R4 B7

Learning Objectives	Teaching Aid	Reference
9.4. Recognize the effects of gyro error 9.5. Graphically monitor own ship's approach to isolated dangers by means of a guard ring		
Ex.1 Simulator exercise – open sea (basic integrated navigation) (2.0 hours)	A3, A4, A5	
10. Understanding chart data (1.0 hour) 10.1. Define the relevant terminology of ECDIS 10.2. Describe the differences between electronic chart systems and ECDIS 10.3. Describe the various electronic chart data formats 10.4. Explain the relationship between ECDIS data and the information presented on the display 10.5. Explain that only information stored as objects with corresponding attributes in the database is available for display 10.6. Describe the chart data selected for display	A1.2 A2 A3 A4 A5 A6	T1 ch.1 & 4T3 ch 4,6 & 7.2 B5 ch.14 B7 B10
Learning Objectives	**Teaching Aid**	**Reference**
11. Chart quality & accuracy (0.5 hours) 11.1. Explain what the accuracy of chart data is dependent upon 11.2. Explain the problems in ECDIS associated with variant datums 11.3. Assess all errors, inaccuracies and ambiguities caused by improper data management 11.4. Explain the need and requirement that electronic chart data must be systematically updated for safe navigation 11.5. Demonstrate issues pertaining to computer monitor display resolution	A1.2 A2 A3 A4 A5	T1 ch.9T3 ch.5 B7

Learning Objectives	Teaching Aid	Reference
12. Chart organization (0.5 hours) 12.1. Introduce the organization of chart data distribution 12.2. Demonstrate the loading (retrieval) of ECDIS data	A1.2 A2 A3 A4 A5	T1 ch.6.3 T3 ch 7.2.2 & 10 B7
Watchkeeping with ECDIS (9.0 hours)		
13. Sensors (0.5 hours) 13.1. Explain the performance limits of devices for position, course over ground, heading, speed, depth, radar, and AIS 13.2. Explain the need for selecting sensor data displayed in ECDIS that is appropriate, unambiguous and accurate 13.3. Evaluate the impairment of ECDIS performance when sensor performance deteriorates or fails 13.4. Explain and analyze various sensor alarms and indications	A1.2 A2 A3 A4 A5	T1 ch.2.16 & 6.1 & 6.5.1 T3 ch. 8 B7
Learning Objectives	Teaching Aid	Reference
14. Ports & data feeds (0.5 hours) 14.1. Select between primary and secondary position source 14.2. Observe automatic change over to secondary position source 14.3. Explain the data reference system of each connected sensor 14.4. Identify the data port assigned to each connected sensor 14.5. Monitor, identify and to a limited extent decode the data stream for each attached sensor 14.6. Assess the plausibility of sensor input values to ECDIS 14.7. Assess the impact on displayed information when a sensor port is improperly selected	A1.2 A2 A3 A4 A5	T1 ch.8.2 & 8.3 B7
15. Chart selection (0.5 hours) 15.1. Demonstrate the variety of methods that chart data can be loaded and changed 15.2. Assess the inaccuracies and ambiguities caused by improper selection of a chart for display 15.3. Display updates in order to review content and to establish	A1.2 A2 A3 A4 A5	T1 ch.6.4 & 9.1 T3 ch 5.3 & 7.2 B7 B8

Learning Objectives	Teaching Aid	Reference
their inclusion in the SENC 15.4. Explain and analyze the data and chart alarms resulting from over-scaling 15.5. Explain and analyze the data and chart alarms resulting from use of a non-WGS84 datum		
Learning Objectives	**Teaching Aid**	**Reference**
16. Chart information (1.0 hour) 16.1. Select the task panel and apply the functions suitable for position monitoring, route monitoring, route creation and editing, trial maneuver, creating and accessing user-defined layers 16.2. Obtain information on charted objects 16.3. Demonstrate how the presentation of navigation marks is changed according to own ship position 16.4. Demonstrate errors of interpretation by the incorrect selection of display categories	A1.2 A2 A3 A4 A5 A6	T1 ch.6.4.6 T3 ch 7.2 B7 B10
17. Changing the settings (1.0 hour) 17.1. Manually test the major functions of hardware, keyboard, mouse / trackball, sensor data, and chart data 17.2. Check and / or select preferred operational settings in the primary task panels and on the primary information panel 17.3. Evaluate alarm and function status indications 17.4. Demonstrate errors of interpretation by the incorrect selection of safety values 17.5. Adjust track length and precision 17.6. Evaluate the range of information recorded in the log table (voyage recording)	A1.2 A2 A3 A4 A5	T1 ch.6.3 & 8.6 T3 ch 7.6 B7

Learning Objectives	Teaching Aid	Reference
18. Chart scaling (0.5 hours) 18.1. Demonstrate scaling of electronic chart display 18.2. Apply the automatic changing of chart scale ratio 18.3. Apply additional chart scale information 18.4. Recognize interpretation errors due to scaling	A1.2 A2 A3 A4 A5	T1 ch.6.4 T3 ch.7.2.4 B7
19. Information layers (1.0 hour) 19.1. Observe effect on information layers and status indications when chart data is loaded and when chart area is under scaled 19.2. Review and apply appropriate day/night palette, display category, and scale 19.3. Select information options in display category of "All other information" 19.4. Differentiate between information layers, user chart layers, and event graphic 19.5. Respond to the indicators representing the loss of displayed information	A1.2 A2 A3 A4 A5	T1 ch.6.5 & 6.9 & 7.3 T3 ch 7.2.1, 7.3.2 & 7.5.6 B7
Ex.2 Simulator exercise – coastal waters (chart display settings) (2.0 hours)	A3, A4, A5	
20. System & position alarms (0.5 hours) 20.1. Identify and respond to alarms for primary and secondary positioning systems 20.2. Identify and respond to chart related alarms 20.3. Identify and respond to ECDIS alarms from autopilot in Track Control	A1.2 A2 A3 A4 A5	T1 ch.8.3 T3 ch 7.5.3 B7
Learning Objectives	Teaching Aid	Reference

21. Depth & contour alarms (1.5 hours) 21.1. Describe route monitoring alarms 21.2. Identify depth-related information 21.3. Set the safety values for route monitoring 21.4. Set the limits pertaining to safe water	A1.2 A2 A3 A4 A5	T1 ch.8.4 & 6.5 T3 ch 7.5 B7
ECDIS Route Planning and Monitoring (9.0 hours) 22. Vessel maneuvering characteristics (0.5 hours) 22.1. Determine methods of alert for wheel over when approaching waypoints 22.2. The navigator must verify positioning especially when ECDIS is connected to auto pilot	A1.2 A2 A3 A4 A5	T1 ch.8.5 T3 ch 7.5 & 8.3 B7
Learning Objectives	**Teaching Aid**	**Reference**
23. Route planning by table (1.0 hour) 23.1. Retrieve a stored route plan 23.2. Approve an existing route for planning, safety review and monitoring 23.3. Select the sea areas and the required waters for planning the whole passage 23.4. Construct a route plan by inputting waypoint data alphanumerically into a route-planning table 23.5. Adjust the route plan by editing, adding and deleting waypoints inside the table 23.6. Adjust curved track planning and wheel over indication 23.7. Establish procedures to name, link, rename, archive, retrieve and delete route files	A1.2 A2 A3 A4 A5	T1 ch.7.1 & 7.5 T3 ch 7.4 B7
24. Route planning by chart (2.0 hours) 24.1. Select the sea areas and the required waters for planning the whole passage 24.2. Construct a route by inputting waypoints directly on the ECDIS display	A1.2 A2 A3 A4 A5	T1 ch.7.2 & 7.3 T3 ch 7.4 B7

