STANDAR MINIMUM
MINIMUM STANDARD

PROGRAM DIKLAT ANT – IV
DECK OFFICER CLASS – IV

BERDASARKAN
BASED ON

KEPUTUSAN BERSAMA
JOINT MINISTERIAL DECRREE

MENHUB, MENDIKNAS, DAN MENAKERTRANS
MINISTER OF COMMUNICATIONS, MINISTER OF NATIONAL EDUCATION,
AND MINISTER OF MANPOWER AND TRANSMIGRATION

NO : KM. 41/2003 – 5/U/KB/2003 – KEP.208 A/MEN/2003
11 SEPTEMBER 2003

TENTANG
CONCERNING

SISTEM STANDAR MUTU KEPELAUTAN INDONESIA
INDONESIAN SEAFARERS QUALITY STANDARD SYSTEM (QSS)

ANNEX – A Part 1

Dokumen ini diperlukan oleh para auditor sebagai “referensi audit mutu internal dan eksternal”
This document is required as “internal and external quality audit reference” by the Auditors

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Jika dalam pelaksanaan audit terjadi ketidak-sepakatan di antara auditor dengan auditi, khususnya dalam pemberian angka pada ED 1, ED 2, dan ED 3, maka justifikasi harus didasarkan kepada
If dispute occurs during audit activity between auditor and auditee, especially for the scoring of ED 1, ED 2 and ED 3, then the justification should be based on the :

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MINIMUM STANDARDS FOR SEAFARER'S EDUCATION AND TRAINING PROGRAMS

Following standards and guidelines for Maritime Education and Training shall apply to the following courses:

1. Deck Officer Class IV (ANT IV)
2. Engineer Officer Class IV (ATT IV)

Article 1 Authorization

Institutes are only authorized to provide that kind of Maritime Education and Training (MET) for which they have received explicit accreditation / authorization from the appropriate authorities of the RI.

Article 2 Mission Statement

The Mission Statement of a MET Institute shall be formulated as such, that it at least addresses the commitment to comply with the appropriate requirements as set forth in the STCW Convention and the National regulations.

Article 3 Education and training strategies

MET Institutes shall possess a Framework Strategic Plan which contains directives and actions that are to be undertaken in order to attain strategic objectives concerning the management, provision and sustainability of maritime education and training and related requirements.
The strategic objectives shall be formulated as such that they are at least in line with the appropriate requirements of the STCW Convention.
With regard to the training strategies, the standards for training methodology and techniques as recommended in the Guidance on the Implementation of the IMO Model Courses and in the respective IMO Model Courses itself shall be observed.

Article 4 Organization

The organizational structure of the training institute shall meet the following criteria:

1. Maritime training programs may be offered by institutions that are offering other degree courses outside the maritime field.
2. To guarantee the quality of the maritime education and training programs the institute shall develop policies and strategies to ensure adequate training and education at all times.
3. The management responsibilities in the organization of the institute, as far as the maritime education and training programs concerned, shall be defined in a clear and transparent manner.

4. In order to administer the maritime training programs:
   4.1 There shall be a Maritime Education Office headed by a full time dean to administer the maritime programs.
   4.2 The dean must possess relevant academic degrees, experiences and credentials as follows:
      a. Holder of a Management Level Certificate as described in STCW 78 as amended in 1995 and 1997;
      b. Seagoing experience of at least two years in a management level capacity on board ocean going ships or job experience at Directorate General of Sea Communication/Maritime Industry for five years;
      c. Holder of a bachelor degree relevant to the maritime education and training programs;
      d. Two years of teaching experience.
5. If MET programs for ANT IV and/or ATT IV are conducted, then the institute shall have a "Shipboard Training Office" headed by a certified merchant marine officer with at least one-year registered shipboard experience.
   The office shall be responsible for the administration and coordination of activities and requirements of students who will undergo shipboard training.
   The Shipboard Training Office shall among others:
   a. Facilitate embarkation of cadets,
   b. Monitor and, in cooperation with the ship-owner/operator, evaluate performance of cadets while on board,
   c. Conduct briefing and debriefing of cadets respectively before and after apprenticeship training in terms of training record book,
   d. Assist graduates for PROLA placement,
   e. Keep an up-to-date record of graduates.
6. In order to guarantee the suitability of infrastructure and the proper functioning of machinery, equipment and apparatus, a "Maintenance Division" (including maintenance plans) shall be incorporated in the institute's organization.
7. An "Internal Assurance Review - Unit" shall be available in order to address:
   - planning, design, presentation and evaluation of programs,
   - teaching, learning and communication activities.
8. The management responsibilities in the organization of the institute, as far as the MET programs are concerned, shall be defined in a clear and transparent manner.

Article 5 Instructor requirements

Requirements for instructors are as follows:

1. Instructors for General Subjects shall possess a diploma for Postgraduate Work or Diploma III and should teach only subjects of their specialization.
2. Instructors for Professional Subjects as defined in tables A-II/3 and A-III/1 of STCW 78 as amended in 1995 and 1997 shall possess an ANT III or ATT III Certificate.
3. Instructors for Professional Subjects on management level as defined in table A-II/3 of STCW 78 as amended in 1995 and 1997 shall possess an ANT II Certificate.

4. Instructors for Professional Subjects on operational level shall have a seagoing experience of at least two years in the capacity of watchkeeping officer in charge of a navigational or engineering watch on board ocean going ships of 500 GT or more or 750 kW or more respectively.
5. Instructors for Professional Subjects on management level shall have a seagoing experience of at one year in a management capacity on board sea going ships.
6. Instructors for Professional Subjects on management level shall have at least one-year teaching experience on operational level subjects.
7. Instructors solely designated to supervise laboratory classes on Professional Subjects are not required to possess an appropriate Certificate of Competence on ANT III or ATT III level. Laboratory instructors shall have professional qualifications and relevant experience in their field of operation.
8. All Professional Subject Instructors shall have successfully completed approved training programs in accordance with the requirements of IMO Model Course 6.09 and IMO Model Course 3.12.
9. Instructors conducting subjects involving the use of simulators must have received appropriate guidance in instructional techniques and have gained practical operational experiences on the particular type of simulator being used.
10. Newly appointed instructors for Professional Subjects shall have completed the required training program in accordance with IMO Model Course 6.09 within 12 months from their appointment. During the 12-month period they are allowed to handle subjects on operational level as assistant instructor under the supervision of a qualified instructor.

Article 6 Development program requirements

To ensure adequate and up-to-date education and training the institute must provide an instructors development program for professional advancement. This program shall be made available to all faculty members and may contain any of the following:

1. Orientation period for new instructors;
2. Scholarship/Fellowship Grants;
3. Tuition Fee Supplement/Discount;
4. In-Service Training;
5. Instructor On-the-Job Training Program.

Article 7 Instructors teaching load

As a general rule, the maximum full-time load of an instructor is 40 hours a week. An instructor with a very satisfactory teaching performance may be allowed to handle six additional hours per week provided that the subject preparation is limited to two.
The maximum number of teaching hours per day shall be limited to 8 hours with sufficient time allowance for lunch and break periods.
With respect to the maximum number of days per week for part-time instructors, the teaching load must be in relation to the amount of hours given. For guidance the following formula shall be used. % Full-time load x 0,05 = maximum number of days per week.

Article 8 Faculty requirements

The institute shall provide a directive for the faculty for the maritime programs containing information and policies on:

1. Hiring, retention, promotion and separation;
2. Functions and responsibilities;
3. Ranking system;
4. Evaluation;
5. Salary rates;
6. Faculty benefits;
7. Code of conduct/ethics.

Article 9 Instructor – Student Ratio

The number of maritime instructors for each program shall not be less than three. There shall be a minimum of two senior instructors and one assistant instructor. The minimum number of general subject instructors is two.
The total minimum number of instructors for the maritime programs at an institute shall meet the following minimum ratio of instructor – student = 1 : 20.
The maximum number of students per class is 30 persons for theoretical subjects. During laboratory sessions and group activities the class will be divided into groups of maximum 10 persons per instructor/supervisor.

Article 10 Curriculum

For each MET program the institute shall follow the appropriate curriculum as provided or approved by the Education and Training Agency.
Annex A – Part 1 (Minimum Standards) contains the prescribed curricular structure and description of the various subjects, which are made an integral part of these minimum standards for MET programs.
Justified improvements/changes to the core curriculum are allowed, after approval by the Education and Training Agency.

MET Institutes that do not possess facilities to conduct applicable prerequisite training programs as prescribed in Chapter II, IV, V and VI of STCW 95 and which form a part of the ANT IV and/or ATT IV curricula shall:

- Make up an adequate Memorandum of Agreement (MOA) with a third party that is accredited by the Administration of the RI to conduct the to be out-boarded training program(s).
- Keep detailed records to prove actual implementation of the MOA.
- Report applicable MOA's in due time to Badan Diklat/Pusdiklat Laut before the start of each annual study year.

If MET Institutes do possess facilities, then they are subjected to the separate criteria, rules and regulations concerning accreditation and authorization to issue the required Certificates or documented evidence, as promulgated by the responsible authority (Dir. Gen. Sea Communications).It is the responsibility of the institute that all students will receive the compulsory training programs.

Article 11 Administrative documentation

Every institute offering maritime programs shall maintain in their files up-to-date records of the following:

1. Articles of incorporation and by-laws
2. Certificate of title of the school site
3. Documents of ownership of the school building
4. Proposed budget for the succeeding school year
5. Copy of accountants report of previous budget year
6. Certificate of recognition/permit of the courses
7. Curriculum
8. Organizational and personnel chart
9. List and curriculum vitae of school administrators, academic teaching and non teaching staff
10. List of laboratory facilities, equipment and materials
11. School prospectus
12. Statistics on enrolment and graduates for the last five years
13. Statistics of performance in National examinations
14. Safety occupation permit
15. Fire and/or disaster plan
16. Class and teachers program for the current school year
17. Room utilization schedule

Article 12 Students admission, selection and retention

Institutes offering maritime programs shall observe the following admission and selection criteria.

Students' general admission requirements:

1. Medically fit;
2. Pass eyesight and hearing examination as prescribed by the Administration;
3. Valid birth certificate and Personal Identity Card or other legal identity card;
4. a. Be the holder of a Junior High School Diploma

   or

   b. Be the holder of a deck or engine rating Certificate followed by 36 months of relevant sea going experience.

It is to the discretion of the Institutes to conduct entrance examinations in order to select the candidates who will likely achieve the program objectives. Dates and fees for entrance examinations must be announced well in time.

Results of entrance examinations shall be communicated to the candidates in writing including the decision concerning admission or rejection.

Article 13 School Tests and Examination system

The institute shall develop and apply a test and examination system in accordance with national standards and policies. A committee shall be established to verify whether the contents and level of the exams are in compliance with the relevant evaluation criteria as required by STCW 95.

Examinations may be conducted in writing or oral. In case of oral exams two qualified examiners shall be present during the examination.
Procedures and guidelines shall be developed and applied with respect to enouncements of examination dates and the selection of questions that are to be drawn-up well ahead of the to be executed examinations.
The institute shall keep files concerning all exams executed, including lists of participants, questions and answers and results.
The institute shall develop procedures and guidelines for appeals and resists of examinations.

Article 14 Feedback from students and industry

The institute shall develop a feedback program from graduate students and shipping companies employing graduate students. Feedback may be performed by means of interviews or questionnaires. The aim of the feedback program is to evaluate the school performance in relation to the demands from the industry.
Results of the program shall be published in school magazines.

Article 15 Research and Development Program

Every institute shall have R & D provisions in order to encourage their instructors and students to undertake research for the improvement of MET programs.

Article 16 Quality Management System

The institute shall develop and implement a quality management system in accordance with one of the following quality standard models:
1. TQM;
2. ISO 9002: 2000 (E);
3. SNI 19-19002;
4. QMET;

or any other model that is approved by the National Standardization Institution.

Article 17 Campus/public spaces/offices /class room and laboratories

The set-up of the campus shall be designed to create an effective learning environment. Attention shall be paid to the avoidance of disturbance from outside sources like noise and smells as well as avoidance of mutual interference between class rooms, workshops …etc.
The campus and buildings shall be supplied with appropriate provisions, safety measurers and procedures in the following:
1. Fire escape
2. Fire alarm systems
3. Campus security force
4. First aid facilities

On the campus site the following supporting facilities shall be available:
1. Administrative rooms/building
2. Instructor room
3. Canteen/cafeteria
4. Library
5. Toilets for male and female
6. Track and field and/or gymnasium
7. Sufficient dormitories to accommodate the number of intern students admitted to the school

To conduct maritime training programs the school shall as a minimum have availability of the following laboratory rooms:

1. Computer laboratory room;
2. Chemistry laboratory room;
3. Physics laboratory room:
4. Machine shops with tool rooms;
5. Seamanship laboratory room;
6. Navigation laboratory room
7. Cargo handling laboratory
8. Automation laboratory
9. Electric and Electronic laboratory;
10. Radar/ARPA simulator room;
11. GMDSS laboratory room;
12. Basic Safety laboratory room;
13. Language laboratory room.

General requirements for spaces in use:
- Well lighted.
- Well ventilated.
- Safe electrical wiring.
- Shielded against outside noise.
- No usage of building material that might be harmful for the health.

Classroom requirements:
Minimum requirements in addition to the general requirements are:
- 7 x 8 m² for a class of 30 students.
- Adequately furnished (White/black board, instructor podium, chairs and tables).

Laboratory/workshop requirements:
Minimum requirements in addition to the general requirements are:
- Enough space, allowing 2 square meters per student.
- If sensitive electronic equipment is installed:
  - Air-conditioning.
  - Dehumidifier.
  - AVR and UPS
  - Electric-fire extinguishers.

- If machinery is installed:
  - Emergency-stop power supply.
  - CO2 extinguishers.
  - First aid kit.
  - Safe storage of combustibles.
- If work clothing is prescribed:
  - Lockers.
  - Washing facilities.

Note:
Specific equipment inventories per laboratory/workshop are described in the respective equipment lists.

In case a MET Institute does not possess one or more of the above-mentioned laboratory or workshop facilities to carry out related competence training, then the use of proper facilities (incl. qualified instructors) of other accredited parties is in principle allowed.
It is the prerogative of the Komite Nasional Pengawasan Mutu Pelaut Indonesia to decide which facilities may be boarded out and which ones not.

If applicable, the Institute shall:
- make up an adequate Memorandum of Agreement (MOA) concerning the use of the required facilities with a third party that is accredited by the Admin. of the RI
- Keep detailed records to prove actual implementation of the MOA.
- Report applicable MOA's in due time to Badan Diklat/Pusdiklat Laut before the start of each annual study year.

Article 18 General teaching means.

As a general rule, the institute shall provide the necessary audiovisual equipment in support of the teaching-learning process such as:
1. Video equipment;
2. Overhead projectors;
3. Slide projector;
4. Sound system;
5. LCD projectors;
6. Screens.

There shall always be sufficient stock of consumables, supporting (hand) tools and other materials for laboratory experiments and execution of practical exercises as prescribed in the lesson plans.

Article 19 Library and Internet facilities

Institutes offering MET programs shall have a library with professional library staff, books and publications that in terms of relevancy and quantity are adequate to suit the maritime studies.

Next to the reference books, video's and PC software as mentioned in the equipment (library) list, the library holdings shall at least contain the following requirements:

1. General reference/education books required for any type of secondary education;
2. Supporting reference material on modern nautical and technical subjects;
3. Relevant publications of the International Maritime Organization;
4. Magazines and publications related to the marine industry;

The students and instructors shall have access to the Internet for documentary purposes. Each institute shall have available a minimum of one Internet station per one hundred students.

Books versus module code ANT IV

Book code	Title	Author / Publisher	Date ed. / Print	Module code(s)
T. 2	An introduction to coastal navigation, a seaman's guide	Morgans	5th ed. 1992	1.1.2 1.1.5
T. 8	A guide to the Collision Avoidance Rules	Cockroft	5th ed. 1996	1.2
T.10	The theory and practise of seamanship	Danton	11th ed. 1996(1998)	1.2 1.4 1.8 2.1
T.11	Ship stability for masters and mates	Derrett	4th ed. 1990(1999)	2.1 3.2.1 3.2.2
T.13	Practical navigation for second mates	Frost	6th ed. 1981(1991)	1.1.1 1.1.2 1.1.5
T.14	The principles and practice of navigation	Frost	1st rev.ed. 1988(2001)	1.1.1 1.1.2 1.1.5
T.21	The behaviour and handling of ships	Hooyer	1st ed. 1994	1.8
T.24	Bridge Procedure Guide	ICS	3rd ed. 1998	1.1.2 1.2
T.29	Accident prevention on board ship at sea and in port	ILO	1996	1.4 2.1
T.31	International safety guide for oil tankers	ICS	4th ed. 1996	2.1
T.36	Shipboard operations	Lavery	2nd ed. 1990(1998)	1.2 1.4
T.38	Shiphandling for the mariner	MacElvrey	3rd ed. 1995	1.8
T.41	Tanker operations, A handbook for the ships's officer	Marton	3rd ed. 1992(1995)	2.1
T.45	IAMSAR manual		1st ed.	1.5
T.47	Marine observer's handbook	Met office	11th ed. 1995	1.1.7
T.48	Meteorology for mariners	Met office	3rd ed. 1978(2002)	1.1.7
T.57	Bridge team management, a practical guide	Swift	2000	1.2
T.58	Merchant ship construction	Taylor	2nd ed. 1985	3.2.2
T.59	Cargowork	Kemp & Young	12th ed. 1992	2.1
T.61	The mariner's handbook (NP 100)	H.O.	7th ed. 1999	1.1.2 1.1.7 1.8

Book code	Title	Author / Publisher	Date ed. / Print	Module code(s)
T.70	Code of safe working practices for merchant seaman	MCA	3rd impr. 1998	1.2 1.4 2.1
TX.1	Thomas Stowage	Thomas	3rd ed. 1996	2.1
TX.2	International Code of Signals			1.7
TX.3	Global Navigation – a GPS user's guide	Ackroyd	2nd ed. 1994	1.1.3
TX.4	The Elements of Navigation and Nautical Astronomy	Cotter	2nd ed. 1992	1.1.3 1.1.4 1.1.5
TX.5	Merchant Ship Stability (metric edition)	Pursey	6th ed. 1996(2002)	2.1 3.2.1
TX.6	Bulk Carrier Practice	The Nautical Institute	1993	2.1
TX.7	IMDG Code – IMO – 2000 edition + supplement	IMO	2000	2.1
TX.8	Lashing and securing of deck cargoes	Knott	1994	2.1
TX.9	Tanker handbook for deck officers	Baptist	2000	2.1
TX.10	MARPOL 73/78 – IMO	IMO	1997	3.1
TX.11	Ship stability. Notes and examples	Kemp & Young	2nd ed. 1971(1999)	3.2.1
TX.12	Naval architecture for marine engineers. Vol 4	Reeds	4th ed. 1991(2001)	3.2.1
TX.13	Ship construction for marine students. Vol 5	Reeds	5th ed. 1985(2001)	3.2.2
TX.14	IMO Model course 6.08 – Maritime Law, vol 1 and 2	IMO	1993	3.6
TX.15	STCW '95 (incl. amendm 2)			1.2
TX.16	Practical shiphandling	Armstrong	2nd ed. 1994	1.8
TX.17	Medical First Aid Guide(MFAG)	IMO	1994	2.1
TX.18	Emergency procedures for ships carrying dangerous goods	IMO	1994	2.1
TX.19	Merchant ship construction	Pursey	7th ed. 1983(1998)	3.2.2
TX.20	Guidelines for the inspection and maintenance of double hull tanker structures	Witherby	1st ed. 1995	3.2.2
TX.21	Standard Marine Communication Phrases (SMCP)	?	?	1.6
TX.22	IMO Model course 3.17, Maritime English	?	?	1.6
TX.23	Marine Gyro Compasses for	Frost	1st ed. 1982	1.1.5

Book code	Title	Author / Publisher	Date ed. / Print	Module code(s)
	ships'officers			
TX.24	Basic electrotechnology for engineers. Vol. 6	Reeds	3rd ed. 1985(2002)	1.1.5
T.90 (TX.25)	Navigation for masters	House	2nd ed. 1998	1.1.2 1.1.3 1.1.4 1.1.9 1.2 1.5
T.99 (TX.26)	Modern chartwork	Squair	6th ed. 1992	1.1.2 1.1.3 1.1.5
TX.27	Symbols nand abbreviations – NP 5011	H.O.	2nd ed. 1998	
TX.28	IMO Model course 1.10, Dangerous, hazardous and harmful cargoes	IMO	1999	
TX.29	Ship knowledge, a modern encyclopedia	K. van Dokkum	2003	1.4.2 1.6.1 1.8.1 2.1.1 2.1.2 2.2.1 3.1.1 3.1.2 3.2.1 3.2.2 3.6.1
TX 31	Safety and health at sea	Sagen, Mitchell 185609233 X	2002	
TX 32	A master's guide to hatch cover maintenance	Lloyd's 1856092321	2002	
TX 33	Drugs and ships	Luck 1856090051	1st ed. 1992	
TX 34	Effective mooring	OCIMF 948691883	1st ed. 1989	
TX 35	Motor Engineering Knowledge for Marine Engineers,Vol. 10	Reeds		1.5.2

Note :

The books T 2 upto T 70 refer to the numbers in the model course 7.03, this list is also present in the Annex A, part 1.

The books TX .. refer to additional books

F : **Navigation at the operational level**
C : **Plan and conduct a coastal passage and determine position**
S : **Terrestrial and coastal navigation – 228 hours** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
1.1.1.1 10 hrs	**Definitions – Earth** - Defines : - great circle - small circle - earth's poles - equator - meridians - latitude - parallels of latitude - prime meridian - longitude - difference of latitude - difference of longitude - international nautical mile - cable - knot	K	Lecture	Written test	**T 2 ;** **Ch. 1** **TX 26 :** Ch. 1	OHS; Model; **TX 26 :** worked examples
1.1.1.2 10 hrs	**Charts** - demonstrates a basic knowledge of chart projections - defines 'natural scale' of a chart - states the requirements of a chart appropriate for marine navigation - measures the distance between two positions on a Mercator chart - states the principle construction of a Mercator chart - describes the properties of the chart and the degree to	K K K S K K	Lecture	Written test Work assignment	**T 2 :** **Ch. 1** **Ch. 3** Ch. 8 **T 61 :** Ch. 1 Ch. 2	OHS; Charts; Chart catalogue; Ntm's

S : Terrestrial and coastal navigation – 228 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	which it meets navigational requirements and Mercator limitations				**TX 26 :**	
	- demonstrates the use of a chart catalogue	S			Ch. 1	
	- demonstrates the correcting of charts using information from Notices to Mariners	S			Ch. 2	
	- describes that ECDIS and other electronic chart systems meeting IMO performance standards may substitute for traditional charts	K				
	- states that familiarisation with the ship's particular electronic chart equipment and controls is required	K				
1.1.1.3	Datums					
	- describes the rotation of the earth about its axis	K	Lecture	Written test	**T 2 :**	
12 hrs	- defines directions on the earth's surface	K			**Ch. 1**	
	- describes the direction of the ship's head on a gyro-compass (gyro course)	K			Ch. 2	
	- describes the direction of the ship's head on a magnetic compass (compass course)	K			**TX 26 :** Ch. 3	
1.1.1.4	Position lines and positions					
	- defines a position	K	Lecture	Written test	**T 2 :**	OHS;
20 hrs	- given the radar distance off a charted object, plots the position circle on a chart	S			**Ch. 2** Ch. 9	Charts;
	- plots a position on the chart from simultaneous cross bearings and from a bearing and distance off	S			**TX 26 :**	Chart
	- defines :	K			Ch. 1	catalogue;
	- dead reckoning position (DR)				Ch. 4	
	- estimated position				Ch. 5	
	- fixed position					
	- plots a dead reckoning position on the chart	S				

S : Terrestrial and coastal navigation – 228 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- plots an estimated position on the chart	S				
	- plots position lines - straight line, circle	S				
	- finds a position line by bearing, horizontal angle and transit line	S				
	- determines a position by a combination of bearing distance and the methods in the above objective	S				
	- finds a position by simultaneous bearings of two objects	S				
	- finds the distance that the ship will pass off a given point when abeam	S				
	- constructs a position line to clear a navigational danger by a given distance	S				

1.1.1.5
 	
90 hrs
	Chartwork exercises, sailings
	- defines :
	  - course
	  - true course
	  - distance
	  - set
	  - rates
	  - drift
	  - leeway due to wind
	  - ship's speed
	  - effective speed
	  - course and distance made good
	  - applied leeway
	- finds true course between two positions
	- finds the distance between two positions
	- calculates the speed between two positions
	- finds the course and distance made good with a tidal
		K
		
		S
		S
		S
		S
			Lecture		**T 2 :**
					Ch. 4
					Ch. 5
					Ch. 9
					Ch. 10
					
					TX 26 :
					Ch. 1
					Ch. 4
					Ch. 5
					Ch. 10
						OHS;
						
						Charts;
						
						Chart catalogue;

S : Terrestrial and coastal navigation – 228 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	stream or current - finds the course to steer, allowing for tidal stream or current - finds the set and rate of tidal stream or current from charts and tables - calculates the actual set and rate of tidal stream or current from DR and fixed positions	 S S S				
1.1.1.6 55 hrs	Information from charts, list of lights and other publications - recognizes and demonstrates the use of the symbols and abbreviations on a chart, especially lighthouses, buoys, beacons, radio beacons and other navigational marks - identifies the characteristics and range of lights - describes the principles and rules of the International Association of Lighthouse Authorities (IALA) Maritime Buoyage System, Systems "A" and "B" - recognises coastlines, coast and radar-responsive targets - states the interpretation of coastline contours, bottom topography, depths and nature of bottom - uses the tidal information given on a chart - recognizes traffic lanes and separation zones - describes the danger of placing implicit reliance upon floating navigational aids - describes the danger of approaching navigational aids too closely - demonstrates simple passage planning and execution - describes the use of clearing marks and horizontal danger angles - recognizes suitable passages, approaches and anchorages in	 S K K S K S S K K S K S	Lecture Laboratory		**T 2 :** Ch. 5 Ch. 6 Ch. 7 Ch. 8 **T 61 :** Ch. 1 Ch. 2 Ch. 3 Ch. 4 Ch. 8 Ch. 9 **TX 26 :** Ch. 1 Ch. 2 Ch. 7 Ch. 12	OHS; Charts; Chart catalogue; Ntm's ; ATT ; ALRS ; ALL

S : **Terrestrial and coastal navigation – 228 hours** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	clear weather and thick weather, using radar-responsive targets					
1.1.1.7 27 hrs	Tides - explains the basic theory of tides - defines : - spring tide - neap tide - height of tide - high water - low water - mean high water springs - mean high water neaps - mean low water springs - mean low water neaps - range - chart datum - carries out calculations with UKC, draft, chart datum, water level and height of tide(rise) - draws a simple figure based on these calculations	 K K S S	Lecture	Written test	**T 2 :** Ch. 4 Ch. 5 **T 61 :** Ch. 4 **TX 26 :** **Ch. 1** ??????	OHS; ATT
1.1.1.8 4 hrs	Keeping a log - states the rules, regulations and common practice regarding keeping a log - describes the proper keeping of different kinds of log during sea passages, coastal navigation and in port	 K K	Lecture		**T 24 :** Ch. 3	Ship's logbook

F : Navigation at the operational level
C : Plan and conduct a coastal passage and determine position
S : Navigational aids and equipment – 51 hours

Lesson Plan for ANT IV

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
1.1.2.1 34 hrs	Satellite navigation systems - describes the principles of operation of satellite navigation systems aboard ship - states that the system will provide continuous world-wide position-fixing capabilities - states the intended level of accuracy of the system GPS - describes the basic principles of the Global Positioning system (G P S) - describes the system configuration - describes the various errors of GPS - states the accuracy obtainable with GPS and how the accuracy can be downgraded - describes WGS 84 and / or other geodetic data - describes why a fix obtained from the GPS receiver cannot be plotted direct onto a navigational chart	K K K K K K K K K	Lecture		TX 3 : p. 13 – 26 p. 113 – 119 TX 26 : Ch. 13. p.297 - 298 + ?	
1.1.2.2 8 hrs	Speed logs - states the difference between ground-reference speed and water-reference speed - describes the basic principles of the electromagnetic speed log - describes the basic principles of the Doppler speed log - lists the main error sources on the various types of logs - states the accuracies of the various systems	K K K K K	Lecture		T 99 : Ch. 1, p. 17 + ?	