24.3. Adjust the route by graphically editing waypoints 24.4. Obtain track courses and distances from the chart 24.5. Obtain relevant route planning information		
25. Track limits (0.5 hours) 25.1. Review the alarm settings used as vessel is proceeding along a monitored route 25.2. Modify the setting of XTE in a previously saved route	A1.2 A2 A3 A4 A5	T1 ch.6.5.3 & 8.3 T3 ch 7.5 B7
Learning Objectives	**Teaching Aid**	**Reference**
26. Checking plan for safety (0.5 hours) 26.1. Check a previously created and saved route for crossing dangers of navigation according to the setting of cross-track distance 26.2. Check the route as it is being created for dangers as listed above 26.3. Assess a route plan based on a safety check	A1.2 A2 A3 A4 A5	T1 ch.7.4 & 7.7 T3 ch 7.4 B7
Ex.3 Simulator exercise – coastal & restricted waters (navigation alarms & route scheduling) (2.0 hours)	A3, A4, A5	
27. Additional Navigational Information (0.5 hours) 27.1. . Discuss various hydro-meteorological data that could be available in ECDIS database.	A1.2 A2 A3 A4 A5	T3 ch 7.5,7.7 & 15.1 B7
Learning Objectives	**Teaching Aid**	**Reference**
28. Route schedule (0.5 hours) 28.1. Observe any deviation from the route schedule setting in use as vessel is proceeding along a route 28.2. Determine expected passage times 28.3. Observe calculations of progress along the planned route 28.4. Using the ETA application in ECDIS, calculate time or speed at a selected waypoint on a monitored route	A1.2 A2 A3 A4 A5	T1 ch.7.5 T3 ch 7.5 & 7.7 B7

29. User charts in route planning (1.5 hours) 29.1. Review the ECDIS function for creating mariner's notes (User Chart) 29.2. Determine effective policy regarding User Charts 29.3. Select User Chart for display 29.4. Use the graphic editor for creating and modifying a User Chart 29.5. Create, save and move an anchor circle guard zone on a User Chart	A1.2 A2 A3 A4 A5	T1 ch.7.3 T3 ch 7.3 B7
ECDIS Targets, Charts & System (6.5 hours)		
30. ARPA/ Radar overlay (0.5 hours) 30.1. Examine sensor setup requirements for ARPA targets 30.2. Determine speed and heading inputs used in ARPA target data calculations 30.3. Access target information display 30.4. Interpret target symbol features 30.5. Operate the user interface controls for radar overlay 30.6. Demonstrate sources of image offset 30.7. Determine source of ECDIS-tracked target data calculations 30.8. Make corrections to own ship's position, using a reference point captured by ARPA.	A1.2 A2 A3 A4 A5	T1 ch.8.4.3 T1 ch.8.4.4 T3 ch 8.2.1, 8.2.2, 8.2.3, 8.5 & 11.1.5 B7
Learning Objectives	**Teaching Aid**	**Reference**
31. AIS functions (0.5 hours) 31.1. Describe what the connection of an Automatic Identification System (AIS) to ECDIS enables 31.2. Examine sensor setup requirements for AIS targets 31.3. Determine alarms and other settings for AIS targets 31.4. Access target information display options 31.5. Interpret AIS target symbol features	A1.2 A2 A3 A4 A5	T1 ch.8.4.5 & 6.9 T3 ch 8.4 B7

32. Procuring & installing chart data (1.5 hours) 32.1. Review chart data structure, terminology, and installation procedures. 32.2. Review chart format requirements for ECDIS 32.3. Examine data distribution sources for ENC 32.4. Examine data distribution sources for SENC conversions 32.5. Examine license structure for various formats, and practice installation 32.6. Extract information on installation history	A1.2 A2 A3 A4 A5	T1 ch.4.4 T3 ch 9.2,9.3 &9.4 B7
Learning Objectives	**Teaching Aid**	**Reference**
33. Installing chart corrections (1.0 hour) 33.1. Explain why electronic chart data is maintained with up-to-date corrections 33.2. Add or modify a chart object using Manual Correction task 33.3. Examine production license options for accessibility of automatic updates 33.4. Install various automatic update formats using various methods 33.5. Extract information on update history 33.6. Apply Temporary and Preliminary Corrections and Navigational Warnings.	A1.2 A2 A3 A4 A5	T1 ch.4.5 & 6.3T3 ch.10 B7
Ex.4 Simulator exercise – restricted waters (advanced integrated navigation with ECDIS) (2.0 hours)	A3, A4, A5	
34. System reset & backup (0.5 hours) 34.1. Explain the intent of regulations on ECDIS back-up arrangements 34.2. Discuss back-up procedures in standalone ECDIS failure event 34.3. Discuss networked back-up procedures in (Master) ECDIS failure event 34.4. Discuss troubleshooting routines in ECDIS 34.5. Recognize consequences to navigation safety while troubleshooting,	A1.2 A2 A3 A4 A5	T1 ch.8.7 & 8.8 T3 ch 11.3 & 11.4 B7

34.6. Recognize consequences to data storage while ECDIS workstation is down		
Learning Objectives	**Teaching Aid**	**Reference**
35. Archiving ECDIS data and data logging (0.5 hours) 35.1. Discuss ECDIS data management utility to work with files associated with ECDIS operations 35.2. Discuss ECDIS data management utility to transfer selected data files between storage media 35.3. Examine requirements and functions of log book task in ECDIS 35.4. Examine display functions of ownship track and tracks of AIS and ARPA targets 35.5. Perform various hard copy print outs	A1.2 A2 A3 A4 A5	T1 ch 8.6 T3 ch 7.6 & 13.9 B7
Learning Objectives	**Teaching Aid**	**Reference**
ECDIS Responsibility & Assessment (6.0 hours)		
36. Responsibility (2.0 hours) 36.1. Review COLREGS 36.2. Review SOLAS, as amended 36.3. Review IMO approval of equipment and installations 36.4. Review IMO carriage requirements 36.5. Review national ECDIS carriage regulations (if applicable) 36.6. Review STCW Code, as amended 36.7. Review flag state (maritime) implementation 36.8. Review IMO training Guidance (and providing review of course) 36.9. Review ISM and IMO requirements of ship owners & operators 36.10. Review IHO relevant regulations 36.11. Review the need to ensure that ECDIS software is kept up to date	A1.2 A2	R1 R3 B11 B12 B13 R7 T1 ch.5 T3 ch13.4

37. Effective navigation with ECDIS (1.0 hour) 37.1. Describe bridge functions incorporating ECDIS 37.2. Re-examine sample bridge operating procedures addressing ECDIS 37.3. Define safe and practical navigation with ECDIS 37.4. Knowledge of the anomalies that ECDIS is susceptible to.	A1.2 A2	T1 ch.10.2 T3 ch 7.3,8.1, 11.2 & 16 R5 R6
Ev.1 Written evaluation (1.0 hour) Ev.2 Simulator exercise – coastal & restricted waters (2.0 hours)	A3, A4, A5	

Specimen

Insititute's LOGO

NAME and ADDRESS of the D.G. Approved Training Institution

INDOS No: **Tel:** **Fax:** **E-Mail:**

Certificate No: _____

THIS IS TO CERTIFY THAT *[full name of candidate]*

Date of Birth .....

Holder of C.D.C. No. ..... Passport No. .....

Certificate of Competency/Proficiency (if any): Grade ..... No. .....

Indian National Data base (INDOS No.) ..... has successfully completed a training course in:

ELECTRONIC CHART DISPLAY AND INFORMATION SYSTEMS [ECDIS]

held from ..... to ..... and has been found qualified.

The course meets the requirements of IMO Model Course 1.27 (Revised 2012) and is approved by the Directorate General of Shipping and meets the requirements relevant to ECDIS as laid down in: Table A-II/1 (Operational Level), Table A-II/2 (Management Level) as well as Table A-II/3 of STCW Convention as amended in 2010.

The candidate has also met the additional criteria specified in the STCW Convention, applicable to the issue of the certificate. This certificate is issued under the authority of the Directorate General of Shipping, Ministry of Shipping, Government of India.

_____
Signature of Candidate

_____
Name and Signature of Course Incharge

Date of Issue : _____
Date of Expiry: UNLIMITED

Colour Photograph (35 mm X 35 mm)

Official Seal

_____
Name and Signature of Dean/Principal

Annex B to ECDIS Circular - OPTION A (Integrated ECDIS Classroom cum Simulator Station) – Representative Lay-out

- Teacher / Student Ratio 1:12
- ECDIS Station / Student Ratio 1:1
- INL Lab / Student Ratio 1:1
- Total Course Duration : 40 hrs

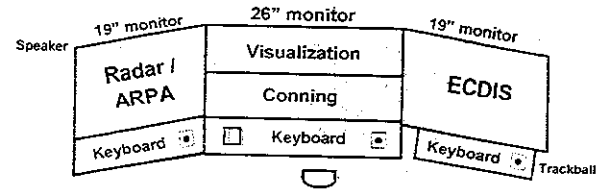
Radar, ECDIS } 19 " 4:3 ratio

Visualization } 26" 16:9 ratio

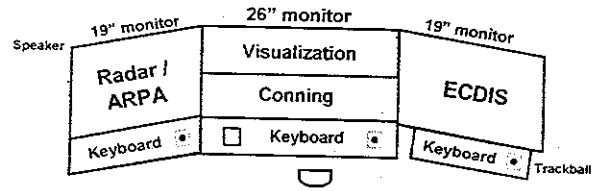
INSTRUCTOR STATION

SCREEN FOR PROJECTION

OPTION A



STATION 1



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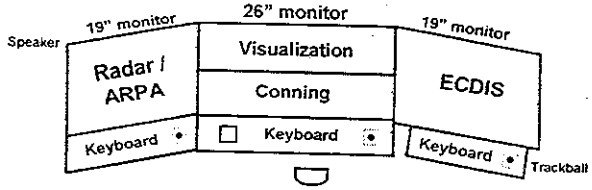

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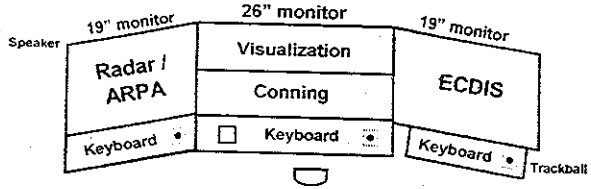

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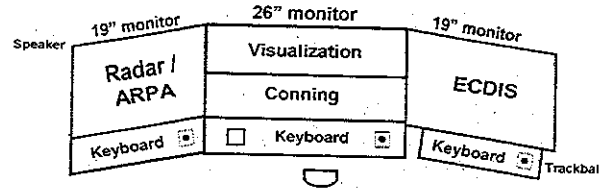

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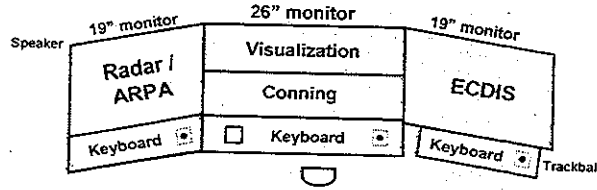

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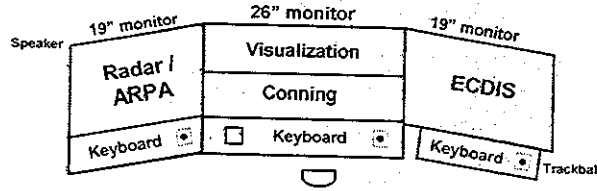

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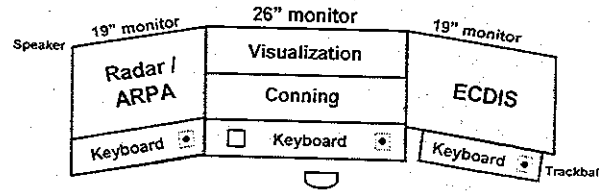

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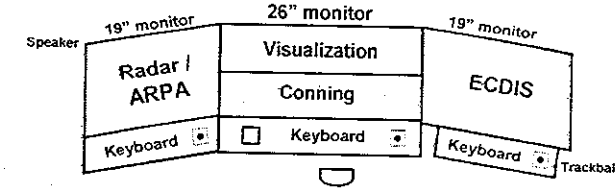
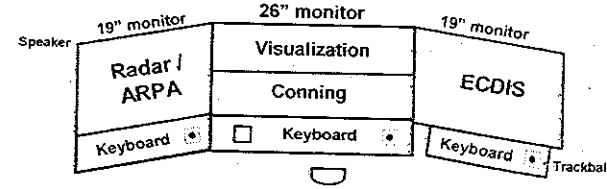
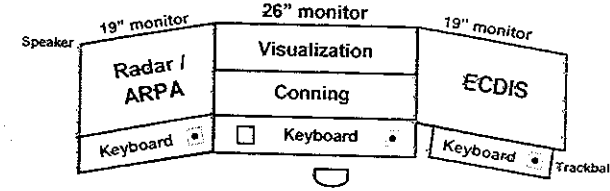