S : Navigational aids and equipment – 51 hours Lesson Plan for ANT IV

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
1.1.2.3 9 hrs	Echo-sounders - describes the basic principles of marine echo-sounding equipment - recognizes the various types of 'false' echo that may be recorded - describes the potential errors due to trim, heel and transducer separation	K K K	Lecture	Written test	T 99 : Ch. 13, p. 285 + ?	OHS;

F : Navigation at the operational level
C : Plan and conduct a coastal passage and determine position
S : Compass – magnetic and gyro – 63 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
1.1.3.1 6 hrs	The magnetism of the earth and the ship's deviation - describes a simple magnet, its poles and states the law of attraction and repulsion - describes the magnetic field around a magnet - describes differences between 'hard' and 'soft' iron - describes the meaning of the term permeability - describes the magnetic field of the earth - defines : - magnetic poles - magnetic variation - describes that magnetic variation is a slowly changing quantity - describes that a compass needle responds to the earth's magnetic field and the field due to the ship's magnetism - describes the effect of introducing a disturbing magnetic force into the vicinity of a compass needle	K K K K K K K K K K	Lecture	Written test	**T 2 :** Ch. 2 **T 99 :** Ch. 1 Ch. 3 Ch. 4 + ?	OHS;
1.1.3.2 11 hrs	The magnetic compass - describes the construction of a liquid card magnetic compass - defines 'deviation' and states how it is named - illustrates with sketches the deviations on various headings - states the need for regular checking of the compass error - states that compass errors should be checked after a major alteration of course	K K K K K	Lecture	Written test	**T 2 :** Ch. 2 **T 99 :** Ch. 1 Ch. 3 Ch. 4	OHS;

S : Compass – magnetic and gyro – 63 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- states that regular comparisons of standard compass, steering compass and gyro-compass should be made - states that the approximate error of the standard compass can be obtained by comparison with the gyro-compass if no other means is available - demonstrates taking bearings of landmarks	K K K			+ ?	
1.1.3.3 14 hrs	The gyro-compass - describes a free gyroscope and its gimbal mountings - states that in the absence of disturbing forces the spin axis of a free gyroscope maintains its direction in space - describes how gyro heading input is supplied to a radar installation - describes the alarms fitted to a gyro-compass	K K K K	Lecture	Written test	**T 2 :** Ch. 2 **T 99 :** Ch. 3 Ch. 4 + ?	OHS;
1.1.3.4 12 hrs	Compass corrections - defines true, magnetic and compass north - finds deviation and variation from tables and charts - calculates true course from compass course - calculates compass course from true course - measures compass error, using a transit bearing - applies compass error to the ship's head and compass bearings to convert to true - takes a compass bearing of a charted object and lays the true bearing off on the chart	K K S S S S S	Lecture	Written test	**T 2 :** Ch. 2 **T 99 :** Ch. 3 Ch. 4 Ch. 10	OHS; Nautical almanac; Nautical chart; Deviation curve

S : **Compass – magnetic and gyro – 63 hours** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
1.1.3.5 19 hrs	Errors of the compass and azimuths - obtains the error of the magnetic compass or gyro-compass by comparing the compass bearing of the body with the true azimuth - obtains the magnetic variation for the observer's position, using isogonal lines or other information on the chart - applies variations to the error of the magnetic compass to find the deviations for the direction of the ship's head - calculates compass error and gyro error - draws a simple figure based on these calculations	S S S S S	Lecture	Work assignment	T 2 : Ch. 2 T 99 : Ch. 3 Ch. 4 Ch. 10	OHS; Nautical almanac; Nautical chart; Deviation curve
1.1.3.6 1 hrs	Modern compasses Fluxgate compass - states the basic operation principle Optical compass - states the basic working principle	 K K	Lecture	Written test		OHS

F : **Navigation at the operational level**
C : **Plan and conduct a coastal passage and determine position**
S : **The automatic pilot – 5 hours** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
1.1.4.1 5 hrs	**The automatic pilot** - states the principle of an automatic pilot system - lists and explains the functions of the manual settings - describes the procedures for change-over from automatic to manual steering and vice versa - describes the course monitor and the off-course alarm - lists the other alarms fitted to the system - states that the automatic pilot should be included in the steering gear testing prior to the ship's departure - states the regulation regarding the use of the automatic pilot - states the need for regular checking of the automatic pilot to ensure that it is steering the correct course - states that the automatic pilot should be tested manually at least once per watch - states the factors to take into account regarding the change-over to manual control of steering in order to deal with a potentially hazardous situation	K	Lecture		Tx 23	

F : Navigation at the operational level
C : Plan and conduct a coastal passage and determine position
S : Meteorology – 79 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
1.1.7.1 (5 hrs)	The atmosphere, its composition and physical properties - describes the composition of the earth's atmosphere, mentioning dry air and its constituents, water vapour and aerosols - labels in a typical vertical temperature profile through the lower 100 km of the earth's atmosphere the following items : - troposphere - tropopause - stratosphere - describes the main features of the troposphere - states the importance of the sun as the principal energy source for atmospheric processes - states the nature of solar radiation (scattering, reflection and absorption) - describes the effect on insolation of a variation in latitude, the sun's declination and the variation in the length of daylight - defines : - water vapour - evaporation - condensation - saturated air - dewpoint - absolute humidity - relative humidity	K K K K K K K K K	Lecture	Written test	**T 48 :** *Ch. 1*	OHS Hygro-meter Thermo-meter

S : Meteorology – 79 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- vapour pressure - describes the properties of water vapour in the atmosphere - describes the processes of mixing, cooling and the evaporation of water vapour, by which a sample of air may be brought to saturation	 K K				
1.1.7.2 (5 hrs)	Atmospheric pressure - states that pressure equals force per unit area - understands that atmospheric pressure decreases with height above sea level - states that atmospheric pressure acts in all directions states that the basic unit of pressure is N/m^2 - states that 1 millibar = 10^{-3} bar = 10^2 N/m^2 - states that 1 hectopascal (hPa) = 1 millibar - states that the atmospheric pressure at sea level normally varies between about 940 hPa and 1050 hPa - states that the average pressure at sea level is 1013.2 hPa - defines 'isobar'	 K K K K K K K K	Lecture	Written test	**T 48 :** *Ch. 2* **T 47 :** Ch. 1	OHS Barometer
1.1.7.3 (10 hrs)	Wind - defines 'wind' - describes the Beaufort scale of wind force - explains the surface wind circulation around high and low-pressure centers - inserts surface wind directions on a map showing pressure distribution and indicates relative wind speeds at various places within the pressure field - states Buys-Ballot's law	 K K K K K	Lecture	Written test	**T 48 :** *Ch. 3* **T 47 :** Ch. 4 Ch. 6 **T 61 :** Ch. 5	OHS Anemo-meter

S : Meteorology – 79 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- describes the method of estimating the strength of the wind from the appearance of the sea surface, using the Beaufort wind scale - explains the difference between apparent and true wind - describes the method of estimating the wind direction from the appearance of the sea surface	K K K				
1.1.7.4 (5 hrs)	Cloud and precipitation - explains that clouds form when air containing water vapour rises, cools and becomes saturated - states that a cloud can consist of ice crystals, supercooled water droplets, water droplets or any combination of these - states that there are ten basic cloud types - defines : - precipitation - rain - drizzle - hail - snow - sleet	K K K K K K K K K	Lecture	Written test	**T 48 :** *Ch. 4* **T 47 :** Ch. 5 **T 61 :** Ch. 5	
1.1.7.5 (6 hrs)	Visibility - states the visibility is reduced by the presence of particles in the atmosphere, near the earth's surface - defines : - fog - mist - haze	K K	Lecture	Written test	**T 48 :** *Ch. 5* **T 47 :** Ch. 4	OHS ;

S : Meteorology – 79 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- states the formation, conditions and typical areas of radiation fog, advection fog and sea smoke - describes methods of estimating the visibility at sea, by day and by night, and the difficulties involved	K K				
1.1.7.6 (12 hrs)	The wind and pressure systems over the ocean - recognizes the mean surface pressure and wind distribution over the earth's surface in January and July - states characteristics and location of the doldrums, intertropical convergence zone, trade winds and sub-tropical oceanic highs - describes a monsoon regime - states the areas which experience a true monsoon regime - states the weather associated with the January and July monsoons of the Indian Ocean, China Sea and north coast of Australia - states the formation of land and sea breezes - states examples of local winds	K K K K K	Lecture	Written test	**T 48 :** *Ch. 7* *Ch. 8* **T 47 :** *Ch. 3* **T 61 :** Ch. 5	OHS ;
1.1.7.7 (14 hrs)	Structure of depressions - defines : - air mass - source region - warm front - cold front - depression - explains the formation of an air mass - describes the characteristics required of a source region	K K K	Lecture	Written test	**T 48 :** *Ch. 9* **T 61 :** Ch. 5	OHS ;

S : **Meteorology – 79 hours** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- describes the source-region characteristics of arctic, polar, tropical and equatorial air-mass types	K				
	- recognises the symbols for warm and cold fronts and identifies them as drawn on a weather map	K				
	- describes, with the aid of a diagram, the weather experienced during the passage of an idealized warm front	K				
	- describes, with the aid of a diagram, the weather experienced during the passage of an idealized cold front	K				
	- identifies a depression on a surface synoptic or prognostic chart	K				
	- describes the stages in the life cycle of a polar front depression	K				
	- recognizes a diagram of a polar front depression, for both northern and southern hemispheres, showing isobars, warm and cold fronts, with circulation and warm sector	K				
	- draws a cross-section through a polar front depression, on the poleward and equatorial side of the centre, showing fronts, cloud and precipitation areas	K				
	- describes the usual movement of a polar front depression	K				
	- applies previous concepts to an explanation of the weather changes experienced when a frontal depression passes with its centre on the poleward side of an observer in the northern hemisphere and in the southern hemisphere	K				
	- identifies a trough of low pressure on a surface synoptic or prognostic chart	K				
	- describes the weather associated with the passage of a trough	K				

S : **Meteorology – 79 hours** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids

1.1.7.8
 	
(7 hrs)
	Anti- cyclone and other pressure systems
	- defines :
	  - anticyclone
	  - ridge of high pressure
	  - col
	- draws a synoptic pattern of an anticyclone, for both northern and southern hemispheres, showing isobars and wind circulation
	- identifies an anticyclone on a surface synoptic or prognostic chart describes the weather associated with anticyclones
		K
		
		K
		
		K
			Lecture	Written test	**T 48 :**
					Ch. 10
					
					T 61 :
					Ch. 5
						OHS ;

1.1.7.9 (10 hrs)	Tropical revolving storms - states the characteristics of a TRS, ie size, wind, pressure, eye, cloud and percipitation - recognizes a plan of a TRS showing isobars, wind circulation, path, track, vortex or eye, through line, dangerous semicircle, dangerous quadrant and navigable semicircle (N and S hemisphere) - describes the signs which give warning of the approach for the TRS - explains the method of determining in which sector of a TRS the ship is situated - states the regions and seasons of greatest frequency of TRS - states the conditions associated with the formation of TRS	K K K K K K	Lecture	Written test	**T 48 :** Ch. 11 **T 61 :** Ch. 5 **T 90 :** Ch. 8	

S : **Meteorology – 79 hours** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
1.1.7.10 (5 hrs)	Weather services for shipping - states the sources of weather information available to shipping - describes the services provided for shipping by Meteorological Offices - describes the types of information received by facsimile machine - describes the services provided for storm warnings	**K** K K K	Lecture	Written test	**T 48 :** Ch. 13 **T 61 :** Ch. 1 Ch. 5	

F : **Navigation at the operational level**
C : **Maintain a safe navigational watch**
S : **Knowledge of the collision regulations -100 hrs** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
1.2.1.1 (100 hrs)	**The content, application and intent of COLREG '72** *Part A, rule 1 -3* - explains the application of the rules as set out in Rule 1 - defines the term 'traffic separation scheme' - states the responsibility to comply with the rules as set out in Rule 2 - describes and cites examples of precautions which may be required by the ordinary practice of seamen or by the special circumstances of the case - gives examples of circumstances which may make a departure from the rules necessary - states the general definitions which apply throughout the rules - explains the term 'vessel constrained by her draught' - distinguishes between 'under way' and 'making way' *Part B, section I, rule 4 - 10* - explains 'a proper look-out' and interprets the intent of 'full appraisal of the situation and the risk of collision' - explains the use of radar in the context of Rule 5 - explains what is meant by a safe speed - describes, with reference to court cases, how 'proper and effective action' and 'within a distance appropriate to the prevailing circumstances and conditions' may be interpreted - states the factors to be taken into account in determining a safe speed	K K	Lecture PC based Lecture PC based	Written test Multiple choice Written test Multiple choice	T 8 : Pages VII - 16 T 8 : Pages 17 - 85	OHS ; PC with software Models for situations OHS; PC with software Models for situations

S : Knowledge of the collision regulations -100 hrs **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids

	- explains how the use of radar affects the determination of safe speed
	- explains what is meant by risk of collision
	- describes the proper use of radar equipment in determining whether a risk of collision exists
	- explains the dangers of making assumptions on the basis of scanty information, citing examples from clear weather as well as the use of radar
	- illustrates, using examples from court cases, how failure to plot may lead to a lack of appreciation of a developing situation
	- illustrates, using examples from court decisions, the following actions to avoid collision referred to in Rule 8:
	  - positive action in ample time large enough to be readily apparent
	  - alteration of course alone
	  - passing at a safe distance
	  - checking the effectiveness of action taken
	  - reduction of speed
	  - taking all way off
	- demonstrates an understanding of Rule 9 by:
	  - defining the terms 'narrow channel' and 'fairway'
	  - describing how to proceed along the course of a narrow channel
	  - describing the navigation of small craft and sailing vessels in a narrow channel
	  - stating the restrictions on crossing the channel or fairway					

S : Knowledge of the collision regulations -100 hrs **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- describing the conduct of vessels engaged in fishing - stating the procedure for overtaking in a narrow channel - describing the actions to be taken on nearing a bend in a narrow channel or fairway - defines 'traffic lane', 'separation lane', 'separation zone', 'inshore traffic zone - describes how to navigate in a traffic separation scheme with reference to: - entering and leaving the traffic separation scheme - entering and leaving traffic lanes crossing lanes - the use of inshore traffic zones - crossing separation lines or entering separation zones other than when crossing, joining or leaving a lane - states the requirements for vessels: - navigating in areas near the terminations of traffic separation schemes - anchoring - not using a traffic separation scheme - engaged in fishing - states that a vessel of less than 20 metres in length or a sailing vessel must not impede the safe passage of a power-driven vessel following a traffic lane - states the exemptions for vessels restricted in their ability to manoeuvre when engaged in an operation for the: - maintenance of safety of navigation - laying, servicing or picking up of a submarine cable - explains the meaning of 'precautionary area					

S : Knowledge of the collision regulations -100 hrs **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- defines 'deep water route' and states for whom such a route is intended Part B, section II, rule 11 - 18 - explains what is meant by 'vessels in sight of one another' - demonstrates, with the use of models displaying proper signals or lights, a navigation light simulator or otherwise, the proper action to take to avoid collision with other vessels in sight - explains how to decide when a vessel is an overtaking vessel - compares and analyses the various avoiding actions which may be taken by an overtaking vessel - explains the application of Rule 14, Head-on situation - explains why the give-way vessel in a crossing situation shall, if the circumstances admit, avoid crossing ahead of the other vessel - explains the application of Rule 15 when crossing narrow channels and traffic lanes - explains how Rule 16and Rule 8 relate regarding the action by a give-way vessel - explains the position of stand-on vessel in cases where a risk of collision exists between more than two vessels - explains how to decide when to take avoiding action as stand-on vessel - describes the actions which may be taken by the stand-on vessel - states the avoiding action which must be taken by the stand-on vessel	K	Lecture PC based	Written test Multiple choice	T 8 : Pages 86 - 125	OHS PC with software Models for situations

S : Knowledge of the collision regulations -100 hrs **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- explains that a potential collision situation may be divided into the following four stages: - at long range, before risk of collision exists and both vessels are free to take any action - risk of collision applies, the give-way vessel is required to take action and the other vessel must keep her course and speed - the give-way vessel is not taking appropriate action - collision cannot be avoided by the action of the give-way vessel alone - explains the responsibilities between vessels with reference to Rules 18 and 3					OHS
	<u>Part B, section III, rule 19</u> - explains the application of Rule 19 - compares Rule 6 and Rule 19 regarding the determination of safe speed - explains how courts have interpreted 'a close-quarters situation' - explains how courts have interpreted 'navigate with extreme caution' - demonstrates, using a manoeuvring board or radar simulator, how to determine risk of collision and the proper action to take to avoid collision in restricted visibility	K	Lecture PC based	Written test Multiple choice	T 8 : Pages 126 - 143	PC with software Models for situations
	<u>Part C, rule 20 - 31</u> - states the application of the rules concerning lights and shapes - states the definitions in Rule 21	K	Lecture PC based	Written test Multiple choice	T 8 : Pages 144 - 170	OHS PC with software

S : **Knowledge of the collision regulations -100 hrs** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- states the visibility of lights as prescribed by Rule 22 - identifies the lights and shapes carried by any type of vessel and the operation or circumstances signified by them, including the additional signals for fishing vessels fishing in close proximity - describes the positioning, spacing and screening of lights - describes the shapes required by the rules <u>Part D, rule 32 - 37</u> - describes the sound signals to be used by vessels in sight of one another - describes the sound signals to be used by vessels in or near and area of restricted visibility - describes the use of signals to attract attention - lists the distress signals set out in Annex IV of COLREG 72	K	Lecture PC based	Written test Multiple choice	T 8 : Pages 171 - 185	Models for situations OHS PC with software Models for situations

F : **Navigation at the operational level**
C : **Maintain a safe navigational watch**
S : **Principles in keeping a navigational watch** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
1.2.2.1 12 hrs.	**Keeping a safe navigational watch** - states that the officer of the watch is responsible for navigating safely, with particular regard to avoiding collision and stranding - describes the principles to be observed in keeping a navigational watch as set out in STCW '95, Section A-VIII/2 regarding: - navigation - navigational equipment - navigational duties and responsibilities - handing over and taking over the watch - look-out - navigation with a pilot embarked - protection of the marine environment - describes the recommendations on operational-guidance for officers in charge of a navigational watch as set out in STCW '95, Section B-VIII/2: - maintenance of an efficient look-out - the use of engines and sound signalling apparatus - taking over the navigational watch - periodic checks of navigational equipment - compliance with SOLAS V/ 19 regarding the use of the automatic pilot and the change-over to manual steering and vice-versa - electronic navigational aids - the use of radar	K K K	Lecture	Written test	STCW '95 Section A, Ch. VIII (pages 139 – 157) STCW '95 Section B, Ch. VIII (pages 247 – 255) T 8 : Pages 17 – 85, 204 - 231 T 10 : Ch. XIII T 36 : pages 31 – 34 T 57 :	

S : Principles in keeping a navigational watch **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- navigation in coastal waters - conduct of the watch in clear weather - actions to take in restricted visibility - the circumstances in which the officer of the watch should call the master - navigation with a pilot embarked - briefing of watch keeping personnel - describes the duties of the officer of the watch while at anchor - lists the entries which should be made in the log-book	K K			Annex 1	
1.2.2.2	Keeping a watch in port - states the arrangements for keeping watch in port should: - ensure the safety of life, ship, cargo and port - observe international, national and local rules - maintain order and the normal routine of the ship - describes taking over the watch and lists the information which the officer being relieved should pass to the relieving officer - lists the matters on which the relieving officer should satisfy himself before assuming charge of the watch - describes how the watch should be kept and lists the points to which attention should be paid - describes the actions to take on receiving a storm warning or in an emergency threatening the safety of the ship - lists the entries which should be made in the log-book	K K K K K	Lecture	Written test	STCW '95 Section A, Ch. VIII (pages 157 – 159) T 10 : Ch. XIII T 36 : Ch. 9 T 70 : Ch. 26, 28	

S : Principles in keeping a navigational watch **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids

1.2.2.3	Keeping a safe deck watch in port when carrying hazardous cargo
	- defines 'hazardous cargo'
	- states that sufficient personnel should be readily available on board when carrying hazardous cargo in bulk
	- explains that special requirements mat be necessary for special types of ships or cargo, particularly with respect to:
	  - the number of crew required on board
	  - the state of readiness of fire-fighting appliances and other safety equipment
	  - special port regulations
	  - communications with the shore in the event of an emergency arising
	  - special precautions to prevent pollution of the environment
	- explains that the officer of the watch should be aware of the nature of the hazards and any special precautions necessary for the safe handling of the cargo
	- states that the officer of the watch should be aware of the appropriate action in the event of a spillage or fire
	- describes the procedure for entry into enclosed spaces using a 'permit to work', and the monitoring of work in progress
	- describes the arrangements and procedures for rescue from an enclosed space in an emergency
		K
		K
		K
		K
		K
		K
			Lecture	Written test	STCW '95 Section A, Ch. VIII (pages 157 – 159)
					T 10 : Ch. XIII
					T 36 : Ch. 7 and 8
					T 70 : Ch. 17, 27	

F : **Navigation at the operational level**
C : **Maintain a safe navigational watch**
S : **The use of routeing – 4 hours**

Lesson Plan for ANT IV

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
1.2.3.1 4 hrs	**Weather routeing** - demonstrates the use of climatological information from routeing charts and sailing directions for route planning	K	Lecture	Written test Work assignment	T 61 : Ch. 5.53	

F : Navigation at the operational level
C : Respond to emergencies
S : Precaution for the protection and safety of passengers – 9 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
1.3.1.1 8 hrs	Contingency plans for response to emergencies - lists the contents of a muster list and emergency instructions - states that duties are assigned for the operation of remote controls such as: - main engine stop - ventilation stops - lubricating and fuel oil transfer pump stops - dump valves - CO^2 discharge - watertight doors - and operation of essential services such as: - emergency generator and switchboard - emergency fire and bilge pumps - describes the division of the crew into a command team, an emergency team, a back-up emergency team and an engine-room emergency team - explains the composition of emergency teams - states that crew members not assigned to emergency teams would prepare survival craft, render first aid, assemble passengers and generally assist the emergency parties as directed - states that the engine-room emergency team would take control of ER emergencies and keep the command team informed - states that good communications between the command	K K K K K K K	Lecture	Written test	**T 10 :** Ch. IX **T 29 :** Ch. 1 - 33 **T 36 :** Ch. 1 **T 70** : all	OHS

S : Precaution for the protection and safety of passengers – 9 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids

	team and the emergency teams are essential
	- describes the actions to take to deal with:
	  - fire in specific areas such as galley, accommodation, engine-room or cargo space, including co-ordination with shore facilities in port, taking account of the ship's fire-control plan
	  - rescue of victims of a gassing accident in an enclosed space
	  - heavy weather damage, with particular reference to hatches, ventilators and the security of deck cargo
	  - rescue of survivors from another ship or the sea
	  - leakages and spills of dangerous cargo
	  - stranding
	  - abandoning ship
	- explains the importance of drills and practices
		K
		
		K				

1.3.1.2
 	
1 hrs
	Precautions for protection and safety of passengers in emergency situations
	- states that some crew members will be assigned specific duties for the mustering and control of passengers
	- lists the duties as:
	  - warning the passengers
	  - ensuring that all passengers spaces are evacuated
	  - guiding passengers to muster stations
	  - maintaining discipline in passageways, stairs and doorways
	  - checking that passengers are suitably clothed and that life jackets are correctly donned
	  - taking a roll-call of passengers
		
		K
		
		K
			Lecture	Written test		OHS

S : **Precaution for the protection and safety of passengers – 9 hours** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- instructing passengers on the procedure for boarding survival craft or jumping into the sea - directing them to embarkation stations - instructing passengers during drills - ensuring that a supply of blankets is taken to the survival craft					

F : **Navigation at the operational level**
C : **Respond to emergencies**
S : **Initial assessment of damage and damage control** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
1.3.2.1 2 hrs	Initial assessment of damage and damage control - describes the inspection for damage - describes measures which may be taken to plug holes, shore up damaged or stressed structure, blank broken piping, make safe damaged electrical cables and limit ingress of water through a damaged deck or superstructure - outlines the measures to be taken when the inert gas main and gas lines to a mast riser are fractured - states that continuous watch should be kept on the damaged area and temporary repairs - describes in general the measures which should be taken in order to attempt to limit the damage and salve the own ship	 K K K K K				

F : **Navigation at the operational level**
C : **Respond to emergencies**
S : **Initial action following collision**

Lesson Plan for ANT IV

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
1.3.3.1 (1 hr)	Actions following a collision - states that after impact the engines should be stopped, all watertight doors closed, the general alarm sounded and the crew informed of the situation - states that in calm weather the colliding ship should generally remain embedded to allow the other ship time to assess the damage or prepare to abandon ship - states that survival craft should be made ready for abandoning ship or assisting the crew of the other ship - states that damage to own ship should be determined - states that a distress or an urgency signal should be made, as appropriate - states that, if not in danger, own ship should stand by to render assistance to the other for as long as necessary - describes measures to attempt to limit damage to salve own ship - states that all details of the collision an subsequent actions should be entered in the log-book	K K K K K K K K		????	**T 10 :** Ch. VII + ????	

F : **Navigation at the operational level**
C : **Respond to emergencies**
S : **Initial action following grounding** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
1.3.4.1 (1 hr)	**Precautions when beaching a vessel** - describes the circumstances in which a vessel may be beached - states that a gently shelving beach of mud, sand or gravel should be chosen if possible - explains why beaching should be at slow speed - states that wind or tide along the shore will quickly swing the ship broadside on to the beach - describes measures which can be taken to prevent the ship driving further ashore and to assist with subsequent refloating - states that all tanks and compartments should be sounded and an assessment made of damage to the ship - states that soundings should be taken to establish the depth of water round the ship and the nature of the bottom	K K K K K K K	Lecture	????	**T 10 :** Ch. VIII + ????	
1.3.4.2 (1 hr)	Actions on stranding/grounding - states that, on stranding, the engines should be stopped, watertight doorsclosed, the general alarm sounded and, if on a falling tide, the engines should be put full astern to see if the ship will immediately refloat - states that the engineers should be warned to change to high-level water intakes - states that a distress or urgency signal should be transmitted and survival craft prepared if necessary - states that all tanks and compartments should be sounded and the ship inspected for damage	K K K K	Lecture	????	**T 10 :** Ch. VIII + ????	