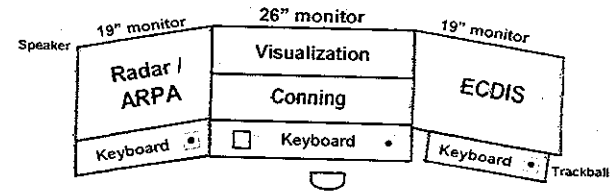
STATION 9



STATION 10



STATION 11



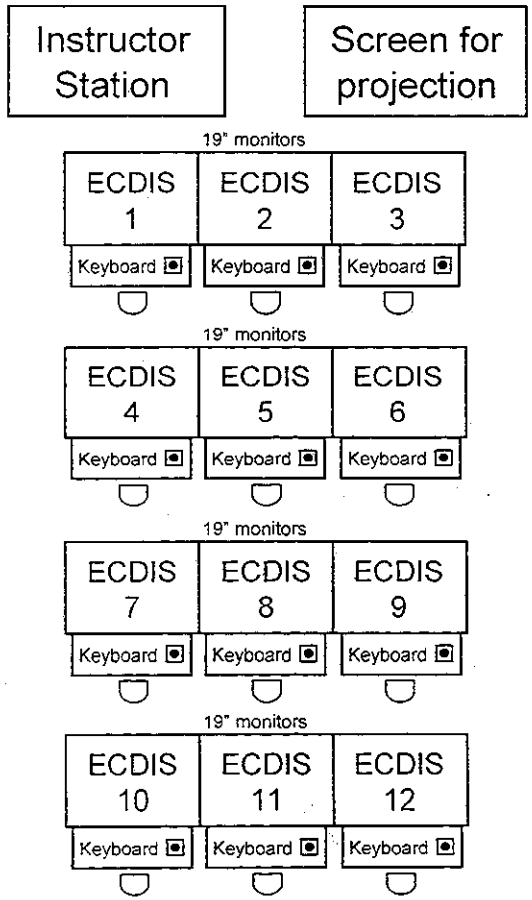
STATION 12

OPTION B (ECDIS Classroom and separate Simulators – RANSCO and above) - Representative Lay-out

Instructor: Shall generate ARPA targets, with vectors, AIS target and vector and provide course, speed and position to the Ship, wind direction and speed, Speed Log, Echo Sounder.
Instructor station : One ECDIS station for instructor + Data Interface for pushing data to student stations.

Classroom / Open lab

- •ECDIS Station / Student Ratio 1:1 max
- •Teacher / Student Radio 1:12 max



1 monitor – ECDIS (4:3) 19 "

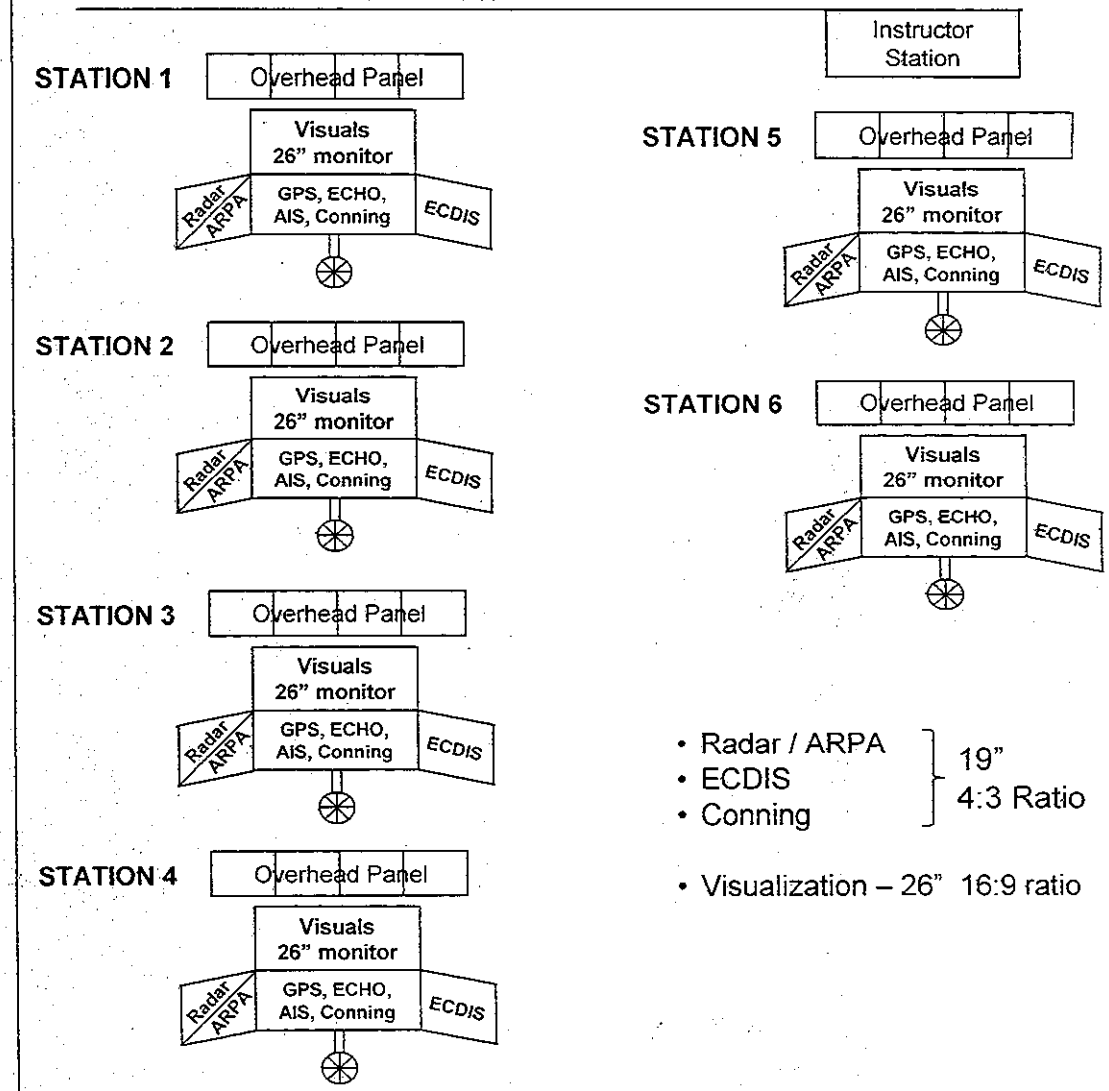
Projector connected to Instructor station : { ECDIS / Radar / Conning

Total Course Duration : 40 hrs

INL

Minimum Required: RANSCO Simulator (with ECDIS and one visualization)

- •Navigation Simulator / Student ratio 6 : 12
- •Navigation Bridge / Student Ratio 1:2 max
- •Teacher / Student Ratio 1:12 max



- Radar / ARPA
- ECDIS
- Conning

} 19" 4:3 Ratio

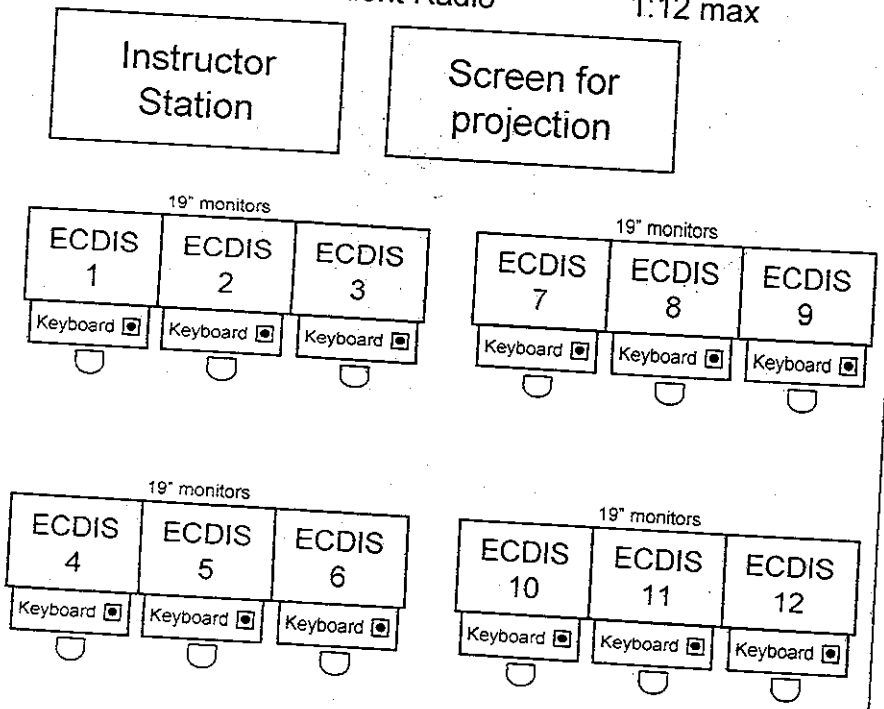
- Visualization – 26" 16:9 ratio

OPTION C (ECDIS Classroom and separate mini simulators) - Representative Lay-out

Instructor: Shall generate radar targets, ARPA tracking, radar overlay and provide course, speed and position to the Ship.
Instructor station : Chart Data Monitor, Control parameters of the ships, Remote control of Student Station.

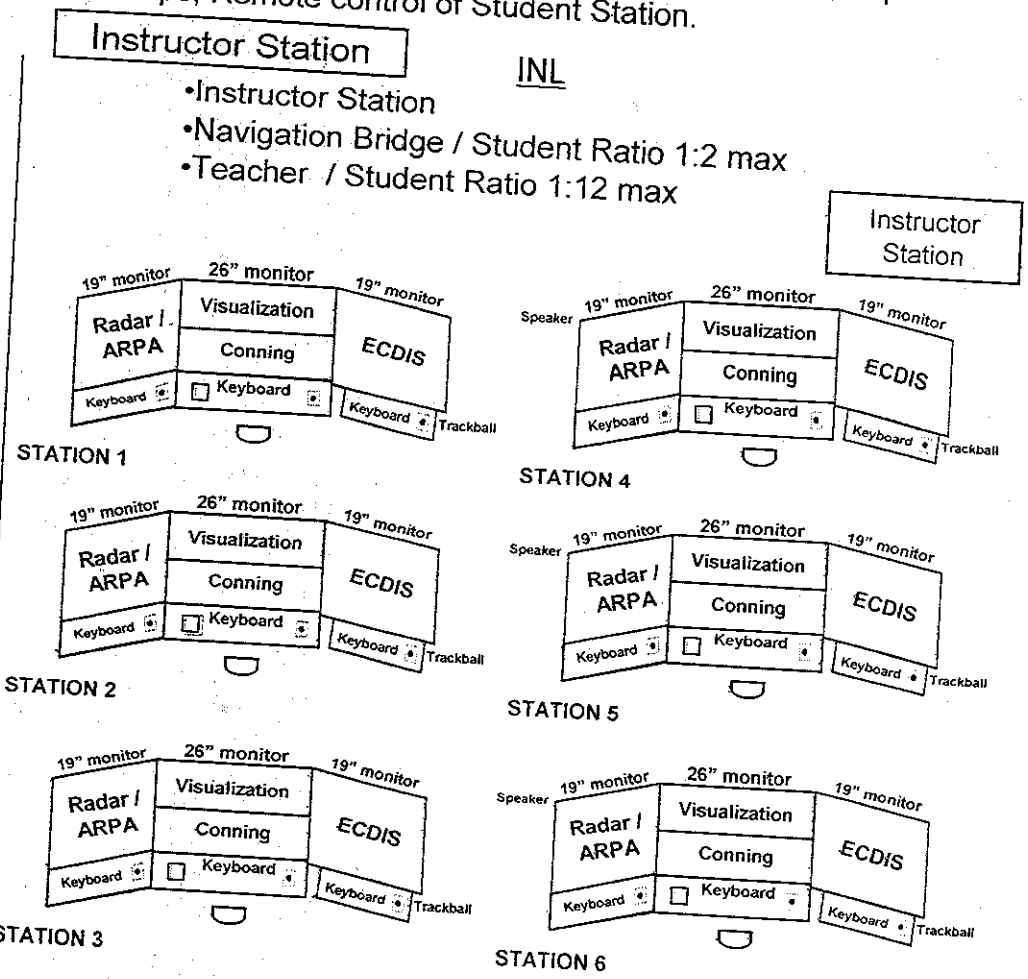
Total Course Duration : 40 hrs
Classroom / Open lab

- ECDIS Station / Student Ratio 1:1 max
- Teacher / Student Radio 1:12 max



1 monitor – ECDIS (4:3) 19 "

Projector connected to Instructor station : { ECDIS / Radar / Conning



- Radar / ARPA
- ECDIS

} 19" 4:3 Ratio

- Visualization – 26" 16:9 ratio

Annexure 2 to STCW 2010 Circular No. 29 of 2012 dated 10th December 2012

CHECK LIST FOR ECDIS COURSE APPROVAL

1	**Requirements**	Remarks
1.1	Is Institute Conducting approved nautical competency courses:	
1.2	Is Institute Conducting any approved Simulator Course ROSC/ARPA/RANSCO/SMS	
1.3	A ship-owning company / Ship management company / Manning company RPSL Number, or manufacturer of ECDIS / Sole authorized representative of Manufacturer	
2	Format of Course Certificate (Sample to attach)	
3	**Course details**	
3.1	Maximum number of trainees per batch (Not to exceed 12)	
3.2	Ratio of trainees to the faculty (Not to exceed 12:1).	
4	Classroom and Simulator station layout Options A, B, and C.	
	(Attach LAYOUT PLAN & Photographs)	
5	**Classroom Equipment**	
5.1	Screen projection through Computer	
5.2	CBT or Computer presentations	
5.3	Hard-copy of course handouts	
6	**Simulation Equipment**	
6.1	Is the ECDIS type approved (By IACS member)	
6.2	Details of approval (Attach Certificate of approval)	
6.3	License /Approval from ECDIS manufacturer to simulator manufacturer	
7	**Electronic Charts**	
7.1	3 charts each for at least four of the prescribed training areas (Areas: _____, _____, _____, _____.)	
	(e.g. Gibraltar, Hormuz, Singapore, Dover), See DGS Guidelines.	
7.2	Scale of charts for that area. (3 different scales)Scales:_____	
7.3	Proprietary vector chart (Details)	
	_____	
	_____	
7.4	ARCS – 1 chart (for one area): Area: _____	