S : Initial action following grounding **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- states that soundings should be taken to establish the depth of water round the ship and the nature of the bottom	K				
	- describes measures which can be taken to prevent further damage to the ship and to assist with subsequent refloating	K				
	- explains how ballast or other weights may be moved, taken on or discharged to assist refloating	K				
	- describes the use of ground tackle for hauling off	K				
	- describes ways in which tugs may be used to assist in refloating	K				
	- describes the use of the main engine in attempting to refloat and the danger of building up silt from its use	K				
1.4.2.5 (2 hrs)	Procedures for abandoning ship - states that a ship should only be abandoned when imminent danger of sinking, breaking up, fire or explosion exists or other circumstances make remaining on board impossible - states that a distress call should be transmitted by all available means until acknowledged - lists the information to include in the distress message - describes other distress signals which may be used to attract attention - states that extra food and blankets should be placed in boats when time allows - states that the emergency radio / SART / EPIRB should be placed in a survival craft to which a radio officer, where one is carried, is assigned - states that warm clothing and life jackets should be worn - describes the launching of boats and life rafts when the				**T 10 :** Ch. VI Ch. IX + ????	

S : Initial action following grounding **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	ship is listing heavily - describes the launching of boats and life rafts in heavy weather - describes the use of oil to calm the sea surface and explains why fuel oil is not suitable - states that the lifeboats with motors should be used to tow craft clear of ship, pick up survivors from the water and marshal survival craft - states that survival craft should remain together in the vicinity of the sinking ship to aid detection and rescue - describes the use of rocket line-throwing appliances and breeches buoy					

F : **Navigation at the operational level**
C : **Respond to a distress signal at sea**
S : **Search and Rescue – 2 hours** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
1.4.1.1 2 hrs	Search and rescue - recognises the procedures as listed in the IMO International Aeronautical Maritime Search and Rescue manual (IAMSAR) - states the purposes of the IAMSAR organisation - states the legal obligations - states the procedures for rendering assistance - states the procedures and equipment for rendering assistance - states the different means of communications available under the GMDSS - states the tasks and procedures for On Scene Coordination (OSC) - given the necessary parameters, constructs a search pattern	K K K K K K K K	Lecture	Written	**T 45** **T 90 :** Ch. 9 Ch. 10	OHS ; Adm.List of Radio Signals, vol. 5 and vol.7

F : **Navigation at the operational level**
C : **Manoeuvre the ship and operate small ship power plants**
S : **Ship Manoeuvring and Handling – 15 hours** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids

1.5.1.1
 	
6 hrs.
	Turning circles and stopping distances
	- outlines the provision and display of manoeuvring information recommended in Assembly resolution A.601 (15)
	- defines the terms:
	  - advance
	  - transfer
	  - drift angle
	  - tactical diameter
	  - track reach
	  - head reach
	  - side reach
	- compares the turning circles of a ship in the loaded and ballast conditions
	- compares turning circles for differing speeds
	- describes the accelerating turn and the decelerating turn
	- states that the size of the turning circle increases as the under-keel clearance reduces
	- describes how speed reduces during a turn under steady engine power
	- compares the stopping distances of a ship in the loaded and ballast conditions
	- explains why a loaded ship carries her way longer than when in ballast
	- states that the stopping distance for a loaded ship may be up to three times the stopping distance when in ballast
		K	Lecture	Written test	**T 10 :**
					Ch. 3 and 4
					
					T 21 :
					Introduction, Ch. 2, 8
					
					T 38 :
					Ch. 1
						OHS

S : Ship Manoeuvring and Handling – 15 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- states that in shallow water a ship will carry her way longer that in deep water - defines directional stability - describes the steering behaviour of directionally stable and directionally unstable ships					

1.5.1.2
 	
2 hrs.
	Effect of wind and current on ship handling
	- explains the position of the pivot point with the vessel stopped, making headway and making sternway
	- explains the significance of the pivot point position on the response of the vessel to applied forces
	- explains how the effect of wind on given ship depends upon:
	  - the wind strength
	  - the relative direction of the wind
	  - the above-water area and profile
	  - the draught and trim
	  - the ship's fore and aft movement
	- describes the behaviour of a ship moving ahead with a wind from various directions
	- states that, as a ship is slowed, a speed is reached at which the wind prevents maintaining course
	- describes the effect of wind when making large turns
	- describes the effect of wind on a ship making sternway
	- describes the effect of wind on a disabled vessel
	- explains the importance of creating a lee when requiring smaller vessel to come alongside
	- describes the effect of current on the motion of a ship
	- states that in rivers and narrow channels the current is
		K	Lecture	Written test	T 10 : Ch. 3 and 4
					
					T 21 : Introduction, Ch. 1, 3, 5, 8
					
					T 38 : Ch. 1, 2, 5, 6, 7, 8,	

S : Ship Manoeuvring and Handling – 15 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	usually stronger in the centre of a straight channel or at the outside of bends - describes how to make use of different current strengths when turning in a channel - describes how a current may be used to control lateral movement toward or away from a river berth - explains how to use an anchor to dredge down with a current					
1.5.1.3 3 hrs.	Squat, shallow water and similar effects - defines shallow water as a depth of less than 1.5 x ship's draught - explains that shallow-water effects become more marked as depth decreases - lists shallow-water effects as: - increased directional stability - a large increase in turning radius - the ship carrying her way longer and responding slowly to changes in engine speed - speed falling less during turns - squat increasing - trim changing, usually by the head for a full hull form and by the stern for a fine form - defines 'squat' as the reduction of under-keel clearance resulting from bodily sinkage and change of trim which occurs when a ship moves through the water - states that squat is considerably reduced by a reduction of speed - defines 'blockage factor' as the ratio of the cross-sectional	K	Lecture	Written test	T 10 : Ch. 3 and 4 T 21 : Introduction, Ch. 7, 8 T 38 : Ch. 2	OHS

S : Ship Manoeuvring and Handling – 15 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	area of the ship to the cross-sectional area of water in a channel - states that squat and other shallow-water effects increase as the blockage factor increases - states that excessive speed in shallow-water can ground a ship in water of sufficient depth to float it at slow speed - states that approaching shoal patches or banks may give rise to an unexpected sheer - states that reduced speed should be used in shallow water and narrow channels to reduce shallow-water effects and allow time to correct an unwanted sheer - states that increased vibration may be experienced in shallow water					
1.5.1.4 4 hrs.	Proper procedures for anchoring and mooring - describes how anchors should be cleared away ready for use - describes how the approach to an anchorage is made with regard to current, wind and speed over the ground - states that anchors should be walked back clear of the hawse pipes when approaching the anchorage - describes the use of anchor buoys - describes the safety measures to be taken by the anchor party - describes the method of letting go and the amount of cable to veer initially - describes the marking of the cable and the reports to be made to the bridge - explains how to determine when the ship is brought up	K	Lecture	Written test	**T 10** : Ch. 1, 2, 3 and 4 **T 21 :** Introduction, Ch. 6, 8 **T 38** : Ch. 4, 5, 6, 8 **TX 34**	OHS Models

S : Ship Manoeuvring and Handling – 15 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- states that the lights or shape for a vessel at anchor should be displayed as soon as the ship is brought up - describes the procedures for anchoring in water too deep to let the anchor go on the brake - describes the different methods that may be used to anchor a large ship - describes the securing of anchors on the completion of anchoring - describes the preparation for and procedure during heaving up - explains how to handle cable safety in a non-self-stowing locker - explains how to secure anchors and seal spurling pipes for a sea passage - lists the preparations to be made for berthing alongside - describes the use of head ropes, stern ropes, breast ropes and springs - describes the safety measures to be taken when handling mooring ropes and wires - describes how to join two mooring ropes together - describes typical mooring arrangements - demonstrates hew to put a stopper on a rope or wire rope - demonstrates how to make a mooring rope or wire fast to bitts - describes the use of self-tensioning winches - states the importance of keeping mooring lines clear of the propeller and notifying the bridge when the propeller is not clear					

S : Ship Manoeuvring and Handling – 15 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- describes how to make fast tugs on towing hawsers or lashed up alongside - describes the use of fenders during berthing and when secured in position describes methods of mooring to a buoy - explains how to use a messenger to pass a wire or chain to a buoy - explains how to set up and secure a ship wire - describes the method of securing ropes and wires to a buoy - describes the procedures for singling up and letting go from berths and buoys - explains how to slip a slip wire - describes how to stow mooring ropes and wires for a sea passage - explains how to rig and light the pilot ladder - slates what equipment should be at hand ready for use at the pilot ladder - that the rigging of the ladder and the embarkation and disembarkation of the pilot should be supervised by a responsible officer					

F : Navigation at the operational level
C : Manoeuvre the ship and operate small ship power plants
S : Operate small ship power plant and auxiliaries - ?? hrs

Lesson Plan for ANT IV

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
1.5.2.1 hrs.	**Marine power plants :** - describes the principle of 4-stroke medium speed diesel engine, including main components - describes the combustion process, fuel consumption and efficiency related to distance and bunker capacity - describes principles of diesel auxiliary systems like fuel, lubrication, super charging, cooling, bilge and ballast systems including commonly used pumps, filters and heat exchangers - describes shafting, couplings and reversible gearing systems, including CPP - describes the principle of governing, including bridge control - lists routine actions and checks to be made before starting up a power plant - defines records of important running data and its normal values	K K K K K K K	Lecture	Written test	Motor Engineering Knowledge for Marine Engineers, Vol. 10 Reeds	OHS, Models and/or components
1.5.2.2 hrs.	Ships' auxiliary machinery : - describes principles of the compressed air system - describes the principle of refrigeration - describes principles of deck machinery, including hydraulic powered machinery - describes the steering gear principles, including electrical and hydraulic powered systems and emergency steering - describes the principle of the shipboard electrical system including generators, batteries, switch board and earth	K K K K K	Lecture	Written test	General Engineering Knowledge for Marine Engineers, Vol. 8 Reeds	OHS, Models and/or components

S : Operate small ship power plant and auxiliaries - ?? hrs **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	protection - lists routine actions and checks to be made before starting up machinery	K				
1.5.2.3	Marine engineering terminology :					

F : **Cargo handling and stowage at the operational level**
C : **Monitor the loading, stowage, securing and unloading of cargoes and their care during the voyage**
S : **Safe handling, stowage and securing of cargoes – 31 hours** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
2.1.1.1 9 hrs	Cargo care, inspection and preparation of holds - outlines the reasons for a general inspection of holds - lists items to be inspected - states the importance of cleaning holds before loading - describes how to clean holds after discharge of a general cargo - states the reasons for using dunnage - describes the types and sizes of material used for dunnage - states the methods of dunnaging a hold for various cargoes and how to dispose of old dunnage - states that dirty dunnage may taint or contaminate the next cargo - states that bilges or drain wells should be clean dry and sweet-smelling disinfectants used - states how bilge suctions should be checked for efficient working scuppers and sounding pipes - describes how limbers and drain well covers should be treated to prevent suctions being blocked by small debris, but ensuring free drainage to the suctions Cargo care, segregation and separation of cargoes - states the need for the segregation of different cargoes with reference to: - dangerous goods - dry cargo - wet cargo	 K K K K K K K K K K K	Lecture	Written test	**T 59 :** Ch. I, II, III, IV, VI, and VII **TX 1 :** Part 1 Part 2 Part 4 **TX 6 :** Ch. 5 Ch. 6 Ch. 9	

S : Safe handling, stowage and securing of cargoes – 31 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- clean cargo - dirty cargo - delicate cargo					
	- states that separation between parcels of cargo for different consignees or different ports of discharge is required	K				
	- states the use of port marking to separate parcels for discharge at different ports	K				
	Cargo care, ventilation and control					
	- lists the factors involved in the control of sweat by ventilation	K				
	- states the difference between ship's sweat and cargo sweat and explains the conditions in which each is experienced	K				
	- describes the system of natural ventilation and how it should be controlled to minimize the formation of sweat	K				
	- describes forced ventilation and humidity control for cargo holds and states the properties measured	K				
	- states how to operate the ventilation system described in the above objective	K				
	- states that ventilation is also required for the removal of heat, gases and odours	K				
	- gives examples of cargoes requiring special ventilation	K				
	Cargo care, refrigerated cargo					
	- states the need for the pre-cooling of spaces and dunnage to be used	K				
	- describes the dunnaging requirements for refrigerated	K				

S : Safe handling, stowage and securing of cargoes – 31 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	cargo - gives examples of commodities carried chilled - gives examples of frozen cargoes - lists the inspections of the cargo which should be made before and during the loading	 K K K				
2.1.1.2	Securing cargoes - states the need for solid stow and securing of all cargoes - states that cargo liable to slide during rolling, such as steel rails, should be stowed fore and aft - describes methods of blocking, lashing, shoring and tombing cargo - describes methods of securing cargo faces resulting from part discharge before making a sea passage - describes methods of securing heavy loads and heavy lifts - describes methods of stowing and securing vehicles and trailers - states that containers, trailers, portable tanks and other cargo units should be secured in accordance with the ship's cargo securing arrangements manual	 A K K K K K K	Lecture	Written test	**TX 1 :** part 1 & 2, page 1 – 129 **TX 8 : Ch. 1 - 6** ????	

S : Safe handling, stowage and securing of cargoes – 31 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids

2.1.1.3
 	
7 hrs
	Cargo handling equipment and safety
	- states the importance of care and maintenance of:
	  - standing rigging
	  - topping lifts, cargo runners, guys and preventers
	  - cargo blocks and topping lift blocks
	  - derrick heel fittings
	- recognises the rigging of derricks for loading and discharging cargo
	- states that gear should be set up in accordance with the ship's rigging
	- describes means of securing derricks for sea
	- states the precautions to take when lifting bales with hooks in the bale bands and damage caused by hooks generally
	- describes the handling of common unitized and pre-slung loads
	- states the precautions to be taken when fork-lift trucks or similar devices are used in the 'tween-decks or holds
	
	Cargo handling safety
	- states that all cargo gear should be visually inspected before the start of cargo operations each day and awareness of test certifications and registration
	- states why the load on cargo gear should never exceed its safe working load
	- states that ropes, wires, blocks and loose gear should be subject to frequent inspections while in use for cargo operations
		K
		
		K
		
		A
		
		K
		K
		
		K
		
		A
		
		A
		
		A
		
		A
			Lecture	Written test	**T 10 :**
					h. XV
					
					T 59 :
					Ch. I
					Ch. VIII
					
					T 70 :
					5, 6, 7, 21
					
					TX 6 :
					Ch. 4
					
					T 36 :
					Ch. 9
					
					TX 32	

S : Safe handling, stowage and securing of cargoes – 31 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- states that mechanically or hydraulically operated hatches should be opened or closed by the ship's crew under the supervision of a responsible person	A				
	- states that hatch covers should be secured by locking devices to prevent them moving accidentally	A				
	- states that beams and covers of partially opened hatches should be secured to prevent their accidental displacement	A				
	- states that hatch openings should be securely fenced	A				
	- states that it is the ship's responsibility to cover hatches when notice of completion of work for the day is given by the stevedore in charge	A				
	- states that no person should use a ladder in the square of a hatch while cargo is being hoisted or lowered in that square	A				
	- states that no person should stand or pass under a suspended load	A				
	- describes the provision of adequate lighting for working spaces, portable lights and precaution with dangerous cargoes, e.g. jute	A				
	- states that portable lights should be removed from cargo spaces as soon as they are no longer required	A				
	- states that unattended portable lights are potential fire hazards	A				
2.1.1.4 4 hrs	Oil tanker piping and pumping arrangements, tanker arrangement - recognises, for crude carriers and product tankers, the general arrangement of: - cargo tanks - pump-rooms	K	Lecture	Written test	**T 31 :** Ch. 1 - 13 **T 59 :**	

S : Safe handling, stowage and securing of cargoes – 31 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- segregated ballast tanks - slop tanks - cofferdams - peak tanks - deep tanks Oil tanker piping and pumping arrangement, cargo piping system - recognises the direct pipeline arrangement in crude carriers - recognises the ring-main system in a product tanker - recognises the piping arrangements in a pump-room - recognises the system of individual deep-well pumps for a product tanker - recognises : - deck lines - drop lines - stripping lines - crossovers - bypasses - master valves - tank suction valves - sea suction valves Oil tanker piping and pumping arrangement, cargo pumps - states the main applications of : - centrifugal pumps - positive-displacement pumps (reciprocating and screw) - eductors	K K K K K			Ch. V **T 41 :** **Ch. 1** Ch. 4 Ch. 5 Ch. 6 **T 36 :** **Ch. 5** Ch. 6 **TX 9 :** Ch. 2 Ch. 3 Ch. 4	

S : Safe handling, stowage and securing of cargoes – 31 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids

2.1.1.5
 	
2 hrs
	Precautions before entering enclosed or contaminated spaces
	- lists potentially dangerous spaces, including:
	  - cargo spaces
	  - cargo, fuel and ballast tanks
	  - pump-rooms
	  - cofferdams
	  - duct keels
	- states that enclosed spaces should be entered only with authorization and after appropriate safety checks have been carried out
	- states that an enclosed space may be lacking in oxygen or contain flammable or toxic gases
	- states that the master or responsible officer must ensure that a space is safe for entry by:
	  - ensuring that the space has been thoroughly ventilated
	  - testing at several levels for oxygen content and the presence of harmful vapours
	  - requiring breathing apparatus to be worn when there is any doubt about the adequacy of ventilation or testing
	- states that the oxygen content should be 21% by volume before entry is permitted
	- states that a space where the atmosphere is known to be unsafe should be entered only in an emergency, after safety checks have been carried out, and wearing breathing apparatus
	- describes a permit-to-enter system using safety checklists to be followed by the responsible officer and the person(s) entering the space
		K
		
		A
		
		K
		
		A
		
		K
		
		A
		
		K
			Lecture	Written test	**T 29 :**
					Ch. 11, 29, app. 1,
					
					T 31 :
					Ch. 10
					
					T 59 :
					Ch. I
					
					T 70 :
					Ch. 16
					Ch. 17	

S : Safe handling, stowage and securing of cargoes – 31 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- lists the items appearing on the checklists - describes the protective clothing and equipment which should be used by or be available to those entering the space - states that mechanical ventilation should be maintained throughout the time persons are in an enclosed space - states that periodical tests of the atmosphere should be made by persons working in an enclosed space - states that all safety checks should be repeated before re-entering a space after a break	K K A K K				
2.1.1.6 5 hrs	Cargo calculations and cargo plans - distinguishes between bale capacity and grain capacity - defines 'stowage factor' - describes 'broken stowage' - given the capacity of the hold and the stowage factor of the cargo, calculates the weight that the holds will contain - given the weights and stowage factors of one or more cargoes, calculates the space required - calculates the number of packages of given dimensions which can be loaded in a stated space, making allowance for broken stowage - given the maximum permissible loading of a 'tween-deck, calculates the maximum height to which cargo of stated stowage factor can be loaded - describes 'ullage' - states that to calculate the weight in a tank, tank calibration tables and cargo density is required - states that density should be adjusted for temperature	K K K S S S K K K	Lecture	Written test	**T 59 :** Ch. VIII	

S : **Safe handling, stowage and securing of cargoes – 31 hours** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- states that to determine the ullage required, tank calibration tables, given weights and densities of cargo is required	K				
	- states the use of a capacity plan to estimate the quantity of cargo which can be loaded in part of a 'tween-deck	K				

F : **Cargo handling and stowage at the operational level**
C : **Monitor the loading, stowage, securing and unloading of cargoes and their care during the voyage**
S : **Use of International Maritime Dangerous Goods Code – ?? hours** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
2.1.2.1 4 hrs	Dangerous, hazardous and harmful cargoes - states that the IMDG Code lays down the packing requirements - states that any doubts about the suitability and integrity of packages should be reported to the master or chief mate - describes the classification of dangerous goods in the International Maritime Dangerous Goods (IMDG) Code - states that the properties, characteristics and physical state of the different substances, materials and articles can be found in the IMDG code - states that the duty officer should have information on the quantities, types of package, proper shipping names (correct technical names), classification, stowage and segregation of the dangerous goods to be handled - states that the duty officer should have information on the special measures to be taken when a certain dangerous cargo is handled - states that the measures to be taken in the event of an incident or accident should be made known and that any necessary equipment and sufficient crew to operate it should be available - states that the actions to be taken are laid down in the IMO Emergency Procedures for Ships Carrying Dangerous Goods (EmS), the IMO Medical First Aid Guide for Use in Accidents Involving Dangerous Goods (MFAG) and the International Medical Guide for Ships		Lecture	Written test	**T 36 :** Ch. 7 Ch. 8 **TX 17** TX 18 **TX 70 :** Ch. 4 CXh. 8 TX 7 **TX 1 :** Part 2	

S : **Use of International Maritime Dangerous Goods Code – ?? hours** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	(IMGS) - states that any incident or accident dunning the handling of dangerous goods should be reported immediately to the person in charge of the operation - states the fire precautions which should be taken when carrying dangerous goods - states the precautions which should be taken while loading or discharging explosives - recognises stowage and segregation requirements for the different types of ships: - on deck only - on deck or under deck - away from - separated from - separated by a complete compartment or hold from - separated longitudinally by an intervening complete compartment or hold from					

F : **Controlling the operation of the ship and care for person on board at the operational level**
C : **Ensure compliance with pollution-prevention requirements**
S : **The precautions to be taken to prevent pollution of the marine environment** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
3.1.1.1	**International Convention for the Prevention of Pollution from Ships, 1973, and the Protocol of 1978 relating thereto (MARPOL 73178):**		Lecture	Written test	**T 41 :** Ch. 12	OHP
	- defines, for the purpose of MARPOL 73/78:	K				
	- harmful substance - discharge - ship - incident				**TX 10** : p. 1 – 8; p. 27 - 29	
	- states that violations of the Convention are prohibited and that sanctions should be established for violations, wherever they occur, by the Administration of the ship concerned	K			**TX 9 :** Ch. 13	
	- describes the inspections which may be made by port State authorities and outlines actions which they may take	K			**T 36 :** Ch. 2	
	- describes the provisions for the detection of violations and enforcement of the Convention	K			**TX 29 :** Ch. 6	
	- states that reports on incidents involving harmful substances must be made without delay	K				
	- recognises the ecological and financial aspects regarding the pollution of the marine environment	K				
	Annex l – Oil	K			**TX 10** : Introduction	
	- defines, for the purposes of Annex I: - oil - oily mixture				Annex I : p. 39 – 98	

S : The precautions to be taken to prevent pollution of the marine environment **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- oil fuel - oil tanker - combination carrier nearest land - special area - instantaneous rate of discharge of oil content - wing tank - centre tank - slop tank - clean ballast - segregated ballast				**T 41 :** Ch. 11 Ch. 12 **TX 9 :** Ch. 7 Ch. 15	
	- describes the surveys and inspections required under the provisions of MARPOL 73/78	K			**TX 29 :** Ch. 6	
	- describes the steps which may be taken if a surveyor finds that the condition of the ship or its equipment is unsatisfactory	K				
	- describes that the condition of the ship and its equipment should be maintained to conform with the provisions of the Convention	K				
	- states that the certificate issued after survey is the International Oil Pollution Prevention (IOPP)	K				
	- states that the IOPP Certificate should be available on board the ship at all times	K				
	- states the general contents and purpose of the IOPP	K				
	- states the conditions under which oily mixtures may be discharged into the sea from an oil tanker	K				
	- states the condition under which oily mixtures from machinery-space bilges may be discharged into the sea	K				
	- describes that the provisions do not apply to the discharge	K				

S : The precautions to be taken to prevent pollution of the marine environment **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	of clean or segregated ballast - describes the conditions under which the provisions do not apply to the discharge of oily mixtures from machinery spaces where the oil content without dilution does not exceed 15 parts per million	K				
	- states that residues which cannot be discharged into the sea in compliance with the regulations must be retained on board or discharged to reception facilities	K				
	- lists special areas for the purposes of Annex I as the Antarctic area, the Baltic Sea area, Mediterranean sea area, Black Sea area, The Gulf area, Gulf of Aden area, Red Sea area and north-west European waters	K				
	- states that any discharge into the sea of oil or oily mixtures from an oil tanker or other ships of 400 tons gross tonnage and above is prohibited while in a special area	K				
	- states the conditions under which a ship, other than an oil tanker, may discharge oily mixtures in a special area	K				
	- states that the regulation does not apply to the discharge of clean or segregated ballast	K				
	- describes conditions in which processed bilge water from machinery spaces may be discharged in a special area	K				
	- describes the exceptional circumstances in which the regulations on the discharge of oil or oily mixtures do not apply	K				
	- describes that ballast water should not normally be carried in cargo tanks of tankers provided with segregated ballast tanks	K				

S : The precautions to be taken to prevent pollution of the marine environment **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- describes the exceptions in which ballast may be carried in cargo tanks	K				
	- states that every oil tanker operating with crude oil washing systems should be provided with an Operations and Equipment Manual	K				
	- states that, in new ships of 4,000 tons gross tonnage and above and in new oil tankers of 150 tons gross tonnage and above, no ballast water should normally be carried in any oil fuel tank	K				
	- states the requirements for the provision of Oil Record Books	K				
	- lists the entries required for machinery space operations in part A of the Oil Record Book	K				
	- lists the entries required in respect of cargo or ballast operations in oil tankers	K				
	- states the entries required for accidental or other exceptional discharge of oil	K				
	- states that the Oil Record Book should be kept on board readily available for inspection and should be preserved for a period of three years after the last entry has been made	K				
	Annex II - Noxious Liquid Substances in Bulk				**TX 9 :** Ch. 13	
	- states that the requirements of Annex II apply to all ships carrying noxious liquid substances in bulk	K				
	- describes that noxious liquid chemicals are divided into four categories, A, B, C, D, such that substances in	K			**TX 10 :** Inroduction	

S : The precautions to be taken to prevent pollution of the marine environment **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	category A pose the greatest threat to the marine environment and those in category D the least				Annex II	
	- states that the conditions for the discharge of any effluent containing substances falling in those categories are specified	K			**TX 29 :** Ch. 6	
	- states that more stringent requirements apply in special areas, which for the purposes of Annex II are the Baltic Sea area and the Black Sea area	K				
	- describes that pumping and piping arrangements are to be such that, after unloading, the tanks designated for the carriage of liquids of categories B or C do not retain more than certain stipulated quantities of residue	K				
	- states that the discharge operations of certain cargo residues and certain tank-cleaning and ventilation, operations may only be carried out in accordance with approved procedures and arrangements based on standards developed by IMO	K				
	- states that each ship which is certified for the carriage of noxious liquid substances in bulk should be provided with a Procedures and Arrangements Manual	K				
	- states that the Manual identifies the arrangements and equipment needed to comply with Annex II and specifies the operational procedures with respect to cargo handling , tank cleaning, slops handling, residue discharging, ballasting and deballasting which must be followed in order to comply with the requirements of Annex II	K				
	- states that each ship should be provided with a Cargo Record Book which should be completed, on a tank-by-	K				

S : The precautions to be taken to prevent pollution of the marine environment **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	tank basis, whenever any operations with respect to a noxious liquid substance take place					
	- states that a surveyor appointed or authorized by the Government of a Party to the Convention to supervise any operations under this Annex should make an appropriate entry in the Cargo Record Book	K				
	- describes the surveys required for ships carrying noxious liquid substances in bulk	K				
	- states that the certificate issued on satisfactory completion of the survey is an International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk	K				
	Annex III - Harmful Substances Carried by Sea in Packaged Forms, or in Freight Containers, Portable Tanks or Road and Rail Tank Wagons				**TX 7 :**	
	- states that for the purpose of this annex, empty receptacles, freight containers and portable road and rail tank wagons which have been used previously for the carriage of harmful substances are treated as harmful substances themselves unless precautions have been taken to ensure that they contain no residue that is hazardous to the marine environment	K			**TX 10 :** Inroduction Annex III	
	- states that packaging, containers and tanks should be adequate to minimize hazard to marine environment	K			**TX 29 :** Ch. 6	
	- describes the requirements for marking and labelling packages, freight containers, tanks and wagons	K				
	- describes the documentation relating to the carriage of	K				

S : The precautions to be taken to prevent pollution of the marine environment **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	harmful substances by sea - states that certain harmful substances may be prohibited for carriage or limited as to the quantity which may be carried aboard any one ship - describes that jettisoning of harmful substances is prohibited except for the purpose of securing the safety of the ship or saving life at sea **Annex IV – Sewage** - describes the provisions regarding the discharge of sewage into the sea - states the general contents and purpose of the 'Sewage Pollution Prevention certificate' **Annex V – Garbage** - defines, for the purposes of Annex V: - garbage - nearest land - special area - states that the provisions of Annex V apply to all ships - states that the disposal into the sea of all plastics is prohibited - states the regulations concerning the disposal of other garbage - describes the use of the 'Garbage Record Book'	K K K K K K K K K			**TX 10 :** Inroduction Annex IV **TX 29 :** Ch. 6 **TX 10 :** Inroduction Annex V **TX 29 :** Ch. 6	

S : The precautions to be taken to prevent pollution of the marine environment **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	Annex VI – Air-pollution - describes the sources of air pollution from exhaust gasses (Noxes and Soxes) - describes the measurements taken to avoid / minimize his pollution **Annex VII – Ballast water** - describes the content of the Annex - describes the legal and operational developments regarding the use of ballast water	K K K K				
3.1.1.2	**Other conventions regarding marine pollution :** Convention of the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Dumping Convention) (LDC) - describes the aims of the Convention - defines, for the purpose of the Convention: - dumping - wastes or other matter - special permit - general permit - states that the dumping of wastes or other matter in whatever form or condition, as listed in annex I, is prohibited - states that the dumping of wastes or other matter listed in annex II requires a prior special permit - states that the dumping of all other wastes or matter requires a prior general permit - describes that the provisions of Article IV do not apply	K K K K K	Lecture	Written test	??????	OHS;

S : The precautions to be taken to prevent pollution of the marine environment **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	when it is necessary to secure the safety of human life or of vessels in cases of force majeure caused by stress of weather, or in any case which constitutes a danger to human life or a real threat to vessels					
	International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, 1969					
	- describes the rights of Parties to the Convention to intervene on the high seas following a maritime casualty	K				
	International Convention on Civil Liability for Oil Pollution Damage, 1969 (CLC 1969)					

	- defines, for the purposes of the Convention:
	  - ship
	  - owner
	  - oil
	  - pollution damage
	  - preventive measures
	  - incident
		K				

	- describes the occurrences to which the Convention applies	K				
	- states that the owner of a ship is strictly liable for any oil pollution damage caused by the ship as the result of an incident	K				

F : **Controlling the operation of the ship and care for person on board at the operational level**
C : **Ensure compliance with pollution-prevention requirements**
S : **Anti-pollution procedures and associated equipment** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
3.1.2.1	Basic knowledge of Regulation 26 Annex 1 MARPOL 73/78 - describes the key points in a typical shipboard oil pollution emergency plan (SOPEP)	K	Lecture	Written test	**TX 29 :** Ch. 6	OHS
3.1.2.2	Basic knowledge of anti-pollution equipment required by national legislation - for example, lists that equipment required under OPA 90 of the United States	K	Lecture	Written test	**TX 29 :** Ch. 11	OHS

F : Controlling the operation of the ship and care for person on board at the operational level
C : Maintain seaworthiness of the ship
S : Ship stability – 41 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids

3.2.1.1
 	
(hrs)
	Displacement
	- defines the displacement of a vessel as its mass measured in tonnes
	- defines :
	  - light displacement
	  - load displacement
	  - deadweight
	  - tonnes per centimetre immersion (TPC)
	- states that, for a ship to float, it must displace a mass of water equal to its own mass
	- states that, when the mass of a ship changes, the mass of water displaced changes by an equal amount
	- states that displacement is represented by the symbol Δ.
	- states that a graph or scale can be drawn to show the relationship between the displacement and mean draught of a ship
	- given the hydrostatic particulars, finds:
	  - displacements for given mean draughts
	  - mean draughts for given displacements
	  - the change in mean draught when given masses are loaded or discharged
	  - the mass to be loaded or discharged to produce a required change of draught
	- states that TPC varies with different draughts
	- uses the hydrostatic particulars to obtain TPC at given draughts
		K
		
		K
		
		K
		
		K
		
		K
		K
		
		S
		
		K
		S
			Lecture	Written test	TX 12 : Ch. 2, page 17 – 30
					
					TX 11 : Ch. 1
					
					TX 5 : Ch. 1
					Ch. 4
					
					TX 29 : Ch. 2
						OHS;
						
						Hydrostatic particulars;

S : Ship stability – 41 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids

	- uses TPC obtained from a deadweight to find:
	  - the change of mean draught when given masses are loaded or discharged
	  - the mass of cargo to be loaded or discharged to produce a required change of draught
	- defines 'block coefficient' (Cb)
		S
		
		K				

3.2.1.2 (hrs)	Buoyancy - describes what is meant by 'buoyancy' - states that the force of buoyancy is an upward force on a floating object created by the pressure of liquid on the object - defines the centre of buoyancy (B) as being the centre of the underwater volume of the ship - states that the force of buoyancy always acts vertically upwards - describes that the total force of buoyancy can be considered as a single force acting through B - states that when the shape of the underwater volume of a ship changes the position of B also changes - states that the position of B will change when the draught changes and when heeling occurs - states that the buoyancy force is equal to the displacement of a floating object, the weight of the ship - describes what is meant by reserve buoyancy - describes the importance of reserve buoyancy - describes how freeboard is related to reserve buoyancy - describes the purpose of load lines - describes the requirements for maintaining water tight integrity	 K K K K K K K K K K K K K K	Lecture	Written test	**T 11** : Ch. 4, page 22 - 24 Ch. 5 Ch. 12 **TX 5 :** Ch. 6 **TX 11** : Ch. 1 **TX 12** : Ch. 2 **TX 29 :** Ch. 16	OHS; Hydrostatic particulars;

S : Ship stability – 41 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids

3.2.1.3
 	
(hrs)
	Static stability
	- states that weight is the force of gravity on a mass and always acts vertically downwards
	- states that the total weight of a ship and all its contents can be considered to act at a point called the centre of gravity (G)
	- labels a diagram of a midship cross-section of an upright ship to show the weight acting through G and the buoyancy force acting through B
	- states that the buoyancy force is equal to the weight of the ship
	- labels a diagram of a midship cross-section of a ship heeled to a small angle to show the weight acting through G and the buoyancy force acting through B
	- states stability as the ability of the ship to return to an upright position after being heeled by an external force
	- states the lever GZ as the horizontal distance between the vertical forces acting through B and G
	- states that the forces of weight and buoyancy form a couple
	- states that the magnitude of the couple is displacement x lever, Δ x GZ
	- states that variations in displacement and GZ affect the stability of the ship
	- on a diagram of a heeled ship, shows:
	  - the forces at B and G
	  - the lever GZ
	- states that the length of GZ will be different at different angles of heel
	- states that if the couple Δ x GZ tends to turn the ship toward
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			Lecture	Written test	**T 11** :
					Ch. 1
					Ch. 2
					Ch. 6
					Ch. 11
					Ch. 13
					Ch. 14
					Ch. 16
					
					TX 5 :
					Ch. 5
					Ch. 7
					Ch. 8
					
					TX 11 :
					Ch. 4
					
					TX 12 :
					Ch. 4, page 57 - 60
					Ch. 5, page 68 – 71 and 87 – 97
					
					TX 29 :
					Ch. 16
						OHS;
						
						Hydrostatic particulars;

S : Ship stability – 41 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids

	the upright, the ship is stable
	- states that for a stable ship:
	  - Δ x GZ is called the righting moment
	  - GZ is called the righting lever
		K				

3.2.1.4
 	
(hrs)
	Initial stability
	- states that it is common practice to describe the stability of a ship by its reaction to heeling to small angles (up to approximately 10°)
	- defines the transverse metacentre (M) as the point of intersection of successive buoyancy force vectors as the angle of heel increases by a small angle
	- states that, for small angles of heel, M can be considered as a fixed point on the centre line
	- on a diagram of a ship heeled to a small angle, indicates G, B, Z and M
	- shows on a given diagram of a stable ship that M must be above G and states that the metacentric height GM is taken as positive
	- shows that for small angles of heel (φ), GZ = GM x sin φ
	- states that the value of GM is a useful guide to the stability of a ship
	- describes the effect on a ship's behaviour of:
	  - a large GM (stiff ship)
	  - a small GM (tender ship)
	- uses hydrostatic curves or tables to find the height of the metacentre above the keel (KM) at given draughts
	- states that KM is only dependent on the draught of a given ship
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		K
		
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			Lecture	Written test	**T 11** :
					Ch. 1
					Ch. 11
					Ch. 12, page 102 - 108
					Ch. 13
					Ch. 14
					Ch. 16
					Ch. 23
					
					TX 5 :
					Ch. 10
					Ch. 11
					Ch. 15
					
					TX 11 :
					Ch. 4
					Ch. 5
					
					TX 12 :
					Ch. 4, page 57 - 60
						OHS;
						
						Hydrostatic particulars;

S : Ship stability – 41 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- given the values of KG, uses the values of KM obtained from hydrostatic curves or tables to find the metacentre heights, GM - states that there are different minimum requirements for the value of MG (e.g. for a cargo ship, the recommended initial GM should not be less than 0.15m)	S K			Ch. 5, page 68 – 77 and 87 – 97 **TX 29 :** Ch. 16	
3.2.1.5 (hrs)	Angle of Loll - shows that if G is raised above M, the couple formed by the weight and buoyancy force will turn the ship further from the upright - states that in this condition, GM is said to be negative and Δ x GZ is called the upsetting moment or capsizing moment - describes how B may move sufficiently to reduce the capsizing moment to zero at some angle of heel - states that the angle at which the ship becomes stable is known as the angle of loll - states that the ship will roll about the angle of loll instead of the upright - states that an unstable ship may loll to either side - describes why the condition described in the above objective is potentially dangerous	S K K K K K	Lecture	Written test	**T 11** : Ch. 24 Ch. 31 Ch. 38 **TX 5** : Ch. 8 **TX 11** : Ch. 4 Ch. 5 **TX 29 :** Ch. 16	OHS; Hydrostatic particulars;
3.2.1.6 (hrs)	Curves of static stability - states that for any one draught the lengths of GZ at various angles of heel can be drawn as a graph - states that the graph described in the above objective is called a curve of statical stability - states that different curves are obtained for different draughts	K K K	Lecture	Written test	**T 11** : Ch. 14 Ch. 16 Ch. 22 **TX 5 :**	OHS; Hydrostatic particulars;

S : Ship stability – 41 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	with the same initial GM - shows how lowering the position of G increases all values of the righting lever and vice versa	S			**Ch. 11** Ch. 13 **TX 11** : Ch. 9 **TX 12** : Ch. 5, page 87 – 97 **TX 29 :** Ch. 16	
3.2.1.7 (hrs)	Movement of the centre of gravity - states that the centre of gravity (G) of a ship can move only when masses are moved within, added to, or removed from the ship - states that: - G moves directly towards the centre of gravity of added masses - G moves directly away from the centre of gravity of removed masses - G moves parallel to the path of movement of masses already on board - calculates, by using moments about the keel, the position of G after loading or discharging given masses at stated positions - calculates the change in KG during a passage resulting from: - consumption of fuel and stores	K K S S	Lecture	Written test	**T 11** : Ch. 2, page 10 - 18 Ch. 6 **Ch. 11** Ch. 26 Ch. 31 **TX 5 :** **Ch. 10** **TX 11** : Ch. 4 Ch. 9 **TX 12 :** Ch. 4	OHS; Hydrostatic particulars;

S : Ship stability – 41 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
3.2.1.8 (hrs)	List and its correction - shows on a diagram the forces which cause a ship to list when G is to one side of the centre line - states that the listing moment is given by displacement x transverse distance of G from the centre line - uses the formula, where the angle of list (φ) is given by tan φ = (GG1) / (GM * Δ); where GG1 is the transverse shift of G from the centre line - states that in a listed condition the range of stability is reduced - describes the inclining experiment and its purpose	S K S K K	Lecture	Written test	**T 11** : Ch. 1 Ch. 13 Ch. 19 Ch. 26 Ch. 34 **TX 5** : Ch. 8 **TX 12** : Ch. 5, page 78 – 81	OHS; Hydrostatic particulars;
3.2.1.9 (hrs)	Effect of slack water - states that if a tank is full of liquid, its effect on the position of the ship's centre of gravity is the same as if the liquid were a solid of the same mass - states that the centre of gravity of the liquid in a partly filled tank moves during rolling - states that when the surface of a liquid is free to move, there is a virtual increase in KG, resulting in a corresponding decrease in GM - states that the increase in KG is affected mainly by the breadth of the free surface and is not dependent upon the mass of liquid in the tank - states that tanks are often constructed with a longitudinal subdivision to reduce the breadth of free surface	K S K K K	Lecture	Written test	**T 11** : Ch. 7 Ch. 20 Ch. 21 **TX 5** : Ch. 9 Ch. 14 **TX 11** : Ch. 8 **TX 12 :** Ch. 5 **TX 29 :** Ch. 16	OHS; Hydrostatic particulars;

S : Ship stability – 41 hours **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
3.2.1.10 (hrs)	Trim - defines 'trim' as the difference between the draught aft and the draught forward - states that trim may be changed by moving masses already on board forward or aft, or by adding or removing masses at a position forward of or abaft the centre of flotation - defines 'centre of flotation' as the point about which the ship trims, and states that it is sometimes called the tipping centre - states that the centre of flotation is situated at the centre of area of the waterplane, which may be forward of or abaft amidships - uses hydrostatic data to find the position of the centre of flotation for various draughts - defines a trimming moment as mass added or removed x its distance forward or aft of the centre of flotation or, for masses already on board, as mass moved x the distance moved forward of aft - defines the moment to change trim by 1cm (MCT 1cm) as the moment about the centre of flotation necessary to change the trim of a ship by 1cm - uses hydrostatic curves or deadweight scale to find the MCT 1cm for various draughts - defines the effect of trim on tank soundings - uses tank sounding tables with various trim values	K K K K S K K S K S	Lecture	Written test	**T 11** : Ch. 15, Ch. 25 Ch. 27 Ch. 37 **TX 5** : Ch. 12 **TX 11** : Ch. 5 **TX 12 :** Ch. 6	OHS; Hydrostatic particulars;
3.2.1.11 (hrs)	Loss of intact buoyancy - states that flooding should be countered by prompt closing of watertight doors, valves and any other openings which could lead to flooding of other compartments	K	Lecture	Written test	**T 11** : Ch. 21,28,34 **TX 5 :** Ch. 14, 16 **TX 29 :** Ch. 16	OHS; Hydrostatic particulars;

F : **Controlling the operation of the ship and care for person on board at the operational level**
C : **Maintain seaworthiness of the ship**
S : **Ship construction** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
3.2.2.1 (hrs)	Ship dimensions and form - illustrates the general arrangement of the following ship types: - general cargo - tankers - bulk carriers - combination carriers - container - ro-ro - passenger - recognises a given drawing of a general cargo ship, showing holds, engine-room, peak tanks, double-bottom tanks, hatchways and position of bulkheads - recognises a given drawing of a typical crude oil carrier, showing bulkheads, cofferdams, pump-room, engine-room, bunker & peak tanks, cargo tanks and permanent ballast tanks - recognises a given drawing of a plan view of a tanker, showing the arrangement of cargo and ballast tanks - defines and indicates in a given drawing: - camber - rise of floor - tumblehome - flare - sheer - rake - parallel middle body	K K K K K	**ecture**	**itten test**	**T 58** : Ch. 1 Ch. 5 Ch. 6 Ch. 8 Ch. 9 Ch. 14 **TX 20 :** Drawings **TX 29 :** Ch. 1 Ch. 2 Ch. 3 Ch. 4 Ch. 7	Ship's drawings ; OHS ; Ship models ;

S : Ship construction **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- defines (e.g. in a drawing) : - forward perpendicular (FP) - after perpendicular (AP) - length between perpendiculars (LBP) - length on the waterline (LWL) - length overall (LOA) - base line, centre line, midships - moulded depth, beam, freeboard and draught - deadweight, displacement, lightweight - gross tonnage, nett tonnage	K				
3.2.2.2 (hrs)	Ship stresses - describes what is meant by 'hogging' and by 'sagging' and distinguishes between them - describes the loading conditions which give rise to hogging and sagging stresses - describes how hogging and sagging stresses are caused by the sea state - describes how hogging and sagging stresses result in tensile or compressive forces in the deck and bottom structure - describes racking stress and its causes - describes what is meant by 'panting' and states which parts of the ship is affected - describes what is meant by 'pounding' or 'slamming' and states which part of the ship is affected - describes stresses caused by localized loading - describes the constructional features which compensate for stress	K K K K K K K K K K	Lecture	Written test	**T 58** : Ch. 2, 5, 14 **T 11 :** Ch. 40 **TX 13 :** Ch. 2 **TX 19 :** Sect. I: page 30 –34 Sect. V : page 185 – 198 **TX 20 :** Drawings **TX 29 :** Ch. 5	Ship's drawings ; OHS ; Ship models ;

S : Ship construction **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
3.2.2.3 (hrs)	Hull structure - recognises structural components on ships' plans and drawings: - frames, floors, transverse frames, deck beams, knees, brackets - shell plating, decks, tank top, stringers - bulkheads and stiffeners, pillars - hatch girders and beams, coamings, bulwarks - bow and stern framing, cant beams, breasthooks - describes and illustrates standard steel sections: - flat plate - offset bulb plate - equal angle - unequal angle - channel - tee - recognises longitudinal, transverse and combined systems of framing on transverse sections of the ships - recognises the arrangement of frames, webs and transverse members for each system - recognises double-bottom structure for longitudinal and transverse framing - describes hold drainage systems and related structure - describes a duct keel - states the stress concentration and loss of strength in the deck round hatch openings - recognises deck-freeing arrangements, scuppers, freeing ports,	K K K K K K K K K	Lecture	Written test	**T 58** : Ch. 3 Ch. 5 Ch. 6 Ch. 8 Ch. 9 **TX 13 :** Ch. 4 Ch. 5 Ch. 6 Ch. 7 Ch. 8 Ch. 9 **TX 19 :** **TX 20 :** Drawings **TX 29 :** Ch. 4 Ch. 7	Ship's drawings ; OHS ; Ship models ;

S : Ship construction **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	open rails illustrates the connection of superstructures to the hull at the ship's side - recognises a plane bulkhead, recognises a corrugated bulkhead - states that transverse bulkheads have vertical corrugations and for-and-aft bulkheads have horizontal ones - states the purpose of bilge keels and how they are attached to the ship's side	K K K				
3.2.2.4 (hrs)	Bow and stern - describes the provisions of additional structural strength to withstand pounding - describes and illustrates the structural arrangements forward to withstand panting - describes the function of the sternframe	K K K	Lecture	Written test	**T 58** : Ch. 3 Ch. 5 Ch. 6 **TX 13 :** Ch. 7 Ch. 8 **TX 20 :** Drawings **TX 29 :** Ch.	Ship's drawings ; OHS ; Ship models ;
3.2.2.5 (hrs)	Fittings - recognises the arrangement of modern weather-deck mechanical steel hatches - recognises the cleating arrangements for the hatch covers - recognises the arrangement of portable beams, wooden hatch covers and tarpaulins - recognises roller, multi-angle, pedestal and Panama fairleads	K K K K	Lecture	Written test	**T 58** : Ch. 6 Ch. 7 **TX 13 :** Ch. 4	Ship's drawings ; OHS ; Ship

S : Ship construction **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- recognises mooring bitts, showing their attachment to the deck - recognises typical forecastle mooring and anchoring arrangements, showing the leads of moorings - states the use of tension winches - recognises the anchor handling arrangements from hawse pipe to spurling pipe - recognises the construction of chain lockers and states how chains are secured in the lockers - states how to secure anchors and make spurling pipes watertight in preparation for a sea passage - describes the use of a cable stopper - recognises derricks and deck cranes - describes the bilge piping system of a cargo ship - states that each section is fitted with a screw-down nonreturn suction valve - states the function of a bilge strum box - describes a ballast system in a cargo ship - describes the arrangement of a fire main and states what pumps may be used to pressurize it - describes the provision of sounding pipes and is familiar with a sounding pipe arrangement - describes the fining of air pipes to ballast tanks or fuel oil tanks - describes the arrangement of fittings and lashings for the carriage of containers on deck	K K K K K K K K K K K K K K K			Ch. 5 Ch. 10 **TX 19 :** Section 1 **TX 20 :** Drawings **TX 29 :** Ch. 7 Ch. 8 Ch. 10	models ;
3.2.2.6	**Rudders and propellers** - describes the action of the rudder in steering a ship	K	Lecture	Written test	**T 58** :	Ship's

S : Ship construction **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids

(hrs)	- recognises drawings of modern rudders: semi balanced, balanced and spade
	- states the purpose of the rudder carrier and pintles
	- states that the weight of the rudder is supported by the rudder carrier
	- describes the rudder trunk
	- describes the arrangement of a watertight gland round the rudder stock
	- describes the principle of screw propulsion
	- describes a propeller and defines, with respect to it:
	  - boss
	  - rake
	  - skew
	  - face
	  - back
	  - tip
	  - radius
	  - pitch
	- compares fixed-pitch with controllable-pitch propellers
	- states the arrangement of an oil-lubricated sterntube and tailshaft
	- states how the propeller is attached to the tailshaft
	- describes why the shaft tunnel must be of watertight construction and how water is prevented from entering the engine-room if the tunnel becomes flooded
		K
		K
		K
		K
		K
		K
		K
		K
		K
					Ch. 5
					TX 13 :
					Ch. 8
					Ch. 11
					TX 19 :
					Sect. 1:
					page 95 -99
					TX 20 :
					Drawings
					TX 29 :
					Ch. 12
						drawings ;
						OHS ;
						Ship models ;
						Rudder models / drawings

3.2.2.7 (hrs)	Load lines and draft marks - describes where the deck line is marked - defines 'freeboard'	K K	Lecture	Written test	**T 58 :** Ch. 11,	OHS;

S : **Ship construction** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- describes what is meant by 'assigned summer freeboard' - recognises the load line mark and the load lines of a ship - explains how the chart of zones, areas and seasonal periods is used to find the applicable load line - demonstrates how to read draughts - describes that the freeboard, measured from the upper edge of the deck line to the water on each side, is used to check that the ship is within its permitted limits of loading	K K K S K			page 230 – 240 **TX 13 :** Ch. 10 **TX 19 :** Sec. IV , page 174 – 182 **TX 29 :** Ch. 2	

F : **Controlling the operation of the ship and care for person on board at the operational level**
C : **Monitor compliance with legislative requirements**
S : **Basic working knowledge of the relevant IMO conventions concerning safety of life at sea and protection of the marine environment** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids

3.6.1.1
 	
(1 hr)
	Introduction to Maritime Law
	- describes that maritime law is based partly on generally accepted customary rules developed over many years and partly on statute law enacted by states
	- states that matters of safety, protection of the marine environment and conditions of employment are covered by statute law
	- states that the main sources of maritime law are international conventions
	- describes that the adoption of international conventions and agreements is intended to provide uniform practice internationally
	- states that a convention is a treaty between the States which have agreed to be bound by it to apply the principles contained in the convention within their sphere of jurisdiction
	- describes that, to implement a convention or other international agreement, a State must enact national legislation giving effect to and enforcing its provisions
	- describes that recommendations which are not internationally binding may be implemented by a State for ships flying its flag
	- lists the main originators of international conventions concerned with maritime law as:
	  - International Maritime Organization (IMO)
	  - International Labour Organization (ILO)
		K
		
		K
		
		K
		
		K
		
		K
		
		K
		
		K
		
		K
			Lecture	Written test	**TX 6**, **Vol 1 :** compendium part 1
					
					T 36 : Ch. 2
					
					TX 29 : Ch. 6
					
					TX 31
					
					TX 33	

S : **Basic working knowledge of the relevant IMO conventions concerning safety of life at sea and protection of the marine environment** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- Comité Maritime International (CMI) - United Nations					
	- describes briefly: - flag State jurisdiction - coastal State jurisdiction - port State jurisdiction	K				
	- describes main elements of relevant IMO Conventions, e.g. SOLAS, MARPOL and STCW	K				
	- describes the significance of the 'no more favourable treatment' clause in the SOLAS, MARPOL, STCW and ILO Minimum Standards in Merchant Ships Conventions	K				
	- distinguishes between private and public international law	K				
	- describes that public maritime law is enforced through: - surveys, inspection and certification - penal sanctions (fines, imprisonment) - administrative procedures (inspection of certificates and records, detention)	K				
	- states that the operation of a ship is governed by the national laws and regulations of the flag State, including those laws and regulations giving effect to international conventions	K				
	- describes that differences of detail usually exist in the national laws of different states implementing the same convention	K				
	- describes that, when serving in a ship flying a foreign flag, it is essential that the master and chief mate familiarize themselves with the laws and regulations of the flag State	K				
	- states that, when in port, a ship must also comply with the	K				

S : **Basic working knowledge of the relevant IMO conventions concerning safety of life at sea and protection of the marine environment** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	appropriate laws and regulations of the port State - stresses the importance of keeping up to date with developments in new and amended legislation	K				
3.6.1.2 (0.5 hr)	**Law of the Sea** Conventions on the Law of the Sea - states that the law of the sea is embodied in the Geneva Conventions of 1958 and the United Nations Convention on the Law of the Sea, 1982 (UNCLOS) - defines the legal status of UNCLOS - defines pollution of the marine environment - defines dumping - defines 'force majeure'	 K K K K K			**TX 6**, Vol 1 : compendium part 1	
(2 hrs)	Territorial Sea and the Contiguous Zone - defines 'internal waters' - describes the legal status of roadsteads - states the right of innocent passage - defines passage - defines 'innocent passage' - states the obligations during innocent passage in a territorial sea - states the regarding the use of sea lanes and traffic separation schemes (TSS) in the territorial sea	 K K K K K K K				
(1 hr)	International Straits - describes the legal status of waters forming straits used for international navigation - states the right of transit passage	 K K				

S : **Basic working knowledge of the relevant IMO conventions concerning safety of life at sea and protection of the marine environment** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- defines transit passage	K				
	- states the duties of ships in transit passage	K				
	- describes the meaning of 'generally accepted international regulations, procedures and practices'	K				
	- states the duty of ships in transit passage regarding sea lanes and TSS	K				
	- describes the application of innocent passage to straits used for international navigation	K				
	- defines 'archipelago'	K				
	- defines 'archipelagic state'	K				
	- states the right of innocent passage through archipelago waters	K				
	- states that an archipelagic State may designate sea lanes through its waters	K				
	- describes how sea lanes should be defined and how ships should follow them	K				
	- states that an archipelagic State may designate TSS for any sea lanes	K				
	- states that ships must respect established sea lanes and TSS	K				
	Exclusive Economic Zone and Continental Shelf					
(0.5 hr)	- defines the exclusive economic zone and states its breadth	K				
	- defines the continental shelf	K				
	- states the coastal State's jurisdiction over artificial islands, installations and structures within its exclusive economic zone	K				
	- describes the establishment of safety zones around artificial	K				