8	**ECDIS simulation performance**	
8.1	Can ECDIS handle ENC data, licenses and update files	
8.2	Is ECDIS Interfaced with :	
	Position indicator	
	Alternative position source	
	Heading indicator, true and magnetic, with graphic course recording	
	Speed indicator	
	depth indicator	
	ARPA tracked target data	
	AIS, Radar overlay(cursor, EBL and VRM)	
	Autopilot	
8.3	Audio for navigation and assessment	
8.4	Communications between all own ships and instructor	
8.5	All own ships can interact with one another	
8.6	Visual scene by scrolling in all directions	
8.7	Take accurate visualbearing, simultaneous navigation on paper charts with chart table	
9	**Class Room Infrastructure (Carpet Area in square meters):**	
9.1	Option A (Classroom cum Navigation Lab): Area of class room:	
	(≥ 30 sq. m for 6 trainees; 45 sq. m for 12 trainees; and pro rata interpolation.	
	Option B (ECDIS classroom and separate navigation simulators): Area of Class room	
	(≥ 15 sq. m and Navigation simulator ≥ 15 sq. m 6 trainees);	
	(≥ 25 sq. m and Nav. simulator ≥ 20 sq. m for 12 trainees; and pro rata interpolation.	
	Option C (ECDIS classroom and separate mini simulators):Area of Class room:	
	(≥ 15 sq. m and Navigation Lab ≥ 15 sq. m for 6 trainees;	
	(≥ 25 sq. m and Navigation Lab ≥ 20 sq. m for 12 trainees; and pro rata interpolation	
9.2	1 White board	
9.3	Projector and screen.	
9.4	Communication facilities between simulator station and the instructor station.	
9.5	Is the Class room and Navigation simulator fully air conditioned.	
	(N.B. No approval for less than 6 trainees)	

10	**FACULTY**	
10.1	Number of Faculty:	
10.2	Course In-Charge & Faculty qualifications	
10.3	Have faculty completed the Training for Trainers and Assessors course	
10.4	Have successfully completed an approved ECDIS course:	
10.5	Have completed ECDIS type specific familiarization:	
10.6	Have a detailed knowledge of the requirements of SOLAS reg. ECDIS	
10.7	Have an up-to-date knowledge of the IMO ECDIS Performance Standards	
10.8	Have an up-to-date knowledge of ENC's.	
10.9	Aware of current ENC data transfer standards	
10.10	Aware of methods of ENC licensing and updating	
11	Assessment	
1.1	Written examination (Sample question Paper)	
11.2	Can the navigation exercises be recorded and replayed.	
12	Quality Standards (Copy of Certificate to attach if available)	
13	Other Teaching Aids - Items marked (*) are mandatory & must be at the institute	
13.1	*A1 IMO Model Course 1.27 (2012 Edition), *A2 Audiovisual aids: Video/DVD player, Projector	
13.2	Recommended Books: *T1 ECDIS and Positioning, by Dr Andy Norris, Publisher: The Nautical Institute *T2 ECDIS Procedures Guide by Malcolm Instone, Publishers Witherby *T3 The Electronic Chart, 3rd Edition, Authors: Horst Hecht, Bernhard Berking T4 The ECDIS Manual, ECDIS Ltd, Witherby Seamanship International	
13.3	Bibliography: *B6 Simulator reference manual (Manufacturer, Date) *B7 User's manual accompanying the ECDIS software utilized during the course *B11 IHO S-52 Specifications for chart content and display aspects of ECDIS, 5th ed., as amended (IHB, 12/2001) *B13 IHO S- 57, Electronic Navigational Chart (ENC), Edition 3.1	
13.3	Reference Material:	

	*R1 STCW 2010 *R2 SOLAS Convention, as amended 2009, IMO Res. MSC 282(86) *R3 Revised ECDIS Performance Standards, MSC.232 (82), IMO, 12/2006 *R4 ECDIS Performance Standards, IMO Resolution A.817(19) as adopted 11/1995 *R5 IMO MSC.1/ Circ.1391, Operating anomalies identified within ECDIS *R6 IMO SN.1/ Circ.266/ Rev. 1, Maintenance of ECDIS software *R7 Guidelines for Voyage Planning, IMO Res. A.893 (21) *R8 COLREGS 1972, as amended	
13.4	Electronic media: E1 ECDIS, Seagull CBT, CD #64 E2 AIS, Seagull CBT, CD #109 v.A, 8/2003 E3 ECDIS Training Course, Videotel CBT #871, 5/2008	
14	BELOW CHECK LIST FOR OPTIONS A or B or C, as applicable, to be attached	

OPTION A: - Integrated ECDIS classroom cum Simulator station

Part	Function	
12 workstations (one chart table for every batch with all relevant paper charts)	Each workstation have three monitors One monitor of at least 19" (270 x 270 mm display) for ECDIS One monitor of atleast 19" (270 x 270 mm display) for Radar/ ARPA / AIS data One monitor of 26" for steering/engine controls / Echo-sounder, AIS, Log, Auto-pilot, GPS and visualization ECDIS software and chart data installed on each ECDIS PC ECDIS, steering/engine controls & visual scene, radar/ ARPA are displayed separately and continuously	
1 instructor station	Instructor station I - have three monitors, each of atleast 19" (270 x 270 mm displays) One Monitor for Parameter settings and bird's eye view One monitor for Design and execution of exercises One monitor for ECDIS Screen Able to project on screen (size 48") for demonstration purpose	
1 server /	Single PC & Full network control	

network		

Option B:- ECDIS classroom and separate Simulators (RANSCO and above)

	ECDIS Classroom:	
Part	**Function**	
12 Stand-alone ECDIS workstations	Each workstation has: One monitor of at least 19" with 270x270mm ECDIS display. ECDIS software and chart data installed on PC.	
1 Instructor station	Instructor station has three monitors, each of at least 19". One monitor for (270x270mm) ECDIS Screen. One monitor for Design and execution of exercises. One monitor for Parameter settings and bird's eye view. Able to project on screen (size 48") for demonstration purpose. Networked to student stations allowing display(s) of ARPA and ECDIS information.	
	Simulator Station	
Part	**Function**	
6 Simulators workstations (one chart table per batch with all the relevant paper charts)	Each simulator workstation of RANSCO simulator or higher with 3 monitors: One monitor of at least 19" for ECDIS (270x270 mm) display. One monitor of at least 19" for Radar/ ARPA / AIS data. One monitor of at least 26" for steering / engine controls / Echo-sounder, AIS, Speed Log, Auto-pilot, GPS and visualization. ECDIS, steering/engine controls & visual, radar/ARPA/AIS displayed separately & continuously.	
1 instructor station	Instructor station have two monitors, each of at least 19": One monitor for Design and execution of exercises - Parameter settings and bird's eye view. One monitor for Remote monitoring of the trainee.	
1 server / network	Single PC with Full network control.	