S : **Basic working knowledge of the relevant IMO conventions concerning safety of life at sea and protection of the marine environment** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	islands, installations and structures and states the breadth of those zones					
	- states the obligations of ships regarding safety zones	K				
	High Seas					
(2 hrs)	- states the freedom of the high seas	K				
	- describes the nationality of ships	K				
	- states that every State must require the master of a ship sailing under its flag, to render assistance to any person found at sea in danger of being lost, and, after a collision, to render assistance to the other ship, her crew and her passengers and, where possible, to inform the other ship of the name of his own ship, her port of registry and the nearest port at which she will call	K				
	- states that the breaking or injury of submarine cables so as to interrupt or obstruct telegraphic or telephonic communications, and similarly the breaking or injury of a submarine pipeline or high-voltage power cable, is, except for the purpose of saving lives or ships, a punishable offence	K				
	Protection and Preservation of the Marine Environment					
(1 hr)	- states the rights of coastal States to adopt laws and regulations for the prevention, reduction and control of pollution in respect of their exclusive economic zones	K				
3.6.1.3 (3 hrs)	**Safety (24 hours)** International Convention on Load Lines, 1966 (LL 1966), as amended				**TX 6**, Vol 1 :	

S : **Basic working knowledge of the relevant IMO conventions concerning safety of life at sea and protection of the marine environment** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- states that no ship to which the Convention applies may proceed to sea on an international voyage unless it has been surveyed, marked and provided with an International Load Line Certificate (1966) or an International Load Line Exemption Certificate, if appropriate	K			compendium part 1	
	- states to which ships the Convention applies	K				
	- states the duration of validity of an International Load Line Certificate (1966)	K				
	- describes the circumstances in which an International Load Line Certificate (1966) would be cancelled by the Administration	K				
	- states the control to which ships holding an International Load Line Certificate (1966) are subject when in the ports of other Contracting Governments	K				

	- defines for the purposes of the Regulations:
	  - freeboard
	  - freeboard deck
	  - superstructure
		K				

	- describes the position, dimensions and marking of:
	  - the deck line
	  - the Load Line Mark
	  - lines to be used with the Load Line Mark
		K				

	- states that the ring, lines and letters are to be painted in white or yellow on a dark ground or in black on a light ground and that they should be permanently marked on the sides of the ship	K				
	- states that means, permanently attached, should be provided	K				

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Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	for closing the openings of air pipes to ballast tanks and other tanks					
	- describes the provisions for the protection of the crew	K				
	- states that deck cargo should be so stowed as to allow for the closing of openings giving access to crew's quarters, machinery space and other parts used in the necessary work of the ship	K				
(2 hrs)	International Convention for the Safety of Life at Sea, 1974 as amended (SOLAS) - General Provisions					
	- states that unless expressly provided otherwise, the regulations apply only to ships engaged on international voyages	K				
	- defines 'international voyage'	K				
	- defines: - passenger - passenger ship - cargo ship - tanker - age of a ship	K				
	- lists the certificates, including attachments and supplements, where appropriate, issued after survey to ships satisfying the requirements of SOLAS	K				
(2 hrs)	SOLAS Subdivision and Stability, Machinery and Electrical Installation					
	- defines, with reference to chapter lI-1: - length	K				

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Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- breadth - draught - bulkhead deck - margin line - permeability of a space - machinery space - passenger spaces - weathertight					
	- describes what is meant by 'floodable length'	K				
	- states that water ballast should not in general be carried in tanks intended for oil fuel and describes the arrangement for ships which cannot avoid putting water in oil fuel tanks	K				
	- states that a ship should not be loaded so as to submerge the load line mark appropriate to the season and locality, as determined in accordance with the International Convention on Load Lines, whatever the position of the subdivision load line marks may be	K				
	- describes the provisions regarding the fitting of watertight doors in passenger ships	K				
	- states that watertight doors in bulkheads dividing cargo between deck spaces must be closed before the voyage commences and must be kept closed during navigation	K				
	- states that all watertight doors should be kept closed during navigation except when necessarily opened for the working of the ship, in which case they should always be ready to be immediately closed	K				
	- describes the requirements for drills, operation and inspection	K				

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Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	of watertight doors and other openings in passenger ships - states that valves, doors and mechanisms should be suitably marked to ensure that they may be properly used to provide maximum safety - lists the entries which should be made in the log-book regarding the opening and closing of doors, sidescuttles and other openings and the drills and inspections required by the regulations - states that every passenger ship and every cargo ship of 24 metres and upwards must be inclined upon its completion and the elements of its stability determined - states that the master should be supplied with such information as is necessary to obtain accurate guidance as to the stability of the ship under varying conditions of service SOLAS - Fire Protection, Fire Detection and Fire Extinction - defines: - main vertical zones - accommodation spaces - public spaces - service spaces - cargo spaces - ro-ro cargo spaces, open and closed - special category spaces - machinery spaces of category A - control stations - states that fire hoses should be used only for the purposes of extinguishing fires or testing the apparatus at fire drills and	K K K K K				
(2 hrs)						

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Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	surveys - describes the information included in fire control plans or booklets	K				
	- states that instructions concerning the maintenance and operation of all fire-fighting equipment and installations on board should be kept under one cover in an accessible position	K				
	- states that all fire-extinguishing appliances must be kept in good order and available for immediate use at all times during the voyage	K				
	- states that passenger ships must at all times when at sea, or in port, be so manned or equipped that any initial fire alarm is immediately received by a responsible member of the crew	K				
	- states that a special alarm, operated from the navigating bridge or from the fire control station, should be fined to summon the crew and should be capable of being sounded independently of the alarm to the passenger spaces	K				
	- states that an efficient patrol system must be maintained for ships carrying more than 36 passengers	K				
	- describes the training required by the fire patrol	K				
	SOLAS - Life-Saving Appliances and Arrangements					
(2 hrs)	- defines, with reference to chapter III of SOLAS: - certificated person - float-free launching - inflatable appliance - inflated appliance - launching appliance or arrangement	K				

S : **Basic working knowledge of the relevant IMO conventions concerning safety of life at sea and protection of the marine environment** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	- rescue boat - survival craft					
	- states the requirements for exhibiting muster lists	K				
	- describes the illustrations and instructions to be displayed in passenger cabins and other spaces	K				
	- lists the items to be included in muster lists and emergency instructions	K				
	- describes the provision of operating instructions for life-saving appliances	K				
	- describes how the crew should be assigned to survival craft to ensure satisfactory manning and supervision of survival craft	K				
	- describes the frequency of abandon ship drills and fire drills and how they should be conducted	K				
	- details the records which should be made of abandon ship drills and fire drills, other drills of life-saving appliances and on-board training	K				
	- states that before leaving port and at all times during the voyage, all life-saving appliances must be in working order and ready for immediate use	K				
	- describes the instructions for on-board maintenance of life-saving appliances which should be carried	K				
	- states the regulation regarding the maintenance of falls	K				
	- describes the weekly and monthly tests and inspections required and the entries which should be made in the log-book	K				
	- states that, on passenger ships, an abandon ship drill and a fire drill must take place weekly	K				

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Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
(2 hrs)	SOLAS - Radiotelegraphy and Radiotelephony - defines, with reference to chapter IV of SOLAS: - Radio Regulations - radiotelephone auto alarm - radiotelephone station, radiotelephone installation and watches - radio officer - radiotelephone operator - emergency position-indicating radio beacon (EPIRB)	K				
	- states that EPIRBs should be tested, inspected and, if necessary, have their source of energy replaced at intervals not exceeding 12 months	K				
	- states that a card of instruction giving a clear summary of the radiotelephone distress procedure should be displayed in full view of the radiotelephone operating position	K				
	- lists the entries which should be made in the radio log for a ship fitted with a radiotelephone station	K				
	- states the records which should be made concerning a VHF radiotelephone installation	K				
	- states that each ship which is fitted with a VHF radiotelephone installation must, while at sea, maintain a continuous listening watch on the navigating bridge on 156.8 MHZ (channel 16) or for such periods and on such channels as may be required by the Government of the area in which the ship is navigating	K				
	The International Safety Management (ISM) Code - states that a Safety Management System in compliance with	K				

S : **Basic working knowledge of the relevant IMO conventions concerning safety of life at sea and protection of the marine environment** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	the ISM Code must be in place on board all passenger ships, tankers and bulk carriers of 500 GT and upwards					
(2 hrs)	- states that a Safety Management System in compliance with the ISM Code must be in place on board all vessels of 500 GT and upwards from 1 July 2002	K				
	- states that the details of the ship's system may be found in the ship's Safety Management Manual	K				
	International Convention on Standards of Training, Certification and Watch keeping for Seafarers, 1995 (STCW)					
	- desribes the general obligations under the Convention	K				
	- defines, for the purpose of the Convention:	K				
	- certificate					
	- certificated					
(1 hr)	- seagoing ship					
	- Radio Regulations					
	- describes the application of the Convention	K				
	- states that ships, when in a port of a party to the Convention, are subject to control to verify that all seafarers serving on board who are required to be certificated are so certificated or hold a valid dispensation	K				
	- describes that a ship which extends its voyage beyond what is defined as a near-coastal voyage by a Party must fulfill the requirements of the Convention without the relaxation allowed for near-coastal voyages	K				
	- describes that the regulations contain:	K				
	- mandatory minimum requirements for the certification of masters, officers, radiotelephone operators and					

S : **Basic working knowledge of the relevant IMO conventions concerning safety of life at sea and protection of the marine environment** **Lesson Plan for ANT IV**

Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	ratings forming part of a navigational watch or an engineering watch - mandatory minimum requirements for the training and qualifications of masters, officers and ratings of oil, chemical and gas tankers - mandatory minimum requirements to ensure the continued proficiency and updating of masters and deck, engineer and radio officers - basic principles to be observed in keeping navigational and engineering watches - mandatory minimum requirements for the issue of a Certificate of Proficiency in Survival Craft and Rescue Boats other than Fast Rescue Boats					
(2 hrs)	ITU Radio Regulations - states that the International Telecommunications union (ITU) is the UN specialized agency responsible for regulations governing the use of the radio spectrum International Convention on Tonnage Measurement of Ships, 1969	K				
(2hrs)	- defines, for the purposes of the Convention: - international voyage - gross tonnage - net tonnage - new ship - existing ship	K				
	- states that an International Tonnage Certificate (1969) will be	K				

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Module code	Required performance	Objective	Teaching method	Assessment method	Textbook Chapter	Teaching aids
	issued to every ship, the gross and net tonnages of which have been determined in accordance with the Convention - describes the alterations in construction or use of spaces which would lead to the cancellations of the International Tonnage Certificate - states that the tonnage as measured by the national rules appears only on the relevant certificates required by SOLAS and MAR POL, together with an explanatory note	K K				

Function : Navigation at operational level

EQUIPMENT for ANT-IV		Amount
1	*Navigational Equipment*	
1.1	Magnetic compass, incl. binnacle + manual	1
1.2	Deviation curve or table	1
1.3	Binocular	1
1.4	Bearing equipment	1
1.8	Charts:	-
	• Big scale chart	1
	• Route chart/ narrow waters	1
	• Mercatorial plotting sheet	1
	• Gnomonic plotting sheet	1
	• Weather chart per ocean	1 set
	• Ocean plotting charts of area concerned	1 set
	• Loran-C chart	1
	• Coastal exercise chart	> 11
	• Applicable national publications	1 set
1.9	Navigational issues :	-
	• BA/HO Chart catalogue	1
	• ATT, area concerned	1 set
	• ALRS, vol 2, 3 and 5	1 set
	• ALL	1 set
	• Tidal stream atlas	1
	• IALA-buoyage NP 735	1
	• Symbols and abbreviations as used in BA-charts NP 5011	1
	• International Code of Signals	1
	• Admiralty Sailing directions / Pilots (area concerned)	1 set
	• Mariners' Handbook	1
	• Notices to Mariners, weekly editions and (annual) summary	1 set
	• Nautical Almanac	> 11
	• Distance tables	1
	• Applicable national publications	1
1.10	Ship's Logbook (international)	1
1.11	Ruler / triangle archer	> 11
1.12	Divider / pencil / eraser / callipers	> 11
1.13	Calculator, with trigonometric functions and memory capacity	> 31
1.14	Mock / model ship's chart table	1
1.15	Chart tables for exercises	10
2	*Electronic Navigation Equipment*	
2.1	Echo Sounder	1
2.2	GPS receiver	1

2.3	Loran-C receiver	1
2.4	Ship's log / speed log	1
2.5	Automatic pilot	1
2.6	Gyro compass	1
2.7	Gyro repeater	1
3	*Collision Regulations Equipment*	
3.1	Set of models with proper navigation lights and signals (table or magnetic board) or navigation light simulator (computer)	1 set
4	*Meteorology Equipment*	
4.1	Cloud sheet 1986, WMO	1
4.2	Barometer, mercurial	1
4.3	Barometer, aneroid	1
4.4	Hygrometer	1
4.5	Thermometer	1
4.6	Wet and dry bulb thermometer	1
4.7	Anemometer	1
4.8	Weather facsimile	1
5	*Emergency procedures Equipment*	
5.1	Line throwing device (dummy)	1
6	*Visual signalling Equipment*	
6.1	Morse key + light	1
6.2	Code flags (with mast)	1 set
7	*Manoeuvring Equipment*	
7.1	Model with ships, jetties, piers, etc. to illustrate berthing procedures	1 set
7.2	Model with windlass and mooring arrangement to illustrate anchoring and mooring procedures	1 set
7.3	Ropes, wires, stoppers, blocks and shackles	1 set
8	*English language Equipment*	
8.1	Marlins study pack 1 & study pack 2, Marlins, 1997/1998	1 set
8.1	Briefing room with air conditioner and class room equipment	1 for >30 persons
8.2	Instructor console + accesoires	1
8.3	Audio-visual equipment	1 set
8.4	Sound system + headphone	30
8.5	Book shelf	1
8.6	Textbooks and teaching aids as per IMO model course 3.17	1 set
9	*Radar navigation laboratory*	
9.1	Briefing room with air conditioner and class equipment	Capacity for 10 persons
9.2	OHP	1
9.3	Video cassette / VCD player	1
9.4	Instructor console + accesoires	1
9.5	Own ship display / station according all applicable performance standards of IMO	> 2 set
9.6	Plotting table, plotting and instruments for each set	> 2 set
9.7	Manufacturer's operational manual / user manual for radar	1
9.8	Manufacturer's operational manual / user manual for ARPA	1

	Radar textbooks	**-**
9.9	Radar observer's handbook for merchant navy officers, Burger, 7th ed, 1983	1
9.10	A guide to collision avoidance rules, Cockroft, 5th ed, 1996	1
9.11	Electronic aids to navigation, Lownsborough, 1983	1
9.12	Shipborne radar, Subramaniam	1
9.13	Radar and ARPA manual, Bole, 1990	1
	Radar video cassettes / VCD	**-**
9.14	Automatic radar plotting aids	1
	TEXTBOOKS ***(IMO recommendations)***	
T. 1	Admiralty Manual of Navigation, vol.1, HMSO, 1997	1
T. 2	An introduction to coastal navigation, 4th ed, 1985	1
T. 3	The navigation control manual, Bole, 2nd ed, 1992	1
T. 4	Collisions and their causes, Cahill, 1993	1
T. 5	Strandings and their causes, Cahill, 1983	1
T. 6	A guide to the Collision Avoidance Rules, Cockroft, 5th ed, 1996	1
T. 7	The theory and practise of seamanship, Danton, 11th ed, 1996	1
T. 8	Practical navigation for second mates, Frost, 6th ed, 1985	1
T. 9	The principles and practice of navigation, Frost, 3rd ed, 1988	1
T.10	The behaviour and handling of ships, Hooyer,	1
T.11	Bridge Procedure Guide, ICS, 3rd ed 1998	1
T.12	Peril at sea and salvage, ICS, 5th ed, 1998	1
T.13	Accident prevention on board ship at sea and in port, ILO, 1996	1
T.14	International safety guide for oil tankers, ICS, 4th ed, 1996	1
T.15	Notes on compass work, Kemp, 2nd ed, 1972	1
T.16	Shipboard operations, Lavery, 2nd ed, 1996	1
T.17	Electronic aids to navigation: Radar and Arpa, Lownsborough, 1st ed, 1993	1
T.18	Shiphandling for the mariner, MacElvrey, 3rd ed, 1995	1
T.19	Maritime meteorology, Reed, 2nd ed, 1997	1
T.20	IAMSAR manual, 1st ed.	1
T.21	Ship magnetism and the magnetic compass, Merrifield	1
T.22	Marine observer's handbook, Met office, 11th ed, 1995	1
T.23	Meteorology for mariners, Met office, 1996	1
T.24	The shiphandler's guide, Row	1
T.25	Bridge team management, a practical guide, Swift, 1993	1
T.26	Electronic aids to navigation, Tetley, 1986	1
T.27	The mariner's handbook (NP 100)	1
T.28	GPS satellite navigation, Toft, 1987	1
T.29	Collision regulations fully explained, Wright, 2nd ed, 1989	1
T.30	Squat and interaction manoeuvring, the nautical institute	1
T.31	English for maritime studies, Blakey, 1987	1
T.32	Seaspeak training manual, Weeks, 1992	1
T.33	Code of safe working practices for merchant seaman, 1998	1
T.34	Practical navigation, Subramaniam, 2nd ed, 1978	1

VIDEO CASSETTES / VCD (IMO recommendations)		
V. 1	Know the current rules	1
V. 2	Bridge watch keeping	1
V. 3	Passage planning	1
V. 4	Search and rescue : co-ordination	1
V. 5	Man overboard	1
V. 6	Theory of mooring	1
V. 7	Basic instincts	1

Function : Cargo handling and stowage at the operational level

EQUIPMENT		
1	Working models cranes / derrick	1
2	Cargo plans for various types of ships	1 set
3	Model of crude carrier, tanks and pump room, showing pipes and valves	1
4	Model of product tanker, tanks and pump room, showing pipes and valves	1
5	Models, drawings of various types of hatch covers incl. operating and securing arrangements	1 set
6	Models, photographs, drawings of different types of cargo ships	1 set
7	Examples of head and heel cargo blocks	1 set
TEXTBOOKS (IMO recommendations)		
T. 1	Ship stability for masters and mates, Derett, 4th ed, 1984	1
T. 2	International Safety Guide for Oil Tankers and Terminals, ICS/OCIMF 4th ed, 1996	1
T. 3	Shipboard Operations, Lavery, 2nd ed, 1990	1
T. 4	Tanker operations, A handbook …, Morton, 3rd ed, 1992	1
T. 5	Cargowork, Taylor, 12th ed, 1992	1
T. 6	Thomas Stowage, Thomas, 3rd ed, 1996	1
T. 7	Code of Safe Working Practices for Merchant Seamen, 1998	1
VIDEO CASSETTES / VCD (IMO recommendations)		
V. 1	IMO – Safer shipping and cleaner seas	1
V. 2	Preparing the defence	1
V. 3	Chemical tanker operation part 1	1
V. 4	Dangerous Goods at Sea Series, part 1	1
V. 5	Dangerous Goods at Sea Series, part 2	1
V. 6	Operation and maintenance of inert gas systems	1
V. 7	Crude oil washing	1
V. 8	Reefer container operations	1
V. 9	Bulk carrier losses	1
V. 10	Entering into enclosed spaces	1

Function : Controlling the operations of the ship and care for the persons on board at the operational level

EQUIPMENT		
1	Cut-away 3-D models showing the structure parts of the ship	1 set
2	Photographs, drawings and plans illustrating types of ships and construction details	1 set
3	Floating ship stability model for demonstrating movement of centre of gravity and free surface effects	1
4	Marine hydrometer	1
TEXTBOOKS (IMO recommendations)		
T. 1	Ship stability for masters and mates, Derett, 4th ed, 1984	1
T. 2	Maritime law, Hill, 1998	1
T. 3	Merchant ship construction, Taylor, 2nd ed, 1985	1
T. 4	Watchkeeping safety and cargo management in port,, Roberts, 1995	1
T. 5	Code of safe working practices for merchant seaman, 1998	1
VIDEO CASSETTES / VCD (IMO recommendations)		
V. 1	Ship stability CD-ROM	1
V. 2	Entry into enclosed spaces	1
V. 3	Permit to work	1
V. 4	Prevention and reaction to marine oil spills under MARPOL	1
V. 5	Oil pollution regulations and the oil record book	1
V. 6	Being prepared-getting ready for surveys	1

General function : Computer room

C.1	Class room with air conditioner and class room equipment	For 30 persons
C.2	Desktop PC and appropriate application program	12
C.3	Desktop PC and Modem	1
C.4	Desktop PC and CD ROM	1
C.5	Desktop PC and CD Writer	1
C.6	Notebook/Laptop (optional)	1
C.7	AVR (Stabilizer)	15
C.8	Printer	1
C.9	Consumables for printer (cartridge, toner)	1 set
C.10	Scanner	1
C.11	UPS (Uninterruptible Power Supply)	1
C.12	Server/Main frame (optional)	1

STANDARD COMPETENCE FOR ANT – IV CERTIFICATE

a. Function : Navigation at the operational level

COMPETENCE	KNOWLEDGE, UNDERSTANDING AND PROFICIENCY	SUBJECT AREA	METHODS FOR DEMONSTRATING COMPETENCE	CRITERIA FOR EVALUATING COMPETENCE
Plan and conduct a coastal passage and determine position.	**Navigation** Ability to determine the ship's position by use of: • Land marks • Aids to navigation, including lighthouses, beacons and buoys • Dead reckoning, taking into account wind, tides, currents and estimated speed; Thorough knowledge of and ability to use navigational charts and publications, such as sailing directions, tide tables, notices to mariners, radio navigational warnings and ship's routeing information; Reporting in accordance with the Guidelines and Criteria for Ship Reporting Systems (note : this item is only required for certification as master).	Terrestrial and coastal navigation: 1. Definitions - Earth 2. Charts 3. Datums 4. Distances 5. Position lines and positions 6. Sailings 7. Chartwork exercises 8. Information from charts, list of lights and other publications 9. Tides 10. Keeping a log.	Examination and assessment of evidence obtained from one or more of the following: • approved in-service experience • approved training ship experience • approved simulator training, where appropriate • approved laboratory equipment training Using: chart catalogues, charts, navigational publications, radio navigational warnings, sextant, azimuth mirror, electronic navigation equipment, echo-sounding equipment, compass.	The information obtained from navigational charts and publications is relevant, interpreted correctly and properly applied; The primary method if fixing the ship's position is the most appropriate to the prevailing circumstances and conditions; The position is determined within the limits of acceptable instrument/ system errors; The reliability of the information obtained from method of position fixing is checked at appropriate intervals; Calculations and measurements of navigational information are accurate; Charts and publications selected are the largest scale on board suitable for the area

COMPETENCE	KNOWLEDGE, UNDERSTANDING AND PROFICIENCY	SUBJECT AREA	METHODS FOR DEMONSTRATING COMPETENCE	CRITERIA FOR EVALUATING COMPETENCE
				of navigation and charts are corrected in accordance with the latest information available.
Plan and conduct a coastal passage and determine position (continued).	**Navigational aids and equipment** Ability to operate safely navigational aids and equipment commonly fitted on board the ships concerned.	Radar: 1. Principles of radar 2. Radar plotting technique 3. Factors affecting performance and accuracy 4. Setting up and maintaining displays 5. Detection of misrepresentation including false echoes and sea returns, Racon and SART 6. Use RADAR for safe navigation incl. parallel indexing 7. Application of COLREGS 8. Description of an ARPA system 9. Operation of an ARPA system	Assessment of evidence obtained from approved radar navigation and ARPA simulator training.	Performance checks and tests to navigation systems comply with manufacturer's recommendations, good navigational practice and IMO resolutions on performance standards for navigational equipment; Interpretation and analyses of information obtained from radar is in accordance with accepted navigational practice and takes account of the limits and accuracy levels of radar.

COMPETENCE	KNOWLEDGE, UNDERSTANDING AND PROFICIENCY	SUBJECT AREA	METHODS FOR DEMONSTRATING COMPETENCE	CRITERIA FOR EVALUATING COMPETENCE
		Electronic systems of position fixing and navigation: 1. Loran-C system 2. GPS. Echo-sounders and speed measurement: (1) Echo-sounders (2) Speed logs.		
Plan and conduct a coastal passage and determine position (continued).	**Compasses** Knowledge of the errors and corrections of magnetic compasses; Ability to determine errors of the compass using terrestrial means, and to allow for such errors.	1. The magnetic compass 2. Compass errors and corrections 3. Deviation table.	Examination and assessment of evidence obtained from one or more of the following: • approved in-service experience • approved training ship experience • approved simulator training, where appropriate • approved laboratory equipment training.	Errors in magnetic compasses are determined and applied correctly to course and bearings.
Plan and conduct a coastal passage and determine position	**Automatic pilot** Knowledge of auto pilot systems and procedures and change over from manual to automatic control & vice versa;	1. Autopilot system 2. Operation procedure 3. Adjustment of control.	Examination and assessment of evidence obtained from one or more of the following:	Selection of the mode of steering is the most suitable for prevailing weather, sea and traffic conditions and

COMPETENCE	KNOWLEDGE, UNDERSTANDING AND PROFICIENCY	SUBJECT AREA	METHODS FOR DEMONSTRATING COMPETENCE	CRITERIA FOR EVALUATING COMPETENCE
(continued).	Adjustment of controls for optimum performance.		• approved in-service experience • approved training ship experience • approved simulator training, where appropriate • approved laboratory equipment training.	intended manoeuvres.
Plan and conduct a coastal passage and determine position (continued).	**Meteorology** Ability to use and interpret information obtained from shipborne meteorological instruments; Knowledge of the characteristics of the various weather systems, reporting procedures and recording systems; Ability to apply the meteorological information available.	Meteorology: 1. Shipborne meteorological instruments 2. The atmosphere, its composition and physical properties 3. Atmospheric pressure 4. Wind 5. Cloud and precipitation 6. Visibility 7. The wind and pressure systems over the ocean 8. Structure of depressions 9. Anti- cyclone and other pressure systems	Examination and assessment of evidence obtained from one or more of the following: • approved in-service experience • approved training ship experience • approved simulator training, where appropriate • approved laboratory equipment training.	Measurements and observations of weather conditions are accurate and appropriate to the passage; Meteorological information is correctly interpreted and applied to maintain the safe passage of the vessel.

COMPETENCE	KNOWLEDGE, UNDERSTANDING AND PROFICIENCY	SUBJECT AREA	METHODS FOR DEMONSTRATING COMPETENCE	CRITERIA FOR EVALUATING COMPETENCE
		10. Weather services for shipping 11. Recording and reporting weather observations 12. Weather forecasting.		
Maintain a safe navigational watch	**Watchkeeping** Thorough knowledge of content, application and intent of International Regulations for Preventing Collision at Sea; Knowledge of content of the Principles to be observed in keeping a navigational watch; Use of routeing in accordance with the General Provisions on Ships' Routeing.	Knowledge of the collision regulations: 1. Content, application and intent of COLREG '72 Principles in keeping a navigational watch: 1. Principles to be observed in keeping a navigational watch 2. Keeping a watch in port Effective bridge teamwork procedures: 1. Bridge teamwork procedures The use of routeing : 1. Weather routing	Examination and assessment of evidence obtained from one or more of the following: • approved in-service experience • approved training ship experience • approved simulator training, where appropriate • approved laboratory equipment training	The conduct, handover and relief of the watch conforms with accepted principles and procedures; A proper look-out is maintained at all times and in conformity with accepted principles and procedures; Lights, shapes and sound signals conform with the requirements contained in the International Regulations for Preventing Collision at Sea and are correctly recognized; Action to avoid close encounters and collision with other vessels is in accordance with the International Regulations for Preventing Collision at Sea;

COMPETENCE	KNOWLEDGE, UNDERSTANDING AND PROFICIENCY	SUBJECT AREA	METHODS FOR DEMONSTRATING COMPETENCE	CRITERIA FOR EVALUATING COMPETENCE
		2. Use of routing in accordance with general provisions on ships' routing.		The frequency and extent of monitoring of traffic, the ship and the environment conforms with accepted principles and procedures; Decisions to adjust course and/ or speed are both timely and in accordance with accepted navigation procedures; A proper record is maintained of movements and activities relating to the navigation of the ship; Responsibility for safe navigation is clearly defined at all times, including periods when the master is on the bridge and when under pilotage.
Respond to emergencies.	Emergency procedures, including: • precautions for the protection and safety of passengers in emergency situations • initial assessment of damage and damage	Precaution for the protection and safety of passengers: 1. Contingency plans for response to emergencies 2. Precautions for protection and safety of passengers in	Examination and assessment of evidence obtained from one or more of the following: • approved in-service experience • approved training ship experience	The type and scale of the emergency is promptly identified; Initial action and, if appropriate, manoeuvring are in accordance with contingency plans and are appropriate to the urgency of

COMPETENCE	KNOWLEDGE, UNDERSTANDING AND PROFICIENCY	SUBJECT AREA	METHODS FOR DEMONSTRATING COMPETENCE	CRITERIA FOR EVALUATING COMPETENCE
	control • action to be taken following a collision or a grounding. **In addition, the following material should be included for certification as master:** • emergency steering • arrangements for towing and for being taken in tow • rescuing persons from the sea • assisting a vessel in distress • appreciation of the action to be taken when emergencies arise in port.	emergency situations Initial action following collision or grounding: 1. Precautions when beaching a vessel 2. Actions on stranding/rounding 3. Actions following a collision 4. Means of limiting damage and salving the ship following fire or explosion 5. Procedures for abandoning ship 6. Use of auxiliary steering gear and rigging jury steering arrangements 7. Arrangements for towing and being towed In addition, the following material should be included for certification as master: 1. Rescue of persons	• approved simulator training, where appropriate • practical instruction.	the situation and the nature of the emergency.

COMPETENCE	KNOWLEDGE, UNDERSTANDING AND PROFICIENCY	SUBJECT AREA	METHODS FOR DEMONSTRATING COMPETENCE	CRITERIA FOR EVALUATING COMPETENCE
		from a vessel in distress 2. Actions for emergencies in port 3. Measures for assisting a vessel in distress.		
Respond to a distress signal at sea.	**Search and rescue** Knowledge of contents of the IMO International Aeronautical Maritime Search and Rescue manual (IAMSAR).	Search and Rescue: 1. IAMSAR	Examination and assessment of evidence obtained from practical instruction or approved simulator training, where appropriate.	The distress or emergency signal is immediately recognized; Contingency plans and instructions in standing orders are implemented and complied with.
Manoeuvre the ship and operate small ship power plant.	**Ship Manoeuvring and Handling** Knowledge of factors affecting safe manoeuvring and handling; The operation of small ship	Ship Manoeuvring and Handling: 1. Effect of wind and current on ship handling 2. Manoeuvres for the	Examination and assessment of evidence obtained from one or more of the following: • approved in-service	Safe operating limits of ship propulsion, steering and power systems are not exceeded in normal manoeuvres;

COMPETENCE	KNOWLEDGE, UNDERSTANDING AND PROFICIENCY	SUBJECT AREA	METHODS FOR DEMONSTRATING COMPETENCE	CRITERIA FOR EVALUATING COMPETENCE
	power plants and auxiliaries; Proper procedures for anchoring and mooring.	rescue of person overboard 3. Squat, shallow water and similar effects Proper procedures for anchoring and mooring: 1. Proper procedures for anchoring and mooring The operation of small ship power plants and auxiliaries: 1. Marine power plants 2. Ships' auxiliary machinery 3. Marine engineering terms	experience • approved training ship experience • approved simulator training, where appropriate	Adjustments made to the ship's course and speed maintain safety of navigation; Plant, auxiliary machinery and equipment is operated in accordance with technical specifications and within safe operating limits at all times.

b. Function : Cargo handling and stowage at the operational level

COMPETENCE	KNOWLEDGE, UNDERSTANDING AND PROFICIENCY	SUBJECT AREA	METHODS FOR DEMONSTRATING COMPETENCE	CRITERIA FOR EVALUATING COMPETENCE
Monitor the loading, stowage, securing and unloading of cargoes and their care during the voyage.	**Cargo handling, stowage and securing** Knowledge of safe handling, stowage and securing of cargoes including dangerous, hazardous and harmful cargoes and their effect on the safety of life and of the ship; Use of the International Maritime Dangerous Goods (IMDG) Code	Safe handling, stowage and securing of cargoes: 1. Cargo care 2. Dangerous, hazardous and harmful cargoes 3. Cargo handling equipment and safety 4. Oil tanker piping and pumping arrangements 5. Precautions before entering enclosed or contaminated spaces 6. Cargo calculations and cargo plans The International Maritime Dangerous Goods (IMDG) Code Loading, stowage and segregation in accordance with the code.	Examination and assessment of evidence obtained from one or more of the following: • approved in-service experience • approved training ship experience • approved simulator training, where appropriate.	Cargo operations are carried out in accordance with the cargo plan or other documents and established safety rules/ regulations, equipment operating instructions and shipboard stowage limitations; The handling of dangerous, hazardous and harmful cargoes complies with international regulations and recognized and codes of safe practice.

c. Function : Controlling the operation of the ship and care for person on board at the operational level

COMPETENCE	KNOWLEDGE, UNDERSTANDING AND PROFICIENCY	SUBJECT AREA	METHODS FOR DEMONSTRATING COMPETENCE	CRITERIA FOR EVALUATING COMPETENCE
Ensure compliance with pollution-prevention requirements	**Prevention of pollution of the marine environment and anti-pollution procedures** Knowledge of the precautions to be taken to prevent pollution of the marine environment and anti-pollution procedures; Anti-pollution procedures and all associated equipment.	The precautions to be taken to prevent pollution of the marine environment: 1. MARPOL 73/78 Anti-pollution procedures and associated equipment: 1. Regulation 26-Annex 1 MARPOL 73/78 2. Anti-Pollution equipment	Examination and assessment of evidence obtained from one or more of the following: • approved in-service experience • approved training ship experience	Procedures for monitoring shipboard operations and ensuring compliance with MARPOL requirements are fully observed;
Maintain sea-worthiness of the ship.	**Ship stability** Working knowledge and application of stability, trim and stress tables, diagrams and stress-calculating equipment; Understanding of fundamental actions to be taken in the event	Ship Stability: 1. Displacement 2. Buoyancy 3. Fresh water allowance 4. Static stability 5. Initial stability 6. Angle of Loll	Examination and assessment of evidence obtained from one or more of the following: • approved in-service experience	The stability conditions comply with the IMO intact stability criteria under all conditions of loading; Actions to ensure and maintain the watertight

COMPETENCE	KNOWLEDGE, UNDERSTANDING AND PROFICIENCY	SUBJECT AREA	METHODS FOR DEMONSTRATING COMPETENCE	CRITERIA FOR EVALUATING COMPETENCE
	of partial loss of intact buoyancy; Understanding of the fundamentals of watertight integrity.	7. Curves of static stability 8. Movement of the centre of gravity 9. List and its correction 10. Effect of slack water 11. Trim 12. Loss of intact buoyancy.	• approved training ship experience • approved simulator training, where appropriate • approved laboratory equipment training.	integrity of the ship are in accordance with accepted practice.
Maintain sea-worthiness of the ship *(continued).*	**Ship construction** General knowledge of the principal structural members of a ship and the proper names for the various parts.	Ship Construction: 1. Ship dimensions and form 2. Ship stresses 3. Hull structure 4. Bow and stern 5. Fittings 6. Rudders and propellers 7. Load lines and draft marks.	Examination and assessment of evidence obtained from one or more of the following: • approved in-service experience • approved training ship experience • approved simulator training, where appropriate • approved laboratory equipment training.	Actions to ensure and maintain the watertight integrity of the ship are in accordance with accepted practice.

COMPETENCE	KNOWLEDGE, UNDERSTANDING AND PROFICIENCY	SUBJECT AREA	METHODS FOR DEMONSTRATING COMPETENCE	CRITERIA FOR EVALUATING COMPETENCE
Prevent, control and fight fires on board	**Fire prevention and fire-fighting appliances** Knowledge of fire prevention; Ability to organized fire drills; Knowledge of classes and chemistry of fire; Knowledge of fire-fighting systems; Knowledge of action to be taken in the event of fire, including fires involving oil systems.	1. Introduction, safety and principles 2. Theory of fire 3. Fire control aboard ships 4. Ship fire fighting organization 5. Training of seafarers in fire fighting 6. Procedures for fire fighting 7. Firer fighting equipment, inspection, testing and servicing 8. Practice servicing fire appliances 9. Fire fighting process hazards 10. First aid 11. Fire investigating and reporting 12. Fire fighting practice 13. Emergency escape technique in case of breathing apparatus failure 14. B.A. rescue practice 15. Case studies.	Assessment of evidence obtained from approved fire-fighting training and experience as set out in the section for Advanced Fire Fighting.	The type and scale of the problem is promptly identified and initial actions conform with the emergency procedures and contingency plans for the ship; Evacuation, emergency shutdown and isolation procedures are appropriate to the nature of the emergency and are implemented promptly; The order of priority, and the levels and time-scales of making reports and informing personnel on board, are relevant to the nature of the emergency and reflect the urgency of the problem.

COMPETENCE	KNOWLEDGE, UNDERSTANDING AND PROFICIENCY	SUBJECT AREA	METHODS FOR DEMONSTRATING COMPETENCE	CRITERIA FOR EVALUATING COMPETENCE
Operate life-saving appliances.	***Life-saving*** Ability to organize abandon ship drills and knowledge of the operation of survival craft and rescue boats, their launching appliances and arrangements, and their equipment, including radio life-saving appliances, satellite EPIRBS, SARTs, immersion suits and thermal protective aids; Knowledge of survival at sea techniques.	Take charge of a survival craft or rescue boat during and after launch : 1. Introduction, safety and survival 2. Emergency situations 3. Evacuation 4. Survival craft and rescue boats 5. Personal life saving appliances 6. Survival at sea and helicopter assistance 7. Lifeboat engines and accessories 8. Emergency radio equipment 9. Signalling equipment and pyrotechnics 10. Best use of survival craft facilities 11. Drill in the use of personal life saving appliances 12. Drill in launching and recovering boats	Assessment of evidence obtained from approved training and experience as set out in the section for Survival Craft and Rescue Boats.	Actions responding to abandon ship and survival situations are appropriate to the prevailing circumstances and conditions and comply with accepted safety practices and standards.

COMPETENCE	KNOWLEDGE, UNDERSTANDING AND PROFICIENCY	SUBJECT AREA	METHODS FOR DEMONSTRATING COMPETENCE	CRITERIA FOR EVALUATING COMPETENCE
		Operate a survival craft engine 1. Starting the engine 2. Cooling systems 3. Battery charger 4. Fire extinguisher 5. Water spray system 6. Self contained air support system		
Apply medical first aid on board ship.	***Medical aid*** Practical application of medical guides and advice by radio, including the ability to take effective action based on such knowledge in the case of accidents or illnesses that are likely to occur on board ship.	1. General principles 2. Immediate action and first aid kit 3. Body structure and function 4. Toxicological hazard aboard ship 5. Examination of patient 6. Spinal injuries 7. Burns, scalds and effects of heat and cold 8. Fractures, dislocations and muscular injuries 9. Medical care of rescued persons, including distress,	Assessment of evidence obtained from approved training set out in the section for Medical First Aid.	The identification of probable cause, nature and extent of injuries or conditions is prompt and treatment minimizes immediate threat to life.

COMPETENCE	KNOWLEDGE, UNDERSTANDING AND PROFICIENCY	SUBJECT AREA	METHODS FOR DEMONSTRATING COMPETENCE	CRITERIA FOR EVALUATING COMPETENCE
		hypothermia and cold exposure 10. Radio medical advice 11. Pharmacology & sterilization 12. Cardiac arrest, drowning and asphyxia		
Monitor compliance with legislative requirements.	**Monitor compliance with legislative requirements** Basic working knowledge of the relevant IMO conventions concerning safety of life at sea and protection of the marine environment.	Basic working knowledge of the relevant IMO conventions concerning safety of life at sea and protection of the marine environment: 1. SOLAS, 1974 as amended 2. SOLAS-subdivision and stability 3. SOLAS-fire protection, detection and extinction 4. SOLAS-LSA and arrangements (LSA code)	Assessment of evidence obtained from examination or approved training.	Legislative requirements relating to safety of life at sea and protection of the marine environment are correctly identified.

COMPETENCE	KNOWLEDGE, UNDERSTANDING AND PROFICIENCY	SUBJECT AREA	METHODS FOR DEMONSTRATING COMPETENCE	CRITERIA FOR EVALUATING COMPETENCE
		5. SOLAS-radiotelegraphy and R/T 6. SOLAS-radio communications (amended chapter IV) 7. SOLAS-carriage of grain 8. SOLAS-carriage of dangerous goods 9. STCW '95, as amended 10. IMO 11. ITU-radio regulations 12. LOADLINE 1966 13. ISM 14. STP, 1971 15. SPACE STP, 1973 **16.** PAL, 1974 and tonnage 1969		

FORMAT AUDIT MUTU
QUALITY AUDIT FORM

PROGRAM DIKLAT ATT – IV
ENGINEER OFFICER CLASS – IV

BERDASARKAN
BASED ON

KEPUTUSAN BERSAMA
JOINT MINISTERIAL DECRREE

MENHUB, MENDIKNAS, DAN MENAKERTRANS
MINISTER OF COMMUNICATIONS, MINISTER OF NATIONAL EDUCATION,
AND MINISTER OF MANPOWER AND TRANSMIGRATION

NO : KM. 41/2003 – 5/U/KB/2003 – KEP.208 A/MEN/2003
11 SEPTEMBER 2003

TENTANG
CONCERNING

SISTEM STANDAR MUTU KEPELAUTAN INDONESIA
INDONESIAN SEAFARERS QUALITY STANDARD SYSTEM (QSS)

ANNEX – A Part 2

NAME OF INSTITUTE	
CITY ADDRESS	
EMAIL ADDRESS	
TELEPHONE	
WEBSITE	
DATE OF AUDIT	

DAFTAR ISI
CONTENT

OVERALL ASSESSMENT EDUCATION AND TRAINING……. 135

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Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OVERALL ASSESSMENT EDUCATION AND TRAINING			
BLOCKS	**SCORE PER BLOCK**	**WEIGHING FACTOR**	**CORRECTED SCORE**
1. ORGANIZATION AND STAFF RESOURCES (OS)		3	
2. INFRA-PROVISIONS TEACHING FACILITIES (ITF)		1	
3. NAVIGATION AT THE OPERATIONAL LEVEL (ED 1)		5	
4. CARGO HANDLING AND STOWAGE AT THE OPERATIONAL LEVEL (ED 2)		5	
5. CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD AT THE OPERATIONAL LEVEL (ED 3)		5	
6. EQUIPMENT (EQ)		5	
	SUBTOTALS	24	
		OVERALL SCORE	

REMARKS AND RECOMMENDATIONS:

Date :
Name :
Function :

Signature :

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

	ORGANIZATION AND STAFF RESOURCES - OS						
COM	**Organizational and managerial structures**					**File Code**	
						COM	**OS**
column 1	column 2	column 3			column 4	column 5	
	Subjects	**Available**		**Suitability in %**	**Comments**	**Points**	
		yes	**no**			**max**	**actual**
1	Mission Statement					10	
2	Education and training strategies					70	
3	Organization					50	
4	Instructor requirements					50	
5	Development program requirements					30	
6	Instructors teaching load					70	
7	Faculty requirements					70	
8	Instructor – Student Ratio					30	
9	Curriculum					90	
10	Administrative documentation					50	
11	Students admission, selection and retention					50	
12	School Tests and Examination system					80	
13	Shipboard Training and Field Trips					60	
14	Feedback from students and industry					40	
15	Research and Development Program					30	
16	Quality Management System					30	
17	Campus/Building/Public spaces/Offices					50	
18	General teaching means					70	
19	Library and Internet facilities					70	
					Totals	**1000**	

Name Institute:
Address :
Date of audit : **STUDY-LINE ANT IV**

ORGANIZATION AND STAFF RESOURCES					
COM	**OS**	**Organizational and managerial structures**			
Subject no.		**Description**	**Points**		
			max		**actual**
1		Mission Statement	10		
2		Education and training strategies	50		
3		Organization	50		
4		Instructor requirements	30		
5		Development program requirements	70		
6		Instructors teaching load	70		
7		Faculty requirements	30		
8		Instructor – Student Ratio	90		
9		Curriculum	50		
10		Administrative documentation	50		
11		Students admission, selection and retention	80		
12		School Tests and Examination system	60		
13		Shipboard Training and Field Trips	40		
14		Feedback from students and industry	30		
15		Research and Development Program	30		
16		Quality Management System	50		
17		Campus/Building/Public spaces/Offices	70		
18		General teaching means	70		
19		Library and Internet facilities	70		
		Subtotals	**1000**		

Actual Points Obtained
Maximum Obtainable Points **1000**
ASSESSMENT SCORE OS

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

ORGANIZATION AND STAFF RESOURCES - OS		
COM Organizational and managerial structures	**File Code**	
	COM	**OS**
REMARKS AND RECOMMENDATIONS:		
Actual points obtained **Maximum obtainable points** **1000** **Assessment score OS**		

Assessor 1		
Name:	Date:	Signature:
Function:		

Assessor 2		
Name:	Date:	Signature:
Function:		

Name Institute:
Address :

Date of audit :

STUDY-LINE ANT IV

INFRA-PROVISIONS FOR TEACHING FACILITIES - ITF					
ITF	**Infra-provisions Teaching Facilities**			**File Code**	
				A II	**ITF**
column 1	column 2	column 3	column 4	column 5	
	Subjects	**Suitability in %**	**Comments**	**Points**	
				max	**actual**
ITF-Gen	General requirements			30	
ITF-Cla	Classrooms			20	
ITF-Lab	Laboratories/workshops			50	
ITF-Lib	Library			30	
			Totals	**130**	

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

INFRA-PROVISIONS FOR TEACHING FACILITIES					
A II	**ITF**	**Infra- provisions**			
File Code		**Description**	**Points**		
			max		**actual**
A II	ITF-Gen	General requirements	30		
A II	ITF-Cla	Classrooms	20		
A II	ITF-Lab	Laboratories/workshops	50		
A II	ITF-Lib	Library	30		
		Subtotals	130		

Actual Points Obtained
Maximum Obtainable Points 130

ASSESSMENT SCORE ITF

Name Institute:
Address :

Date of audit : **STUDY-LINE ANT IV**

INFRA-PROVISIONS FOR TEACHING FACILITIES - ITF		
REMARKS AND RECOMMENDATIONS:		
Actual points obtained		
Maximum obtainable points	**130**	**Assessment score ITF**

Assessor 1		
Name:	Date:	Signature:
Function:		

Assessor 2		
Name:	Date:	Signature:
Function:		

Name Institute:
Address :
Date of audit : **STUDY-LINE ANT IV**

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH				
A-II/1 ED 1	**NAVIGATION AT THE OPERATIONAL LEVEL**			
File Code	**Description**	**Points**		
		max		**actual**
A-II/1 ED 1.1	Plan and conduct a passage and determine position	458		
A-II/1 ED 1.2	Maintain a safe navigational watch	120		
A-II/1 ED 1.3	Responds to emergencies	57		
A-II/1 ED 1.4	Responds to a distress signal at sea	24		
A-II/1 ED 1.5	Ship manouevering and handling	42		
	Subtotals	**701**		

Actual Points Obtained
Maximum Obtainable Points 701

ASSESSMENT SCORE ED 1

Name Institute:
Address :
Date of audit : **STUDY-LINE ANT IV**

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

F: 1 C: 1.1 S: 1.1.1	**NAVIGATION AT THE OPERATIONAL LEVEL** **Plan and conduct a passage and determine position** Terrestrial and coastal navigation							**File Code**	
								A-II/3	**ED 1.1**
column 1	column 2	column 3		column 4	column 5			column 6	
no.	**Description topics per subject**	**Actually instructed**		**Examination method (use legend 1)**	**Item properly examined**			**Points**	
		yes	**% covered (par 5.1.4 d)**		**yes**	**no**	**if no, indicate (use legend 2)**	**max**	**actual**
1	Definitions - Earth							6	
2	Charts							12	
3	Datums							6	
4	Distances							12	
5	Position lines and positions							24	
6	Sailings							12	
7	Chartwork exercises							36	
8	Information from charts, list of lights and other publications							12	
9	Tides							12	
10	Keeping a log.							6	
11									
								138	

Name Institute:
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OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

F: 1 C: 1.1 S: 1.1.2	**NAVIGATION AT THE OPERATIONAL LEVEL** **Plan and conduct a passage and determine position** Radar							**File Code**	
								A-II/3	**ED 1.1**
column 1	column 2	column 3		column 4	column 5			column 6	
no.	**Description topics per subject**	**Actually instructed**		**Examination method (use legend 1)**	**Item properly examined**			**Points**	
		yes	**% covered (par 5.1.4 d)**		**yes**	**no**	**if no, indicate (use legend 2)**	**max**	**actual**
1	Principles of radar							12	
2	Radar plotting technique							12	
3	Factors affecting performance & accuracy							6	
4	Setting up and maintaining displays							4	
5	Detection of misrepresentation including false echoes & sea returns, Racon & SART							6	
6	Use RADAR for safe navigation incl. parallel indexing							12	
7	Application of COLREGS							24	
8	Description of an ARPA system							6	
9	Operation of an ARPA system							12	
								94	

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

F: 1 C: 1.1 S: 1.1.3	**NAVIGATION AT THE OPERATIONAL LEVEL** **Plan and conduct a passage and determine position** Electronic systems of position fixing and navigation							**File Code**	
								A-II/3	**ED 1.1**
column 1	column 2	column 3		column 4	column 5			column 6	
no.	**Description topics per subject**	**Actually instructed**		**Examination method (use legend 1)**	**Item properly examined**			**Points**	
		yes	**% covered (par 5.1.4 d)**		**yes**	**no**	**if no, indicate (use legend 2)**	**max**	**actual**
1	Loran-C system							9	
2	GPS.							9	
3									
4									
5									
6									
7									
								18	

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

F: 1 C: 1.1 S: 1.1.4	**NAVIGATION AT THE OPERATIONAL LEVEL** **Plan and conduct a passage and determine position** Echo-sounders and speed measurement							**File Code**	
								A-II/3	**ED 1.1**
column 1	column 2	column 3		column 4	column 5			column 6	
no.	**Description topics per subject**	**Actually instructed**		**Examination method (use legend 1)**	**Item properly examined**			**Points**	
		yes	**% covered (par 5.1.4 d)**		**yes**	**no**	**if no, indicate (use legend 2)**	**max**	**actual**
1	Echo-sounders							6	
2	Speed logs.							6	
3									
4									
5									
6									
7									
8									
								12	

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH									
F: 1 C: 1.1 S: 1.1.5	**NAVIGATION AT THE OPERATIONAL LEVEL** **Plan and conduct a passage and determine position** Compass – magnetic							**File Code**	
								A-II/3	**ED 1.1**
column 1	column 2	column 3		column 4	column 5			column 6	
no.	**Description topics per subject**	**Actually instructed**		**Examination method (use legend 1)**	**Item properly examined**			**Points**	
		yes	**% covered (par 5.1.4 d)**		**yes**	**no**	**if no, indicate (use legend 2)**	**max**	**actual**
1	The magnetic compass							12	
2	Compass errors and corrections							24	
3	Deviation table.							4	
4									
5									
6									
7									
								40	

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

F: 1 C: 1.1 S: 1.1.6	**NAVIGATION AT THE OPERATIONAL LEVEL** **Plan and conduct a passage and determine position** Steering control systems							**File Code**	
								A-II/3	**ED 1.1**
column 1	column 2	column 3		column 4	column 5			column 6	
no.	**Description topics per subject**	**Actually instructed**		**Examination method (use legend 1)**	**Item properly examined**			**Points**	
		yes	**% covered (par 5.1.4 d)**		**yes**	**no**	**if no, indicate (use legend 2)**	**max**	**actual**
1	Autopilot system							12	
2	Operation procedure							12	
3	Adjustment of control							6	
4									
5									
6									
7									
8									
								30	

Name Institute:
Address :
Date of audit : **STUDY-LINE ANT IV**

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

F: 1 C: 1.1 S: 1.1.7	**NAVIGATION AT THE OPERATIONAL LEVEL** **Plan and conduct a passage and determine position** Meteorology							**File Code**	
								A-II/3	**ED 1.1**
column 1	column 2	column 3		column 4	column 5			column 6	
no.	**Description topics per subject**	**Actually instructed**		**Examination method (use legend 1)**	**Item properly examined**			**Points**	
		yes	**% covered (par 5.1.4 d)**		**yes**	**no**	**if no, indicate (use legend 2)**	**max**	**actual**
1	Shipborne meteorological instruments							9	
2	The atmosphere, its composition and physical properties							12	
3	Atmospheric pressure							6	
4	Wind							12	
5	Cloud and precipitation							12	
6	Visibility							12	
7	The wind and pressure systems over the ocean							9	
8	Structure of depressions							18	
9	Anti- cyclone and other pressure systems							12	
10	Weather services for shipping							6	
11	Recording and reporting weather observations							6	
12	Weather forecasting							12	
13									
								126	

Name Institute:
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Date of audit : **STUDY-LINE ANT IV**

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

		File Code	
F: 1	**NAVIGATION AT THE OPERATIONAL LEVEL**		
C: 1.1	**Plan and conduct a passage and determine position**	**A-II/3**	**ED 1.1**

		maximum points	actual points
S: 1.1.1	Terrestrial and coastal navigation	**138**	
S: 1.1.2	Radar	**94**	
S: 1.1.3	Electronic systems of position fixing & navigation	**18**	
S: 1.1.4	Echo-sounders and speed measurement	**12**	
S: 1.1.5	Compass – magnetic	**40**	
S: 1.1.6	Steering control systems	**30**	
S: 1.1.7	Meteorology	**126**	
		458	

Actual Points Obtained

Maximum Obtainable Points **458** **Assessment Score ED 1.1**

Assessor 1
Name: Signature:
Function:

Assessor 2
Name: Signature:
Function:

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH										
F: 1 C: 1.2 S: 1.2.1	**NAVIGATION AT THE OPERATIONAL LEVEL** **Maintain a safe navigational watch** Knowledge of the collision regulations								**File Code**	
									A-II/3	**ED 1.2**
column 1	column 2	column 3			column 4	column 5			column 6	
no.	**Description topics per subject**	**Actually instructed**			**Examination method (use legend 1)**	**Item properly examined**			**Points**	
		yes	**no**	**% covered (par 5.1.4 d)**		**yes**	**no**	**if no, indicate (use legend 2)**	**max**	**actual**
1	Content, application & intent of Colreg ‘72								48	
2										
3										
4										
5										
6										
7										
8										
									48	