Option C: ECDIS classroom and separate Mini Simulators

	ECDIS Classroom	
Part	**Function**	
12stand-alone ECDIS workstations	Each workstation has: One monitor of at least 19" with 270x270mm ECDIS display. ECDIS software and chart data installed on PC.	
1 instructor station	Instructor station have three monitors, each of at least 19": One monitor for (270x270mm) ECDIS Screen One monitor for Design and execution of exercises One monitor for Parameter settings and bird's eye view Able to project on screen (size 48") for demonstration purpose Networked to student stations allowing display(s) of ARPA and ECDIS	
	Mini Simulators	
Part	**Function**	
6 mini simulator workstations one chart table for every batch with all relevant paper charts)	Each mini simulator workstation has three monitors: One monitor of 19" (270 x 270 mm) for ECDIS One monitor of 19" (270 x 270 mm) for Radar/ ARPA / AIS data One monitor of 26" for steering/ engine controls / Echo-sounder, AIS, Speed Log, Auto-pilot, GPS and visualization ECDIS software and chart data installed on each ECDIS PC ECDIS, steering / engine controls and visual scene, radar/ ARPA/ AIS are displayed separately and continuously	
1 instructor station	Instructor station has two monitors, each of at least 19": One monitor for Design and execution of exercises- Parameter settings and bird's eye view One monitor for Remote monitoring of the trainees	
1 server / network	Single PC with Full network control	

Annexure - 3

Letter Head of the Institute

Ref.No: .....
Date: .....

Declaration

This is to certify that the information and material fact submitted in the Checklist, Enclosure III of DGS Circular No. 1 of 2003, and the application with all enclosures, for the course ECDIS in respect of the Institute .....

Address .....Pin ....., attached along with, is true to the best of my knowledge and know-how.

We hereby commit that there is no mis-declaration, suppression, false certificate of material fact and in the event anything to that effect is found contrarily, we are subject to any disciplinary action as per the applicable regulations in force.

1. Signature: .....

(Authorised Signature)

2. Signature:.....

(Authorised Signature)

Full Name: (i)...../(ii).....

Designation(i)...../...(ii).....

Date: .....

Seal

Example of a filled CHECK LIST FOR ECDIS COURSE APPROVAL SPECIMEN

1	**Requirements**	Remarks
1.1	Is Institute Conducting approved nautical competency courses:	Yes, 2MFG
1.2	Is Institute Conducting any approved Simulator Course ROSC/ARPA/RANSCO/SMS	No
1.3	A ship-owning company / Ship management company / Manning company RPSL Number, or manufacturer of ECDIS / Sole authorized representative of Manufacturer	No
2	Format of Course Certificate (Sample to attach)	Attached 1
3	**Course details**	
3.1	Maximum number of trainees per batch (Not to exceed 12)	12
3.2	Ratio of trainees to the faculty (Not to exceed 12:1).	6:1
4	Classroom and Simulator station layout Options A, B, and C. (Attach LAYOUT PLAN & Photographs)	Option A, Attached 2&3
5	**Classroom Equipment**	
5.1	Screen projection through Computer	Yes
5.2	CBT or Computer presentations	Yes
5.3	Hard-copy of course handouts	Yes
6	**Simulation Equipment**	**TRANSAS NAVIPRO 5000**
6.1	Is the ECDIS type approved (By IACS member)	Yes, DNV
6.2	Details of approval (Attach Certificate of approval)	Attached 5
6.3	License /Approval from ECDIS manufacturer to simulator manufacturer	Attached 6
7	**Electronic Charts**	
7.1	3 charts each for at least four of the prescribed training areas (Areas: _____, _____, _____, _____.) (e.g. Gibraltar, Hormuz, Singapore, Dover), See DGS Guidelines.	6 areas
7.2	Scale of charts for that area. (3 different scales)Scales:_____	Yes
7.3	Proprietary vector chart (Details) _____ _____	Yes
7.4	ARCS – 1 chart (for one area): Area: _____	Yes

8	**ECDIS simulation performance**	
8.1	Can ECDIS handle ENC data, licenses and update files	Yes
8.2	Is ECDIS Interfaced with :	
	Position indicator	Yes
	Alternative position source	Yes
	Heading indicator, true and magnetic, with graphic course recording	Yes
	Speed indicator	Yes
	depth indicator	Yes
	ARPA tracked target data	Yes
	AIS and Radar overlay(cursor, EBL and VRM)	Yes
	Autopilot	Yes
8.3	Audio for navigation and assessment	Yes
8.4	Communications between all own ships and instructor	Yes
8.5	All own ships can interact with one another	Yes
8.6	Visual scene by scrolling in all directions	Yes
8.7	Take accurate visualbearing, simultaneous navigation on paper charts with chart table	Yes
9	**Class Room Infrastructure (Carpet Area in square meters):**	
9.1	Option A (Classroom cum Navigation Lab): Area of class room:	46.86
	(≥ 30 sq. m for 6 trainees; 45 sq. m for 12 trainees; and pro rata interpolation.	———
	Option B (ECDIS classroom and separate navigation simulators): Area of Class room	N.A.
	(≥ 15 sq. m and Navigation simulator ≥ 15 sq. m 6 trainees);	———
	(≥ 25 sq. m and Nav. simulator ≥ 20 sq. m for 12 trainees; and pro rata interpolation.	
	Option C (ECDIS classroom and separate mini simulators):Area of Class room:	N.A.
	(≥ 15 sq. m and Navigation Lab ≥ 15 sq. m for 6 trainees;	———
	(≥ 25 sq. m and Navigation Lab ≥ 20 sq. m for 12 trainees; and pro rata interpolation	
9.2	1 White board	Yes
9.3	Projector and screen.	Yes
9.4	Communication facilities between simulator station and the instructor station.	Yes
9.5	Is the Class room and Navigation simulator fully air conditioned.	Yes
	(N.B. No approval for less than 6 trainees)	

10	**FACULTY**	
10.1	Number of Faculty: **(Capt. J. L. Sharma and Capt. R. Vivek)**	2
10.2	Course In-Charge & Faculty qualifications	Master FG
10.3	Have faculty completed the Training for Trainers and Assessors course	Yes
10.4	Have successfully completed an approved ECDIS course:	Yes
10.5	Have completed ECDIS type specific familiarization:	Yes
10.6	Have a detailed knowledge of the requirements of SOLAS reg. ECDIS	Yes
10.7	Have an up-to-date knowledge of the IMO ECDIS Performance Standards	Yes
10.8	Have an up-to-date knowledge of ENC's.	Yes
10.9	Aware of current ENC data transfer standards	Yes
10.10	Aware of methods of ENC licensing and updating	Yes
11	Assessment	
1.1	Written examination (Sample question Paper)	Attached 7
11.2	Can the navigation exercises be recorded and replayed.	Yes
12	Quality Standards (Copy of Certificate to attach if available)	Attached 8
13	Other Teaching Aids - Items marked (*) are mandatory & must be at the institute	
13.1	*A1 IMO Model Course 1.27 (2012 Edition),	Yes
	*A2 Audiovisual aids: Video/DVD player, Projector	Yes
13.2	Recommended Books:	
	*T1 ECDIS and Positioning, by Dr Andy Norris, Publisher: The Nautical Institute	Yes
	*T2 ECDIS Procedures Guide by Malcolm Instone, Publishers Witherby	Yes
	*T3 The Electronic Chart, 3rd Edition, Authors: Horst Hecht, Bernhard Berking	Yes
	T4 The ECDIS Manual, ECDIS Ltd, Witherby Seamanship International	Yes
13.3	Bibliography:	
	*B6 Simulator reference manual (Manufacturer, Date)	Yes
	*B7 User's manual accompanying the ECDIS software utilized during the course	Yes
	*B11 IHO S-52 Specifications for chart content and display aspects of ECDIS, 5th ed., as amended (IHB, 12/2001)	Yes
	*B13 IHO S- 57, Electronic Navigational Chart (ENC), Edition 3.1	Yes
13.3	Reference Material:	

	*R1 STCW 2010	Yes
	*R2 SOLAS Convention, as amended 2009, IMO Res. MSC 282(86)	Yes
	*R3 Revised ECDIS Performance Standards, MSC.232 (82), IMO, 12/2006	Yes
	*R4 ECDIS Performance Standards, IMO Resolution A.817(19) as adopted 11/1995	Yes
	*R5 IMO MSC.1/ Circ.1391, Operating anomalies identified within ECDIS	Yes
	*R6 IMO SN.1/ Circ.266/ Rev. 1, Maintenance of ECDIS software	Yes
	*R7 Guidelines for Voyage Planning, IMO Res. A.893 (21)	Yes
	*R8 COLREGS 1972, as amended	Yes
13.4	Electronic media:	
	E1 ECDIS, Seagull CBT, CD #64	Yes
	E2 AIS, Seagull CBT, CD #109 v.A, 8/2003	Yes
	E3 ECDIS Training Course, Videotel CBT #871, 5/2008	Yes
14	BELOW CHECK LIST FOR OPTIONS A or B or C, as applicable, to be attached	Yes, Option A

OPTION A: - Integrated ECDIS classroom cum Simulator station

Part	Function	
12 workstations (one chart table for every batch with all relevant paper charts)	Each workstation have three monitors	Yes – 3
	One monitor of at least 19" (270 x 270 mm display) for ECDIS	21"
	One monitor of atleast 19" (270 x 270 mm display) for Radar/ ARPA / AIS data	21"
	One monitor of 26" for steering/engine controls / Echo-sounder, AIS, Log, Auto-pilot, GPS and visualization	28"
	ECDIS software and chart data installed on each ECDIS PC	Yes
	ECDIS, steering/engine controls & visual scene, radar/ ARPA are displayed separately and continuously	Yes
1 instructor station	Instructor station I - have three monitors, each of atleast 19" (270 x 270 mm displays)	Yes – 3
	One Monitor for Parameter settings and bird's eye view	21"
	One monitor for Design and execution of exercises	21"
	One monitor for ECDIS Screen	21"
	Able to project on screen (size 48") for demonstration purpose	LCD
1 server/ network	Single PC with Full network control	Yes

Option B:- ECDIS classroom and separate Simulators (RANSCO and above)

	ECDIS Classroom:	
Part	**Function**	
12 Stand-alone ECDIS workstations	Each workstation has: One monitor of at least 19" with 270x270mm ECDIS display. ECDIS software and chart data installed on PC.	
1 Instructor station	Instructor station has three monitors, each of at least 19". One monitor for (270x270mm) ECDIS Screen. One monitor for Design and execution of exercises. One monitor for Parameter settings and bird's eye view. Able to project on screen (size 48") for demonstration purpose. Networked to student stations allowing display(s) of ARPA and ECDIS information.	
	Simulator Station	
Part	**Function**	
6 Simulators workstations (one chart table per batch with all the relevant paper charts)	Each simulator workstation of RANSCO simulator or higher with 3 monitors: One monitor of at least 19" for ECDIS (270x270 mm) display. One monitor of at least 19" for Radar/ ARPA / AIS data. One monitor of at least 26" for steering / engine controls / Echo-sounder, AIS, Speed Log, Auto-pilot, GPS and visualization. ECDIS, steering/engine controls & visual, radar/ARPA/AIS displayed separately & continuously.	
1 instructor station	Instructor station have two monitors, each of at least 19": One monitor for Design and execution of exercises - Parameter settings and bird's eye view. One monitor for Remote monitoring of the trainee.	
1 server / network	Single PC with Full network control.	

Option C: ECDIS classroom and separate Mini Simulators

	ECDIS Classroom	
Part	**Function**	
12stand-alone ECDIS workstations	Each workstation has: One monitor of at least 19" with 270x270mm ECDIS display. ECDIS software and chart data installed on PC.	
1 instructor station	Instructor station have three monitors, each of at least 19": One monitor for (270x270mm) ECDIS Screen One monitor for Design and execution of exercises One monitor for Parameter settings and bird's eye view Able to project on screen (size 48") for demonstration purpose Networked to student stations allowing display(s) of ARPA and ECDIS	
	Mini Simulators	
Part	**Function**	
6 mini simulator workstations one chart table for every batch with all relevant paper charts)	Each mini simulator workstation has three monitors: One monitor of 19" (270 x 270 mm) for ECDIS One monitor of 19" (270 x 270 mm) for Radar/ ARPA / AIS data One monitor of 26" for steering/ engine controls / Echo-sounder, AIS, Speed Log, Auto-pilot, GPS and visualization ECDIS software and chart data installed on each ECDIS PC ECDIS, steering / engine controls and visual scene, radar/ ARPA/ AIS are displayed separately and continuously	
1 instructor station	Instructor station has two monitors, each of at least 19": One monitor for Design and execution of exercises- Parameter settings and bird's eye view One monitor for Remote monitoring of the trainees	
1 server / network	Single PC with Full network control	