Name Institute:
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Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH											
F: 1 C: 1.2 S: 1.2.2	**NAVIGATION AT THE OPERATIONAL LEVEL** **Maintain a safe navigational watch** Principles in keeping a navigational watch									**File Code**	
										A-II/3	**ED 1.2**
column 1	column 2	column 3			column 4	column 5			column 6		
no.	**Description topics per subject**	**Actually instructed**			**Examination method (use legend 1)**	**Item properly examined**			**Points**		
		yes	**no**	**% covered (par 5.1.4 d)**		**yes**	**no**	**if no, indicate (use legend 2)**	**max**	**actual**	
1	Principles to be observed in keeping a navigational watch								24		
2	Keeping a watch in port								12		
3											
4											
5											
6											
7											
									36		

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH											
F: 1 C: 1.2 S: 1.2.3	**NAVIGATION AT THE OPERATIONAL LEVEL** **Maintain a safe navigational watch** Effective bridge teamwork procedures									**File Code**	
										A-II/3	**ED 1.2**
column 1	column 2	column 3			column 4	column 5			column 6		
no.	**Description topics per subject**	**Actually instructed**			**Examination method (use legend 1)**	**Item properly examined**			**Points**		
		yes	**no**	**% covered (par 5.1.4 d)**		**yes**	**no**	**if no, indicate (use legend 2)**	**max**	**actual**	
1	Bridge teamwork procedures								12		
2											
3											
4											
5											
6											
7											
8											
18									**12**		

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH										
F: 1 C: 1.2 S: 1.2.4	**NAVIGATION AT THE OPERATIONAL LEVEL** **Maintain a safe navigational watch** The use of routeing								**File Code**	
									A-II/3	**ED 1.2**
column 1	column 2	column 3			column 4	column 5			column 6	
no.	**Description topics per subject**	**Actually instructed**			**Examination method (use legend 1)**	**Item properly examined**			**Points**	
		yes	**no**	**% covered (par 5.1.4 d)**		**yes**	**no**	**if no, indicate (use legend 2)**	**max**	**actual**
1	Weather routing								12	
3	Use of routing in accordance with general provisions on ships' routing								12	
4										
5										
6										
7										
8										
9										
									24	

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH			
F: 1 C: 1.2	**NAVIGATION AT THE OPERATIONAL LEVEL** **Maintain a safe navigational watch**	**File Code**	
		A-II/3	**ED 1.2**

		maximum points	**actual points**
S: 1.2.1	Knowledge of the collision regulations	**48**	
S: 1.2.2	Principles in keeping a navigational watch	**36**	
S: 1.2.3	Effective bridge teamwork procedures	**12**	
S: 1.2.4	The use of routeing	**24**	
		120	

Actual Points Obtained **Maximum Obtainable Points**	**120**	**Assessment Score ED 1.2**

Assessor 1 Name: Function:	Date:	Signature:
Assessor 2 Name: Function:	Date:	Signature:

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH											
F: 1 C: 1.3 S: 1.3.1	**NAVIGATION AT THE OPERATIONAL LEVEL** **Responds to emergencies** Precaution for protection and safety of passengers									**File Code** **A-II/3**	**ED 1.3**
column 1	column 2	column 3			column 4	column 5			column 6		
no.	**Description topics per subject**	**Actually instructed**			**Examination method** (use legend 1)	**Item properly examined**			**Points**		
		yes	**no**	**% covered (par 5.1.4 d)**		**yes**	**no**	**if no, indicate** (use legend 2)	**max**	**actual**	
1	Contingency plans for response to emergencies								8		
2	Precautions for protection and safety of passengers in emergency situations								4		
3											
4											
5											
6											
7											
									12		

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH										
F: 1 C: 1.3 S: 1.3.2	**NAVIGATION AT THE OPERATIONAL LEVEL** **Responds to emergencies** Initial action following collision or grounding								**File Code**	
									A-II/3	**ED 1.3**
column 1	column 2	column 3			column 4	column 5			column 6	
no.	**Description topics per subject**	**Actually instructed**			**Examination method** (use legend 1)	**Item properly examined**			**Points**	
		yes	**no**	**% covered (par 5.1.4 d)**		**yes**	**no**	**if no, indicate** (use legend 2)	**max**	**actual**
1	Precautions when beaching a vessel								13	
2	Actions on stranding/rounding								1	
3	Actions following a collision								1	
4	Means of limiting damage and salving the ship following fire or explosion								2	
5	Procedures for abandoning ship								2	
6	Use of auxiliary steering gear and rigging jury steering arrangements								1	
7	Arrangements for towing and being towed								1	
									21	

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH										
F: 1 C: 1.3 S: 1.3.3	**NAVIGATION AT THE OPERATIONAL LEVEL** **Responds to emergencies** Rescuing persons from the sea, assisting a ship in distress and port emergencies								**File Code**	
									A-II/3	**ED 1.3**
column 1	column 2	column 3			column 4	column 5			column 6	
no.	**Description topics per subject**	**Actually instructed**			**Examination method** (use legend 1)	**Item properly examined**			**Points**	
		yes	**no**	**% covered (par 5.1.4 d)**		**yes**	**no**	**if no, indicate** (use legend 2)	**max**	**actual**
In addition, the following material should be included for certification as master										
1	Rescue of persons from a vessel in distress								6	
2	Actions for emergencies in port								6	
3	Measures for assisting a vessel in distress.								6	
4										
5										
6										
									18	

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH			
F: 1 C: 1.3	**NAVIGATION AT THE OPERATIONAL LEVEL** **Responds to emergencies**	**File Code**	
		A-II/3	**ED 1.3**

		maximum score	**actual score**
S: 1.3.1	Precaution for protection and safety of passengers	**18**	
S: 1.3.2	Initial action following collision or grounding	**21**	
S: 1.3.3	Rescuing persons from the sea, assisting a ship in distress and port emergencies	**18**	
		57	

Actual Points Obtained			
Maximum Obtainable Points	**57**	**Assessment Score ED 1.3**	
Assessor 1 Name: Function:	Date:	Signature:	
Assessor 2 Name: Function:	Date:	Signature:	

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH											
F: 1 C: 1.4 S: 1.4.1	**NAVIGATION AT THE OPERATIONAL LEVEL** **Responds to a distress signal at sea** Search and rescue									**File Code**	
										A-II/3	**ED 1.4**
column 1	column 2	column 3			column 4	column 5			column 6		
no.	**Description topics per subject**	**Actually instructed**			**Examination method (use legend 1)**	**Item properly examined**			**Points**		
		yes	**no**	**% covered (par 5.1.4 d)**		**yes**	**no**	**if no, indicate (use legend 2)**	**max**	**actual**	
1	IAMSAR								24		
2											
3											
4											
5											
6											
7											
8											
									24		

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH			
F: 1 C: 1.4	**NAVIGATION AT THE OPERATIONAL LEVEL** **Responds to a distress signal at sea**	**File Code**	
		A-II/3	**ED 1.4**

		maximum score	actual score
S: 1.4.1	Search and rescue	**24**	

Actual Points Obtained		
Maximum Obtainable Points	**24**	**Assessment Score ED 1.4**

Assessor 1
Name: Date: Signature:
Function:

Assessor 2
Name: Date: Signature:
Function:

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH											
F: 1 C: 1.5 S: 1.5.1	**NAVIGATION AT THE OPERATIONAL LEVEL** **Manoeuvre the ship and operate small ship power plants** Ship manoeuvring and handling								**File Code**		
									A-II/3	**ED 1.5**	
column 1	column 2	column 3			column 4	column 5			column 6		
no.	**Description topics per subject**	**Actually instructed**			**Examination method (use legend 1)**	**Item properly examined**			**Points**		
		yes	**no**	**% covered (par 5.1.4 d)**		**yes**	**no**	**if no, indicate (use legend 2)**	**max**	**actual**	
1	Effect of wind and current on ship handling								24		
2	Manoeuvres for the rescue of person overboard								6		
3	Squat, shallow water and similar effects								12		
4											
5											
6											
7											
									42		

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH			
F: 1 C: 1.5	**NAVIGATION AT THE OPERATIONAL LEVEL** **Manoeuvre the ship and operate small ship power plants**	**File Code**	
		A-II/3	**ED 1.5**

		maximum score	**actual score**
S: 1.5.1	Ship manoeuvring and handling	**42**	

Actual Points Obtained		
Maximum Obtainable Points	**42**	**Assessment Score ED 1.5**

Assessor 1
Name: Date: Signature:
Function:

Assessor 2
Name: Date: Signature:
Function:

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH					
A-II/1	**ED 2**	**CARGO HANDLING AND STOWAGE AT THE OPERATIONAL LEVEL**			
File Code		**Description**	**Points**		
			max		**actual**
A-II/1	ED 2.1	Monitor the loading, stowage, securing & unloading of cargoes & their care during the voyage	48		
A-II/1	ED 2.2	Inspect and report defects and damage to cargo spaces, hatch covers and ballast tanks	12		
		Subtotals	**60**		

Actual Points Obtained
Maximum Obtainable Points 60

ASSESSMENT SCORE block ED 2

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH											
F: 2 C: 2.1 S: 2.1.1	**CARGO HANDLING AND STOWAGE AT THE OPERATIONAL LEVEL** Monitor the loading, stowage, securing and unloading of cargoes and their care during the voyage The effect of cargo, including heavy lifts on the seaworthiness stability of the ship									**File Code**	
										A-II/1	**ED 2.1**
column 1	column 2	column 3			column 4	column 5			column 6		
no.	**Description topics per subject**	**Actually instructed**			**Examination method (use legend 1)**	**Item properly examined**			**Points**		
		yes	**no**	**% covered (par 5.1.4 d)**		**yes**	**no**	**if no, indicate (use legend 2)**	**max**	**actual**	
1	Draught, trim and stability								4		
2	Securing cargoes								2		
3	Deck cargo								4		
4	Bulk cargo								2		
5	Bulk grain cargo								3		
6	Container cargo								2		
7											
8											
									17		

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH											
F: 2 C: 2.1 S: 2.1.2	**CARGO HANDLING AND STOWAGE AT THE OPERATIONAL LEVEL** Monitor the loading, stowage, securing and unloading of cargoes and their care during the voyage Safe handling, stowage and securing of cargoes								**File Code**	
									A-II/1	**ED 2.1**
column 1	column 2	column 3			column 4	column 5			column 6	
no.	**Description topics per subject**	**Actually instructed**			**Examination method (use legend 1)**	**Item properly examined**			**Points**	
		yes	**no**	**% covered (par 5.1.4 d)**		**yes**	**no**	**if no, indicate (use legend 2)**	**max**	**actual**
1	Cargo care								4	
2	Dangerous, hazardous and harmful cargoes								9	
3	Cargo handling equipment and safety								7	
4	Oil tanker piping and pumping arrangements								4	
5	Precautions before entering enclosed or contaminated spaces								2	
6	Cargo calculations and cargo plans								5	
7										
8										
									31	

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH			
F: 2	**CARGO HANDLING AND STOWAGE AT THE OPERATIONAL LEVEL**	**File Code**	
C: 2.1	Monitor the loading, stowage, securing & unloading of cargoes & their care during the voyage	**A-II/1**	**ED 2.1**

		maximum score	**actual score**
S: 2.1.1	The effect of cargo, including heavy lifts on the seaworthiness and stability of the ship:	**17**	
S: 2.1.2	Safe handling, stowage and securing of cargoes	**31**	

Actual Points Obtained		
Maximum Obtainable Points	**48**	**Assessment Score ED 2.1**

Assessor 1
Name: Date: Signature:
Function:

Assessor 2
Name: Date: Signature:
Function:

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH											
F: 2 C: 2.2 S: 2.2.1	**CARGO HANDLING AND STOWAGE AT THE OPERATIONAL LEVEL** Inspect and report defects and damage to cargo spaces, hatch covers and ballast tanks Inspection reports and damage control									**File Code**	
										A-II/1	**ED 2.2**
column 1	column 2	column 3			column 4	column 5			column 6		
no.	**Description topics per subject**	**Actually instructed**			**Examination method (use legend 1)**	**Item properly examined**			**Points**		
		yes	**no**	**% covered (par 5.1.4 d)**		**yes**	**no**	**if no, indicate (use legend 2)**	**max**	**actual**	
1	Cause and nature of corrosion including caused by cargo and cargo operations								2		
2	Tension and stress due to severe weather conditions and parts of the structure affected								2		
3	Maintenance programs								2		
4	Inspection techniques								2		
5	Inspection sequence								2		
6	Survey programs								2		
									12		

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH			
F: 2	**CARGO HANDLING AND STOWAGE AT THE OPERATIONAL LEVEL**	**File Code**	
C: 2.2	Inspect and report defects and damage to cargo spaces, hatch covers and ballast tanks	**A-II/1**	**ED 2.2**

		maximum score	**actual score**
S: 2.2.1	Inspection reports and damage control	**12**	

Actual Points Obtained		
Maximum Obtainable Points	**12**	**Assessment Score ED 2.1**

Assessor 1
Name: Date: Signature:
Function:

Assessor 2
Name: Date: Signature:
Function:

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH				
A-II/3 ED 3	CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD AT THE OPERATIONAL LEVEL			
File Code	**Description**	**Points**		
		max		**actual**
A-II/3 ED 3.1	Ensure compliance with pollution-prevention requirements	20		
A-II/3 ED 3.2	Maintain the seaworthinees of the ship	135		
A-II/3 ED 3.3	Prevent, control and fight fires on board (see Chapter 1 paragraph 1.2.2)	45		
A-II/3 ED 3.4	Operate life-saving appliances (see Chapter 1 paragraph 1.2.2)	54		
A-II/3 ED 3.5	Apply medical first aid on board ship (see Chapter 1 paragraph 1.2.2)	60		
A-II/3 ED 3.6	Monitor compliance with legislative requirements	42		
	Sub totals	**356**		

Actual Points Obtained
Maximum Obtainable Points 356

ASSESSMENT SCORE block ED 3

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH										
F: 3 C: 3.1 S: 3.1.1	CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD AT THE OPERATIONAL LEVEL **Ensure compliance with pollution-prevention requirements** The precautions to be taken to prevent pollution of the marine environment								**File Code**	
									A-II/3	**ED 3.1**
column 1	column 2	column 3			column 4	column 5			column 6	
no.	**Description topics per subject**	**Actually instructed**			**Examination method (use legend 1)**	**Item properly examined**			**Points**	
		yes	**no**	**% covered (par 5.1.4 d)**		**yes**	**no**	**if no, indicate (use legend 2)**	**max**	**actual**
1	MARPOL 73/78								12	
2										
3										
4										
5										
6										
7										
8										
									12	

Name Institute:
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Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH											
F: 3 C: 3.1 S: 3.1.2	CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD AT THE OP. LEVEL **Ensure compliance with pollution-prevention requirements** Anti pollution procedures and associated equipment									**File Code**	
										A-II/3	**ED 3.1**
column 1	column 2	column 3			column 4	column 5			column 6		
no.	**Description topics per subject**	**Actually instructed**			**Examination method (use legend 1)**	**Item properly examined**			**Points**		
		yes	**no**	**% covered (par 5.1.4 d)**		**yes**	**no**	**if no, indicate (use legend 2)**	**max**	**actual**	
1	Regulation 26-Annex 1 MARPOL 73/78								4		
2	Anti-Pollution Equipment								4		
3											
4											
5											
6											
7											
8											
									8		

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH			
F: 3 C: 3.1	CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD AT THE OP. LEVEL **Ensure compliance with pollution-prevention requirements**	**File Code**	
		A-II/3	**ED 3.1**

		maximum score	actual score
S: 3.1.1	The precautions to be taken to prevent pollution of the marine environment	**12**	
S: 3.1.2	Anti pollution procedures and associated equipment	**8**	

Actual Points Obtained			
Maximum Obtainable Points	**20**	**Assessment Score ED 3.1**	

Assessor 1
Name: Date: Signature:
Function:

Assessor 2
Name: Date: Signature:
Function:

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH										
F: 3 C: 3.2 S: 3.2.1	CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD AT THE OP. LEVEL Maintain the seaworthinees of the ship Ship stability								**File Code**	
									A-II/3	**ED 3.2**
column 1	column 2	column 3			column 4	column 5			column 6	
no.	**Description topics per subject**	**Actually instructed**			**Examination method (use legend 1)**	**Item properly examined**			**Points**	
		yes	**no**	**% covered (par 5.1.4 d)**		**yes**	**no**	**if no, indicate (use legend 2)**	**max**	**actual**
1	Displacement								4	
2	Buoyancy								2	
3	Fresh water allowance								9	
4	Static stability								12	
5	Initial stability								12	
6	Angle of Loll								4	
7	Curves of static stability								4	
8	Movement of the centre of gravity								4	
9	List and its correction								6	
10	Effect of slack water								3	
11	Trim								6	
12	Loss of intact buoyancy.								4	
									70	

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH										
F: 3 C: 3.2 S: 3.2.2	CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD AT THE OP. LEVEL **Maintain the seaworthinees of the ship** Ship construction								**File Code**	
									A-II/3	**ED 3.2**
column 1	column 2	column 3			column 4	column 5			column 6	
no.	**Description topics per subject**	**Actually instructed**			**Examination method (use legend 1)**	**Item properly examined**			**Points**	
		yes	**no**	**% covered (par 5.1.4 d)**		**yes**	**no**	**if no, indicate (use legend 2)**	**max**	**actual**
1	Ship dimensions and form								12	
2	Ship stresses								8	
3	Hull structure								12	
4	Bow and stern								6	
5	Fittings								9	
6	Rudders and propellers								12	
7	Load lines and draft marks.								6	
8										
									65	

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH			
F: 3 C: 3.2	CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD AT THE OP. LEVEL **Maintain the seaworthinees of the ship**	**File Code**	
		A-II/3	**ED 3.2**

		maximum score	**actual score**
S: 3.2.1	Ship stability	**70**	
S: 3.2.2	Ship construction	**65**	

Actual Points Obtained

Maximum Obtainable Points **135** **Assessment Score ED 3.2**

Assessor 1
Name: Date: Signature:
Function:

Assessor 2
Name: Date: Signature:
Function:

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH										
F: 3 C: 3.3 S: 3.3.1	CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD AT THE OP. LEVEL **Prevent, control and fight fires on board** IMO Model Course No. 2.03 and STCW 1995 Regulation VI/3								**File Code**	
									A-II/3	**ED 3.3**
column 1	column 2	column 3			column 4	column 5			column 6	
no.	**Description topics per subject**	**Actually instructed**			**Examination method (use legend 1)**	**Item properly examined**			**Points**	
		yes	**no**	**% covered (par 5.1.4 d)**		**yes**	**no**	**if no, indicate (use legend 2)**	**max**	**actual**
1	Introduction, safety and principles								3	
2	Theory of fire								3	
3	Fire control aboard ships								3	
4	Ship fire fighting organization								3	
5	Training of seafarers in fire fighting								3	
6	Procedures for fire fighting								3	
7	Firer fighting equipment, inspection, testing & servicing								3	
8	Practice servicing fire appliances								3	
9	Fire fighting process hazards								3	
10	First aid								3	
11	Fire investigating and reporting								3	
12	Fire fighting practice								3	
13	Emergency escape technique in case of breathing apparatus failure								3	
14	B.A. rescue practice								3	
15	Case studies.								3	
									45	

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH			
F: 3 C: 3.3	CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD AT THE OP. LEVEL **Prevent, control and fight fires on board**	**File Code**	
		A-II/3	**ED 3.3**

		maximum score	actual score
S: 3.3.1	IMO Model Course No. 2.03 and STCW 1995 Regulation VI/3	**45**	

Actual Points Obtained		
Maximum Obtainable Points	**45**	**Assessment Score ED 3.3**

Assessor 1
Name: Date: Signature:
Function:

Assessor 2
Name: Date: Signature:
Function:

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH										
F: 3 C: 3.4 S: 3.4.1	CONTROLLING THE OPERATION OF THE SHIP & CARE FOR PERSONS ON BOARD AT THE OP. LEVEL **Operate life-saving appliances** Take charge of a survival craft or rescue boat during & after launch IMO Model Course No. 1.23 & STCW '95 Reg.VI/2 paragraph 1-4								**File Code**	
									A-II/3	**ED 3.4**
column 1	column 2	column 3			column 4	column 5			column 6	
no.	**Description topics per subject**	**Actually instructed**			**Examination method (use legend 1)**	**Item properly examined**			**Points**	
		yes	**no**	**% covered (par 5.1.4 d)**		**yes**	**no**	**if no, indicate (use legend 2)**	**max**	**actual**
1	Introduction, safety and survival								3	
2	Emergency situations								3	
3	Evacuation								3	
4	Survival craft and rescue boats								3	
5	Personal life saving appliances								3	
6	Survival at sea and helicopter assistance								3	
7	Lifeboat engines and accessories								3	
8	Emergency radio equipment								3	
9	Signalling equipment and pyrotechnics								3	
10	Best use of survival craft facilities								3	
11	Drill in the use of personal life saving appliances								3	
12	Drill in launching and recovering boats								3	
13										
14										
									36	

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH										
F: 3 C: 3.4 S: 3.4.2	CONTROLLING THE OPERATION OF THE SHIP & CARE FOR PERSONS ON BOARD AT THE OP. LEVEL **Operate life-saving appliances** Operate a survival craft engine IMO Model Course No. 1.23 and STCW 1995 Regulation VI/2 paragraph 1-4								**File Code**	
									A-II/3	**ED 3.4**
column 1	column 2	column 3			column 4	column 5			column 6	
no.	**Description topics per subject**	**Actually instructed**			**Examination method (use legend 1)**	**Item properly examined**			**Points**	
		yes	**no**	**% covered (par 5.1.4 d)**		**yes**	**no**	**if no, indicate (use legend 2)**	**max**	**actual**
1	Starting the engine								3	
2	Cooling systems								3	
3	Battery charger								3	
4	Fire extinguisher								3	
5	Water spray system								3	
6	Self contained air								3	
									18	

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH			
F: 3 C: 3.4	CONTROLLING THE OPERATION OF THE SHIP & CARE FOR PERSONS ON BOARD AT THE OP. LEVEL **Operate life-saving appliances**	**File Code**	
		A-II/3	**ED 3.4**

		maximum score	actual score
S: 3.4.1	Take charge of a survival craft or rescue boat during and after launch	**36**	
S: 3.4.2	Operate a survival craft engine	**18**	

Actual Points Obtained **Maximum Obtainable Points**	**54**	**Assessment Score ED 3.4**

Assessor 1
Name: Date: Signature:
Function:

Assessor 2
Name: Date: Signature:
Function:

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH										
F: 3 C: 3.5 S: 3.5.1	CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD AT THE OP. LEVEL **Apply medical first aid on board ship** IMO Model Course No. 1.14 and STCW 1995 Regulation VI/4 paragraph 1-3								**File Code**	
									A-II/3	**ED 3.5**
column 1	column 2	column 3			column 4	column 5			column 6	
no.	**Description topics per subject**	**Actually instructed**			**Examination method (use legend 1)**	**Item properly examined**			**Points**	
		yes	**no**	**% covered (par 5.1.4 d)**		**yes**	**no**	**if no, indicate (use legend 2)**	**max**	**actual**
1	General principles								5	
2	Immediate action and first aid kit								5	
3	Body structure and function								5	
4	Toxicological hazard aboard ship								5	
5	Examination of patient								5	
6	Spinal injuries								5	
7	Burns, scalds and effects of heat and cold								5	
8	Fractures, dislocations & muscular injuries								5	
9	Medical care of rescued persons, including distress, hypothermia and cold exposure								5	
10	Radio medical advice								5	
11	Pharmacology & sterilization								5	
12	Cardiac arrest, drowning and asphyxia								5	
									60	

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH			
F: 3 C: 3.5	CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD AT THE OP. LEVEL **Apply medical first aid on board ship**	**File Code**	
		A-II/3	**ED 3.5**
		maximum score	**actual score**
S: 3.5.1	IMO Model Course No. 1.14 and STCW 1995 Regulation VI/4 paragraph 1-3	**60**	
Actual Points Obtained **Maximum Obtainable Points**		**60**	**Assessment Score ED 3.5**

Assessor 1
Name: Date: Signature:
Function:

Assessor 2
Name: Date: Signature:
Function:

Name Institute:
Address :

Date of audit : **STUDY-LINE ANT IV**

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH											
F: 3 C: 3.6 S: 3.6.1	CONTROLLING THE OPERATION OF THE SHIP & CARE FOR PERSONS ON BOARD AT THE OPERATIONAL LEVEL **Monitor compliance with legislative requirements** Basic working knowledge of the relevant IMO conventions concerning safety of life & protection of the marine environment									**File Code**	
										A-II/3	**ED 3.6**
column 1	column 2	column 3			column 4	column 5				column 6	
no.	**Description topics per subject**	**Actually instructed**			**Examination method (use legend 1)**	**Item properly examined**				**Points**	
		yes	**no**	**% covered (par 5.1.4 d)**		**yes**	**no**	**if no, indicate (use legend 2)**		**max**	**actual**
1	International convention on load lines									3	
2	SOLAS, 1974 as amended									3	
3	SOLAS-subdivision and stability									3	
4	SOLAS-fire protection, detection & extinction									3	
5	SOLAS-LSA & arrangements (LSA code)									3	
6	SOLAS-radiotelegraphy and R/T									3	
7	SOLAS-radio communications (amended chapter IV)									3	
8	SOLAS-carriage of grain									3	
9	SOLAS-carriage of dangerous goods									3	
10	STCW ’95, as amended									3	
11	ITU-radio regulations									3	
12	STP, 1971									3	
13	SPACE STP, 1973									3	
14	PAL, 1974 and tonnage 1969									3	
										42	

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH			
F: 3 C: 3.6	CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD AT THE OP. LEVEL **Monitor compliance with legislative requirements**	**File Code**	
		A-II/3	**ED 3.6**
		maximum score	**actual score**
S: 3.6.1	Basic working knowledge of the relevant IMO conventions concerning safety of life & protection of the marine environment	**42**	
Actual Points Obtained **Maximum Obtainable Points**		**42**	**Assessment Score ED 3.6**

Assessor 1
Name: Date: Signature:
Function:

Assessor 2
Name: Date: Signature:
Function:

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

EQUIPMENT REQUIREMENTS FOR MET / ANT IV					
A II-1	**EQ**	**Equipment**			
File Code		**Description**	**Points**		
			max		**actual**
A-II/1	**Com**	**Operational level**			
A-II/3-C	EQ-Cr	Computer room	120		
A-II/1	**Com**	**Operational level**			
A-II/1-C	EQ-Tb	Textbooks	295		
A-II/1-C	EQ-Vc	Video cassettes and VCD	225		
A-II/3	**EQ 1**	**Navigation at the operational level**			
A-II/3-1	EQ-Na	Navigational Equipment	122		
A-II/3-1	EQ-El	Electronic Navigation Equipment	110		
A-II/3-1	EQ-Co	Collision Regulations Equipment	10		
A-II/3-1	EQ-Me	Meteorology Equipment	30		
A-II/3-1	EQ-Em	Emergency procedures Equipment	5		
A-II/3-1	EQ-Vs	Visual signalling Equipment	10		
A-II/3-1	EQ-Ma	Manoeuvring Equipment	15		
A-II/3-1	EQ-En	English language Equipment	60		
A-II/3-1	EQ-Ra	Radar navigation laboratory	280		
A-II/3	**EQ 2**	**Cargo handling and stowage at the operational level**			
A-II/3-2	EQ-Ca	Cargo handling and stowage	40		
A-II/3	**EQ 3**	**Controlling the operations of the ship & care for the persons on board at the operational level**			
A-II/3-3	EQ-Cn	Controlling equipment	40		
		Subtotals	**1362**		

Actual Points Obtained
Maximum Obtainable Points 1362

ASSESSMENT SCORE EQ

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

EQUIPMENT REQUIREMENTS FOR MET / ANT IV					
A II/3	**EQ**	**Equipment**			
File Code		**Description**	**Points**		
			max		**actual**
A-II/3	**Com**	**Operational level**			
A-II/3-C	EQ-Cr	Computer room	120		
		Subtotals	**120**		

Actual Points Obtained
Maximum Obtainable Points 120

ASSESSMENT SCORE EQ

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH						
COM EQ-Cr	**Common equipment at the operational level** **Computer room**				**File Code**	
					A-II/3-C	**EQ-Cr**
column 1	column 2		column 3	column 4	column 5	
no.	**Description items per subject and quantity**		**Available**	**Comments**	**Points**	
			quantity	**suitability in %**	**max**	**actual**
C.1	Class room with air conditioner & class room equipment	For 30 persons			10	
C.2	Desktop PC & appropriate application program	12			10	
C.3	Desktop PC and Modem	1			10	
C.4	Desktop PC and CD ROM	1			10	
C.5	Desktop PC and CD Writer	1			10	
C.6	Notebook/Laptop (optional)	1			10	
C.7	AVR (Stabilizer)	15			10	
C.8	Printer	1			10	
C.9	Consumables for printer (cartridge, toner)	1 set			10	
C.10	Scanner	1			10	
C.11	UPS (Uninterruptible Power Supply)	1			10	
C.12	Server/Main frame (optional)	1			10	
					120	

Name Institute:
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COM **EQ-Cr**	**Common equipment at the operational level** **Computer room**	**File Code**	
		A-II/3-C	**EQ-Cr**

		maximum points	**actual points**
EQ-Cr	Computer room	**120**	

Actual Points Obtained			
Maximum Obtainable Points	**120**	**Assessment Score EQ-Cr**	

Assessor 1
Name: Date: Signature:
Function:

Assessor 2
Name: Date: Signature:
Function:

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

EQUIPMENT REQUIREMENTS FOR MET / ANT IV					
A II-1	**EQ**	**Equipment**			
File Code		**Description**	**Points**		
			max		**actual**
A-II/1	**Com**	**Operational level**			
A-II/1-C	EQ-Tb	Textbooks	295		
A-II/1-C	EQ-Vc	Video cassettes and VCD	225		
		Subtotals	**520**		

Actual Points Obtained
Maximum Obtainable Points 520

ASSESSMENT SCORE block EQ Li

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH						
EQ-Li EQ-Tb	**Library-textbooks and video cassettes/VCD Textbooks**				**File Code**	
					A-II/1-C	**EQ-Tb**
column 1	column 2		column 3		column 4	column 5	
no.	**Description items per subject and quantity**		**Available**		**Comments**	**Points**	
			quantity	**suitability in %**		**max**	**actual**
	Radar Textbooks:						
	Radar observer's handbook for merchant navy officers, Burger, 7th ed, 1983	1				5	
	A guide to collision avoidance rules, Cockroft, 5th ed, 1996	1				5	
	Electronic aids to navigation, Lownsborough, 1983	1				5	
	Shipborne radar, Subramaniam	1				5	
	Radar and ARPA manual, Bole, 1990	1				5	
T. 1	Admiralty Manual of Navigation, vol.1, HMSO, 1997	1				5	
T. 2	An introduction to coastal navigation, 4th ed, 1985	1				5	
T. 3	The navigation control manual, Bole, 2nd ed, 1992	1				5	
T. 5	Collisions and their causes, Cahill, 1993	1				5	
T. 6	Strandings and their causes, Cahill, 1983	1				5	
T. 8	A guide to the Collision Avoidance Rules, Cockroft, 5th ed, 1996	1				5	

T.10	The theory and practise of seamanship, Danton, 11th ed, 1996	1				5	
T.11	Ship stability for masters and mates, Derett, 4th ed, 1984	1				5	
T.12	Ship construction	1				5	
T.13	Practical navigation for second mates, Frost, 6th ed, 1985	1				5	
T.14	The principles and practice of navigation, Frost, 3rd ed, 1988	1				5	
T.16	The use of constant rate turns	1				5	
T.17	Tug use in port	1				5	
T.19	Maritime law, Hill, 1998	1				5	
T.21	The behaviour and handling of ships, Hooyer,	1				5	
T.24	Bridge Procedure Guide, ICS, 3rd ed 1998	1				5	
T.28	Peril at sea and salvage, ICS, 5th ed, 1998	1				5	
T.29	Accident prevention on board ship at sea and in port, ILO, 1996	1				5	
T.30	International medical guide for ships	1				5	
T.31	International safety guide for oil tankers, ICS, 4th ed, 1996	1				5	
T.32	Cargo handling	1				5	
T.34	Notes on compass work, Kemp, 2nd ed, 1972	1				5	
T.35	Stability and trim for the ship's officer	1				5	
T.36	Shipboard operations, Lavery, 2nd ed, 1996	1				5	
T.37	Electronic aids to navigation: Radar and Arpa, Lownsborough, 1st ed, 1993	1				5	
T.38	Shiphandling for the mariner, MacElvrey, 3rd ed, 1995	1				5	

T.41	Tanker operations, A handbook …, Morton, 3rd ed, 1992	1				5	
T.42	Maritime meteorology, Reed, 2nd ed, 1997	1				5	
T.44	Liguefied gas handling principles on ships and terminals	1				5	
T.45	IAMSAR manual, 1st ed.	1				5	
T.46	Ship magnetism and the magnetic compass, Merrifield	1				5	
T.47	Marine observer's handbook, Met office, 11th ed, 1995	1				5	
T.48	Meteorology for mariners, Met office, 1996	1				5	
T.53	The shiphandler's guide, Row	1				5	
T.54	Ship captain medical guide	1				5	
T.57	Bridge team management, a practical guide, Swift, 1993	1				5	
T.58	Merchant ship construction, Taylor, 2nd ed, 1985	1				5	
T.59	Cargowork, Taylor, 12th ed, 1992	1				5	
T.60	Electronic aids to navigation, Tetley, 1986	1				5	
T.61	The mariner's handbook (NP 100)	1				5	
T.62	GPS satellite navigation, Toft, 1987	1				5	
T.63	Collision regulations fully explained, Wright, 2nd ed, 1989	1				5	
T.63*	The properties and stowage of cargoes, Thomas, 3rd ed, 1996	1				5	
T.66	Squat and interaction manoeuvring, the nautical institute	1				5	
T.66*	Watchkeeping safety and cargo management in port,, Roberts, 1995	1				5	
T.66**	Introduction to marine engineering	1				5	

T.67	English for maritime studies, Blakey, 1987	1				5	
T.67*	Medical first aid guide for use in accidents involving dangerous goods	1				5	
T.68	Seaspeak training manual, Weeks, 1992	1				5	
T.68*	Guidelines for the inspection and maintenance of double hull tanker structures	1				5	
T.69	Guidance and information on bulk cargo loading & discharging to reduce trhe likelihood of overstressing the hull structures	1				5	
T.70	Code of safe working practices for merchant seaman, 1998	1				5	
T.72	Training and assessment on board	1				5	
T.73	Practical navigation, Subramaniam, 2nd ed, 1978	1				5	
						295	

Name Institute:
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Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH			
EQ-Li **EQ-Tb**	**Library-textbooks and video cassettes/VCD** **Textbooks**	**File Code**	
		A-II/1-C	**EQ-Tb**

		maximum points	**actual points**
EQ-Tb	Textbooks	**295**	

Actual Points Obtained		
Maximum Obtainable Points	**295**	**Assessment Score EQ-Tb**

Assessor 1
Name: Date: Signature:
Function:

Assessor 2
Name: Date: Signature:
Function:

Name Institute:
Address :

Date of audit : **STUDY-LINE ANT IV**

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH						
EQ-Li **EQ-Vc**	**Library-textbooks and video cassettes/VCD** **Video cassettes/VCD**				**File Code**	
					A-II/1-C	**EQ-Vc**
column 1	column 2		column 3		column 4	column 5
no.	**Description items per subject and quantity**		**Available**		**Comments**	**Points**
			quantity	**suitability in %**		**max** / **actual**
	Radar video cassettes/VCD (IMO recommendations)	-				
	Automatic radar plotting aids	1				5
VID 202	IMO – Safer shipping and cleaner seas	1				5
VID 301	Preparing the defence	1				5
x	Ship stability CD-ROM	1				5
11	Crude oil washing	1				5
13	Interaction	1				5
95	Ship handling part 1	1				5
100	Introduction to chemicals tankers	1				5
103	Introduction to liquefied gas carriers	1				5
116	Operation and maintenance of inert gas systems	1				5
129	Ship handling part 2	1				5

162	Ro-ro safety and cargo operations	1				5	
321	Ship handling part 3	1				5	
328	Know the current rules	1				5	
329.1	Chemical tanker operation part 1	1				5	
387	Dangerous Goods at Sea Series, part 1	1				5	
387/8	Dangerous Goods at Sea Series	1				5	
388	Dangerous Goods at Sea Series, part 2	1				5	
463	SOLAS Chapter III series part 5-SOLAS amendments	1				5	
467	Shipping casualty emergency response	1				5	
481	Reefer container operations	1				5	
489	Onboard training b y design	1				5	
496	Passage planning	1				5	
497	Bridge watch keeping	1				5	
498	Master/pilot relationship	1				5	
506	Operation and maintenance of hatch covers	1				5	
532	Bulk carrier losses	1				5	
534	Entering into enclosed spaces	1				5	
537	The culture gap	1				5	
544	Loadline surveys	1				5	
545	Safety construction survey	1				5	
546	Safety equipment survey	1				5	
564/571	First aid and medical carfe on board ship series	1				5	
574	Search and rescue : co-ordination	1				5	
575	The ISM audit	1				5	

591	Prevention and reaction to marine oil spills under MARPOL	1				5	
598	Cargo loss prevention on bulk c\arriersa	1				5	
603	Basic instincts	1				5	
606	Oil pollution regulations and the oil record book	1				5	
607/612	Management for seafarers series	1				5	
615	Theory of mooring	1				5	
621	Permit to work	1				5	
629	STCW & Flag state implementation	1				5	
636	Ship handling in following seas	1				5	
644	Man overboard	1				5	
						225	

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STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH			
EQ-Li **EQ-Vc**	**Library-textbooks and video cassettes/VCD** **Video cassettes/VCD**	**File Code**	
		A-II/1-C	**EQ-Vc**

		maximum points	actual points
EQ-Vc	Video cassettes/VCD	**225**	

Actual Points Obtained

Maximum Obtainable Points **225** **Assessment Score EQ-Vc**

Assessor 1
Name: Date: Signature:
Function:

Assessor 2
Name: Date: Signature:
Function:

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

EQUIPMENT REQUIREMENTS FOR MET / ANT IV					
A II/3	**EQ**	**Equipment**			
File Code		**Description**	**Points**		
			max		**actual**
A-II/3	**EQ 1**	**Navigation at the operational level**			
A-II/3-1	EQ-Na	Navigation Equipment	122		
A-II/3-1	EQ-El	Electronic Navigation Equipment	110		
A-II/3-1	EQ-Co	Collision Regulations Equipment	10		
A-II/3-1	EQ-Me	Meteorology Equipment	30		
A-II/3-1	EQ-Em	Emergency procedures Equipment	5		
A-II/3-1	EQ-Vs	Visual signalling Equipment	10		
A-II/3-1	EQ-Ma	Manoeuvring Equipment	15		
A-II/3-1	EQ-En	English language Equipment	60		
A-II/3-1	EQ-Ra	Radar navigation laboratory	280		
		Subtotals	**642**		

Actual Points Obtained
Maximum Obtainable Points 642

ASSESSMENT SCORE block EQ 1

Name Institute:
Address :
Date of audit : **STUDY-LINE ANT IV**

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH							
F 1 EQ-Na	**NAVIGATION AT THE OPERATIONAL LEVEL Navigation Equipment**					**File Code**	
						A-II/3.1	**EQ-Na**
column 1	column 2		column 3		column 4	column 5	
no.	**Description items per subject and quantity**		**Available**		**Comments**	**Points**	
			quantity	**suitability in %**		**max**	**actual**
1	**Navigational Equipment**						
1.1	Magnetic compass, incl. binnacle + manual	1				25	
1.2	Deviation curve or table	1				5	
1.3	Binocular	1				2	
1.4	Bearing equipment	1				5	
1.8	Charts:	-					
	Big scale chart	1				1	
	Route chart/ narrow waters	1				1	
	Mercatorial plotting sheet	1				1	
	Gnomonic plotting sheet	1				1	
	Weather chart per ocean	1 set				2	
	Ocean plotting charts of area concerned	1 set				2	
	Loran-C chart	1				1	
	Coastal exercise chart	> 11				5	
	Applicable national publications	1 set				2	

1.9	Navigational issues :	-					
	BA/HO Chart catalogue	1				1	
	ATT, area concerned	1 set				2	
	ALRS, vol 2, 3 and 5	1 set				1	
	ALL	1 set				2	
	Tidal stream atlas	1				1	
	IALA-buoyage NP 735	1				1	
	Symbols and abbreviations as used in BA-charts NP 5011	1				1	
	International Code of Signals	1				1	
	Admiralty Sailing directions / Pilots (area concerned)	1 set				2	
	Mariners' Handbook	1				1	
	Notices to Mariners, weekly editions and (annual) summary	1 set				2	
	Nautical Almanac	> 11				10	
	Distance tables	1				1	
	Applicable national publications	1				1	
1.10	Ship's Logbook (international)	1				1	
1.11	Parallel ruler, triangle archer	30				10	
1.12	Divider, pencil, eraser, callipers	30				10	
1.13	Calculator, with trigonometric functions and memory capacity	30				10	
1.14	Mock / model ship's chart table	1				1	
1.15	Chart tables for exercises	10				10	
						122	

Name Institute:

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OFFICER IN CHARGE OF A NAVIGATIONAL WATCH			
F 1 EQ-Na	**NAVIGATION AT THE OPERATIONAL LEVEL** **Navigation Equipment**	**File Code**	
		A-II/3.1	**EQ-Na**

		maximum points	**actual points**
EQ-Na	Navigation Equipment	**122**	

Actual Points Obtained		
Maximum Obtainable Points	**122**	**Assessment Score EQ-Na**

Assessor 1
Name: Date: Signature:
Function:

Assessor 2
Name: Date: Signature:
Function:

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH							
F 1 EQ-El	**NAVIGATION AT THE OPERATIONAL LEVEL Electronic Navigation Equipment**					**File Code**	
						A-II/3.1	**EQ-El**
column 1	column 2		column 3		column 4	column 5	
no.	**Description items per subject and quantity**		**Available**		**Comments**	**Points**	
			quantity	**suitability in %**		**max**	**actual**
2	**Electronic Navigation Equipment**						
2.1	Echo Sounder	1				5	
2.2	GPS receiver	1				25	
2.3	Loran-C receiver	1				5	
2.4	Ship's log / speed log	1				15	
2.5	Automatic pilot	1				5	
2.6	Gyro compass	1				50	
2.7	Gyro repeater	1				5	
						110	

Name Institute:
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STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH			
F 1 **EQ-El**	**NAVIGATION AT THE OPERATIONAL LEVEL** **Electronic Navigation Equipment**	**File Code**	
		A-II/3.1	**EQ-El**

		maximum points	**actual points**
EQ-El	Electronic Navigation Equipment	**110**	

Actual Points Obtained		
Maximum Obtainable Points	**110**	**Assessment Score EQ-El**

Assessor 1
Name: Date: Signature:
Function:

Assessor 2
Name: Date: Signature:
Function:

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH							
F 1 EQ-Co	**NAVIGATION AT THE OPERATIONAL LEVEL** **Collision Regulations Equipment**					**File Code**	
						A-II/3.1	**EQ-Co**
column 1	column 2		column 3		column 4	column 5	
no.	**Description items per subject and quantity**		**Available**		**Comments**	**Points**	
			quantity	**suitability in %**		**max**	**actual**
3	**Collision Regulations Equipment**						
3.1	Set of models with proper navigation lights & signals (table or magnetic board) or navigation light simulator (computer)	1 set				10	
						10	

Name Institute:
Address :
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STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH					
F 1 EQ-Co	**NAVIGATION AT THE OPERATIONAL LEVEL** **Collision Regulations Equipment**			**File Code**	
				A-II/3.1	**EQ-Co**
		maximum points	**actual points**		
EQ-Co	**Collision Regulations Equipment**	**10**			
	Actual Points Obtained				
	Maximum Obtainable Points	**10**	**Assessment Score EQ-Co**		

Assessor 1
Name: Date: Signature:
Function:

Assessor 2
Name: Date: Signature:
Function:

Name Institute:
Address :
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STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH							
F 1 EQ-Me	**NAVIGATION AT THE OPERATIONAL LEVEL**					**File Code**	
	Meteorology Equipment					**A-II/3.1**	**EQ-Me**
column 1	column 2		column 3		column 4	column 5	
no.	**Description items per subject and quantity**		**Available**		**Comments**	**Points**	
			quantity	**suitability in %**		**max**	**actual**
4	**Meteorology Equipment**						
4.1	Cloud sheet 1986, WMO	1				2	
4.2	Barometer, mercurial	1				2	
4.3	Barometer, aneroid	1				5	
4.4	Hygrometer	1				4	
4.5	Thermometer	1				4	
4.6	Wet and dry bulb thermometer	1				2	
4.7	Anemometer	1				4	
4.8	Weather facsimile	1				5	
						2	
						30	

Name Institute:
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STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH			
F 1 **EQ-Me**	**NAVIGATION AT THE OPERATIONAL LEVEL** **Meteorology Equipment**	**File Code**	
		A-II/3.1	**EQ-Me**

		maximum points	**actual points**
EQ-Me	**Meteorology Equipment**	**30**	
	Actual Points Obtained		
	Maximum Obtainable Points	**30**	**Assessment Score EQ-Me**

Assessor 1
Name: Date: Signature:
Function:

Assessor 2
Name: Date: Signature:
Function:

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH							
F 1 EQ-Em	**NAVIGATION AT THE OPERATIONAL LEVEL Emergency procedures Equipment**					**File Code**	
						A-II/3.1	**EQ-Em**
column 1	column 2		column 3		column 4	column 5	
no.	**Description items per subject and quantity**		**Available**		**Comments**	**Points**	
			quantity	**suitability in %**		**max**	**actual**
5	**Emergency procedures Equipment**						
5.1	Line throwing device (dummy)	1				5	
						5	

Name Institute:
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STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH			
F 1 EQ-Em	**NAVIGATION AT THE OPERATIONAL LEVEL Emergency procedures Equipment**	**File Code**	
		A-II/3.1	**EQ-Em**

		maximum points	**actual points**
EQ-Em	Emergency procedures Equipment	**5**	

Actual Points Obtained		
Maximum Obtainable Points	**5**	**Assessment Score EQ-Em**

Assessor 1
Name: Date: Signature:
Function:

Assessor 2
Name: Date: Signature:
Function:

Name Institute:
Address :
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STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH							
F 1 EQ-Vs	**NAVIGATION AT THE OPERATIONAL LEVEL Visual signalling Equipment**					**File Code**	
						A-II/3.1	**EQ-Vs**
column 1	column 2		column 3		column 4	column 5	
no.	**Description items per subject and quantity**		**Available**		**Comments**	**Points**	
			quantity	**suitability in %**		**max**	**actual**
6	**Visual signalling Equipment**						
6.1	Morse key + light	1				5	
6.2	Code flags (with mast)	1 set				5	
						10	

Name Institute:
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STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH			
F 1 EQ-Vs	**NAVIGATION AT THE OPERATIONAL LEVEL** **Visual signalling Equipment**	**File Code**	
		A-II/3.1	**EQ-Vs**

		maximum points	**actual points**
EQ-Vs	Visual signalling Equipment	**10**	

Actual Points Obtained			
Maximum Obtainable Points	**10**	**Assessment Score EQ-Vs**	

Assessor 1
Name: Date: Signature:
Function:

Assessor 2
Name: Date: Signature:
Function:

Name Institute:
Address :
Date of audit :

STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH							
F 1 EQ-Ma	**NAVIGATION AT THE OPERATIONAL LEVEL Manoeuvring Equipment**					**File Code**	
						A-II/3.1	**EQ-Ma**
column 1	column 2		column 3		column 4	column 5	
no.	**Description items per subject and quantity**		**Available**		**Comments**	**Points**	
			quantity	**suitability in %**		**max**	**actual**
7	**Manoeuvring Equipment**						
7.1	Model with ships, jetties, piers, etc. to illustrate berthing procedures	1 set				5	
7.2	Model with windlass and mooring arrangement to illustrate anchoring and mooring procedures	1 set				5	
7.3	Ropes, wires, stoppers, blocks and shackles	1 set				5	
						15	

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STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH			
F 1 EQ-Ma	**NAVIGATION AT THE OPERATIONAL LEVEL** **Manoeuvring Equipment**	**File Code**	
		A-II/3.1	**EQ-Ma**

		maximum points	**actual points**
EQ-Ma	Manoeuvring Equipment	**15**	

Actual Points Obtained			
Maximum Obtainable Points	**15**	**Assessment Score EQ-Ma**	

Assessor 1
Name: Date: Signature:
Function:

Assessor 2
Name: Date: Signature:
Function:

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OFFICER IN CHARGE OF A NAVIGATIONAL WATCH							
F 1 EQ-En	**NAVIGATION AT THE OPERATIONAL LEVEL English language Equipment**					**File Code**	
						A-II/3.1	**EQ-En**
no.	**Description items per subject and quantity**		**Available**		**Comments**	**Points**	
			quantity	**suitability in %**		**max**	**actual**
8	**English language Equipment**						
8.1	Marlins study pack 1 & study pack 2, Marlins, 1997/1998	1 set				5	
8.1	Briefing room with air conditioner and class room equipment	1 for >30 persons				10	
8.2	Instructor console + accesoires	1				10	
8.3	Audio-visual equipment	1 set				4	
8.4	Sound system + headphone	30				30	
8.5	Book shelf	1				1	
						60	

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STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH			
F 1 EQ-En	**NAVIGATION AT THE OPERATIONAL LEVEL** **English language Equipment**	**File Code**	
		A-II/3.1	**EQ-En**

		maximum points	**actual points**
EQ-En	English language Equipment	**60**	
	Actual Points Obtained		
	Maximum Obtainable Points	**60**	**Assessment Score EQ-En**

Assessor 1
Name: Date: Signature:
Function:

Assessor 2
Name: Date: Signature:
Function:

Name Institute:
Address :
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STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH							
F 1 EQ-Ra	**NAVIGATION AT THE OPERATIONAL LEVEL Radar navigation laboratory equipment**					**File Code**	
						A-II/3.1	**EQ-Ra**
column 1	column 2		column 3		column 4	column 5	
no.	**Description items per subject and quantity**		**Available**		**Comments**	**Points**	
			quantity	**suitability in %**		**max**	**actual**
9	**Radar navigation laboratory**						
9.1	Briefing room with air conditioner & class equipment	Cap. 10 pers				10	
9.4	Instructor console + accesoires	1				50	
9.5	Own ship display / station according all applicable performance standards of IMO	> 2 set				200	
9.6	Plotting table, plotting and instruments for each set	> 2 set				10	
9.7	Manufacturer's operational manual / user manual for radar	1				5	
9.8	Manufacturer's operational manual / user manual for ARPA	1				5	
						280	

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STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH			
F 1 EQ-Ra	**NAVIGATION AT THE OPERATIONAL LEVEL** **Radar navigation laboratory equipment**	**File Code**	
		A-II/3.1	**EQ-Ra**

		maximum points	**actual points**
EQ-Ra	Radar navigation laboratory equipment	**280**	

Actual Points Obtained		
Maximum Obtainable Points	**280**	**Assessment Score EQ-Ra**

Assessor 1
Name: Date: Signature:
Function:

Assessor 2
Name: Date: Signature:
Function:

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STUDY-LINE ANT IV

EQUIPMENT REQUIREMENTS FOR MET / ANT IV					
A II/3	**EQ**	**Equipment**			
File Code		**Description**	**Points**		
			max		**actual**
A-II/3	**EQ 2**	**Cargo handling and stowage at the operational level**			
A-II/3-2	EQ-Ca	Cargo handling and stowage	40		
		Subtotals	**40**		

Actual Points Obtained
Maximum Obtainable Points 40

ASSESSMENT SCORE block EQ 2

Name Institute:
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OFFICER IN CHARGE OF A NAVIGATIONAL WATCH						
F 2 EQ-Ca	**CARGO HANDLING AND STOWAGE AT THE OPERATIONAL LEVEL Cargo handling and stowage**				**File Code**	
					A-II/3.2	**EQ-Ca**
column 1	column 2		column 3		column 4	column 5
no.	**Description items per subject and quantity**		**Available quantity**	**suitability in %**	**Comments**	**Points max**	**actual**
EQ-Ca	**Cargo handling and stowage**						
1	Working models cranes / derrick	1				10	
2	Cargo plans for various types of ships	1 set				5	
3	Model of crude carrier, tanks and pump room, showing pipes and valves	1				5	
	Model of product tanker, tanks and pump room, showing pipes and valves	1				5	
5	Models, drawings of various types of hatch covers incl. operating and securing arrangements	1 set				5	
6	Models, photographs, drawings of different types of cargo ships	1 set				5	
7	Examples of head and heel cargo blocks	1 set				5	
						40	

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STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH			
F 2 **EQ-Ca**	**Cargo handling and stowage at operational level** **Cargo handling and stowage**	**File Code**	
		A-II/3.2	**EQ-Ca**

		maximum points	**actual points**
EQ-Ca	Cargo handling and stowage	**40**	

Actual Points Obtained			
Maximum Obtainable Points	**40**	**Assessment Score EQ-Ca**	

Assessor 1
Name: Date: Signature:
Function:

Assessor 2
Name: Date: Signature:
Function:

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Address :
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STUDY-LINE ANT IV

EQUIPMENT REQUIREMENTS FOR MET / ANT IV					
A II/3	**EQ**	**Equipment**			
File Code		**Description**	**Points**		
			max		**actual**
A-II/3	**EQ 3**	**Controlling the operations of the ship and care for the persons on board at the operational level**			
A-II/3-3	EQ-Cn	Controlling equipment	40		
		Subtotals	**40**		

Actual Points Obtained
Maximum Obtainable Points 40

ASSESSMENT SCORE block EQ 3

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STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH						
F 3 EQ-Cn	CONTROLLING THE OPERATIONS OF THE SHIP AND CARE FOR PERSONS ON BOARD AT THE OPERATIONAL LEVEL **Controlling equipment**				**File Code**	
					A-II/3.3	**EQ-Cn**
column 1	column 2		column 3	column 4	column 5	
no.	**Description items per subject and quantity**		**Available**	**Comments**	**Points**	
			quantity	**suitability in %**	**max**	**actual**
1	Cut-away 3-D models showing the structure parts of the ship	1 set			10	
2	Photographs, drawings and plans illustrating types of ships and construction details	1 set			5	
3	Floating ship stability model for demonstrating movement of centre of gravity and free surface effects	1			15	
4	Marine hydrometer	1			10	
					40	

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STUDY-LINE ANT IV

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH			
F 3 **EQ-Cn**	CONTROLLING THE OPERATIONS OF THE SHIP AND CARE FOR PERSONS ON BOARD AT THE OPERATIONAL LEVEL **Controlling equipment**	**File Code**	
		A-II/3.3	**EQ-Cn**

		maximum points	**actual points**
EQ-Cn	Controlling equipment	**40**	

Actual Points Obtained			
Maximum Obtainable Points	**40**	**Assessment Score EQ-Cn**	

Assessor 1
Name: Date: Signature:
Function:

Assessor 2
Name: Date: Signature:
Function: