



**DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA**  
**MERCHANT SHIPPING SECRETARIAT**

**Ministry of Ports & Civil Aviation**

No.79, Technical Junction, Maradana Road, Colombo 10, Sri Lanka

Telephone: +94(0)112435127, Fax: +94-(0) 112430277, E-mail: dmsmos@sltnet.lk

**01. Navigation (Total number of hours - 60)**

Ref. No	Competence	Knowledge, Understanding and Proficiency		Time Allocation (Hrs)	STCW Ref
1.1	Introduction to plan and conduct a passage and determine position	1.1.1	<b>Introduction</b>		Table A- II/I ,P99
		1.1.1.1	Definitions - earth	4.0	
		1.1.1.2	Charts	3.0	
		1.1.1.3	Datum's	3.0	
		1.1.1.4	Compass corrections	3.0	
		1.1.1.5	Distances	0.5	
		1.1.1.6	Position lines and positions	3.0	
		1.1.1.7	Sailings	3.0	
		1.1.1.8	Chart work exercises	4.5	
		1.1.1.9	Information from charts, lists of lights and other publications	3.0	
		1.1.1.10	Keeping a log	3.0	
		1.1.1.11	Chronometer time	1.0	
		1.1.2	<b>Celestial navigation (Introduction to the use of celestial bodies to determine the ship's position)</b>		
		1.1.2.1	Celestial sphere and equinoctial system of co-ordinates	3.0	
		1.1.2.2	Sextant and altitude corrections	3.0	
		1.1.2.3	Relationship between GHA,LHA	3.0	
		1.1.2.4	Relationship between hour angle and time	3.0	
		1.1.2.5	Relationship between local and Greenwich time	3.0	
		1.1.2.6	Universal time and co-ordinate universal time	3.0	
		1.1.2.7	Compass errors by astronomical observations	6.0	
1.1.2.8	Nautical almanac	3.0			
1.1.2.9	Theory of astronomical position lines and position circles	2.0			

**02. Meteorology (Total number of hours - 30)**



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Ref No	Competence	Knowledge, Understanding and Proficiency		Time Allocation (Hrs)	STCW Ref
2.1	Introduction to plan and conduct a passage and determine position	2.1.1	<b>Basic Knowledge of the characteristics of the various weather systems</b>		Table A-II/I ,P100
		2.1.1.1	Ship-borne meteorological instruments	6.0	
		2.1.1.2	The atmosphere, its composition and physical properties	3.0	
		2.1.1.3	Cloud and precipitation	6.0	
		2.1.1.4	Atmospheric pressure	3.0	
		2.1.1.5	Wind	6.0	
		2.1.1.6	Visibility	6.0	

**03. General Ship Knowledge (Total number of hours - 30)**

Ref. No	Competence	Knowledge, understanding and proficiency		Time Allocation (Hrs)	STCW Ref/Page
3.1	Introduction to maintain seaworthiness of the ship	3.1.1	<b>Introduction to structural members of a ship and the proper names for the various parts</b>		Table A- II/I ,P108
		3.1.1.1	Ship dimension and form	3.0	
			Definitions		
		3.1.1.2	General arrangements of vessels types	3.0	
		3.1.1.3	Fittings	2.0	
		3.1.1.5	Hull structure	2.0	
		3.1.2	<b>Basic knowledge of stability</b>		
		3.1.2.1	Density & displacement	1.0	
		3.1.2.2	Water pressure	1.0	
		3.1.2.3	Principle of floatation	1.5	
		3.1.2.4	Stability definitions	3.0	
		3.1.2.5	Relationship of weight and COG of a vessel	3.0	
		3.1.2.6	Buoyancy	1.5	
		3.1.2.7	Transverse statical stability	4.5	
3.1.2.8	Equilibrium of ships	3.0			
3.1.2.9	Free surface effect	1.5			

**04. Applied Science (Total number of hours - 30)**

Ref. No	Competence	Knowledge, understanding and proficiency		Time Allocation (hrs)	STCW Ref/Page
N/A	N/A	4.1	Units and measurements	1.0	N/A
		4.2	Scalars and vectors	2.0	
		4.3	Newton's equations of motion	4.0	



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	4.4	Newton's laws of motion	6.0
	4.5	Gravity	2.0
	4.6	Work, energy , power and efficiency	4.0
	4.7	Motion of two connected particles	4.0
	4.8	Fluid dynamics and statics	4.0
	4.9	Introduction to material science	3.0

**05. Watchkeeping / Bridge Equipment (Total number of hours - 60)**

Ref. No	Competence	Knowledge, understanding and proficiency		Time Allocation (hrs)	STCW Ref/Page
5.1	Introduction to maintain a safe navigational watch	5.1.1	<b>Basic knowledge of the collision regulations and principles in keeping a safe watch</b>		Table A-II/I ,P101
		5.1.1.1	The content, application and intent of COREG 72 as amended	25.0	
		5.1.1.2	Keeping a safe navigational watch	2.0	
		5.1.1.3	Keeping an effective deck watch in port under normal circumstances	3.0	
		5.1.1.4	Keeping a watch at anchor	1.5	
5.2	Introduction to plan & conduct a passage and determine position	5.2.1	<b>Bridge equipment</b>		Table A-II/I ,P99/100
		5.2.1.1	GPS system	1.5	
		5.2.1.2	Radar	3.0	
		5.2.1.3	Sextant	4.5	
		5.2.1.4	Use chronometers for accurate time keeping and measurement	1.5	
		5.2.1.5	Use echo sounders to determine the under-keel clearance and the profile of the sea bed	1.5	
		5.2.1.6	The magnetic compass	1.5	
		5.2.1.7	The gyro compass	1.5	
		5.2.1.8	The automatic pilot	1.5	
		5.2.1.9	Automatic identification system – AIS	1.5	
		5.2.1.10	Course recorder	1.5	
		5.2.1.11	ECDIS	1.5	
		5.2.1.12	GMDSS	1.5	
		5.2.1.13	The weather facsimile	1.5	
		5.2.1.14	Voyage data recorder	1.5	
		5.2.1.15	Long range identification and tracking (LRIT)	1.5	
5.2.1.16	Bridge navigation watch alarm system (BNWAS)	1.5			

**06. Mathematics (Total number of hours - 30)**



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Ref. No	Competence		Knowledge, understanding and proficiency	Time Allocation (Hrs)	STCW Ref/Page
6.1	<b>Algebra</b>	6.1	<b>Algebra</b>	7.5	N/A
		6.1.1	Number systems		
		6.1.2	Mathematical operations and their order		
		6.1.3	Functions		
		6.1.4	Expansions & factorization		
		6.1.5	Indices		
		6.1.6	Surds		
		6.1.7	An introduction to matrix algebra		
		6.1.8	Simultaneous equations		
		6.1.9	Polynomials		
		6.1.10	Quadratic equations and roots		
	<b>Graphs</b>	6.2	<b>Graphs</b>	3.0	
		6.2.1	2-D and 3-D coordinates		
		6.2.2	Determining suitable scales from data given		
		6.2.3	Sketching and plotting		
		6.2.4	Independent and dependent variables		
		6.2.5	The best fit		
		6.2.6	Data analysis using statistical methods		
	<b>Ratio, proportion &amp; variation</b>	6.3	<b>Ratio, proportion &amp; variation</b>	3.0	
		6.3.1	Definitions		
		6.3.2	Properties		
		6.3.3	Applications		
	<b>Exponentials &amp; logarithms</b>	6.4	<b>Exponentials &amp; logarithms</b>	3.0	
		6.4.1	Exponential		
		6.4.2	Logarithms		
		6.4.3	Laws of logarithms		
		6.4.4	Exponential & logarithmic equations		
		6.4.5	Graphing with logarithmic scales		
	<b>Euclidean geometry</b>	6.5	<b>Euclidean geometry</b>	3.0	
		6.5.1	Angles		
		6.5.2	Triangle & their properties		
		6.5.3	Polygons & their properties		
		6.5.4	Circle, sector, segment, arcs & chord		
		6.5.5	Constructions		
	<b>Trigonometry</b>	6.6	<b>Trigonometry</b>	6.0	
		6.6.1	Hexadecimal system		
		6.6.2	Circular measure of the Angle		
		6.6.3	Definitions of trigonometric ratios		
		6.6.4	Graphs of trigonometric functions		
		6.6.5	Trigonometric identities		
		6.6.6	Polar & Cartesian coordinates		
6.6.7	Important results				
	<b>Mensuration</b>	6.7	<b>Mensuration</b>	4.5	
		6.7.1	Perimeter		
		6.7.2	Area		
		6.7.3	Volume of standard geometrical shapes		



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**07. Communication (Total number of hours - 30)**

Ref. No	Competence	Knowledge, understanding and proficiency		Time Allocation (Hrs)	STCW Ref/Page
7.1	Transmit and receive information by visual signaling	7.1.1	<b>Introduction</b>		Table A-II/I, P 106
		7.1.1.1	Signaling by Morse code	10.0	
		7.1.1.2	International code of signals	10.0	
		7.1.1.3	Use of VHF communication at sea	10.0	

**08. Seamanship (Total number of hours - 150)**

Ref. No	Competence	Knowledge, understanding and proficiency		Time Allocation (Hrs)	STCW Ref/Page
8.1	Seamanship practical				N/A
		8.1.1	Rope and rope work	120.0	
8.2	Seamanship Theory	8.2.1	Rope and rope work types of ropes	10.0	
		8.2.2	Helm orders	3.0	
		8.2.3	Cargo handling equipment - lifting gear	6.0	
		8.2.4	Preparation of surfaces, painting & maintenance	3.0	
		8.2.5	Preparation for heavy weather	1.5	
		8.2.6	Anchor work	5.0	
		8.2.7	Pilot ladder	1.5	

**09. Operational Safety (Total number of hours - 60)**

	Competence	Ref. No	Knowledge, understanding and proficiency	Time Allocation (Hrs)	STCW Ref/Page
9.1	Introduction to monitor the loading, stowage, securing, care during the voyage and the unloading of cargoes	9.1.1	Types of ships	1.5	Table A- II/I, P 107
		9.1.2	Identification of ships parts including lifting gear	4.5	
		9.1.3	Definitions	3.0	
		9.1.4	Basic principles of cargo stowage	6.0	
		9.1.4.1	Hold preparations	4.0	
		9.1.4.2	Care of cargo during carriage	1.0	
		9.1.4.3	Ventilation and control of sweat	2.0	
		9.1.5	Basic cargo calculations	16.0	
		9.1.6	Introduction to containers and container vessels	4.0	
9.1.7	Blocks and tackles	3.0			



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	9.1.8	Single slewing and union purchase derricks	3.0	
	9.1.9	Safe working practices	3.0	
	9.1.10	Cargo handling safety	3.0	
	9.1.11	Dangers in enclosed spaces & enclosed space entry procedure	3.0	
	9.1.12	Prevention of marine pollution	3.0	

**10. International Computer Driving License (ICDL) (Total number of hours - 60)**

Ref. No	Competence	Knowledge, understanding and proficiency		Time Allocation (Hrs)	STCW Ref/Page
10.1	<b>Module – I (Computer Essentials)</b>				
	N/A	10.1.1	Understand key concepts relating to ICT, computers, devices and software	0.5	N/A
		10.1.2	Start up and shut down a computer.	2.0	
		10.1.3	Work effectively on the computer desktop using icons, windows.		
		10.1.4	Adjust the main operating system settings and use built-in help features.		
		10.1.5	Create a simple document and print an output.		
		10.1.6	Know about the main concepts of file management and be able to efficiently organize files and folders.		
		10.1.7	Understand key storage concepts and use utility software to compress and extract large files.		
		10.1.8	Understand network concepts and connection options and be able to connect to a network.		
		10.1.9	Understand the importance of protecting data and devices from malware and of backing up data.	0.5	
		10.1.10	Recognize considerations relating to green IT, accessibility and user health.	0.5	
10.2	<b>Module – 2 (Online Essentials)</b>				
	N/A	10.2.1	Understand web browsing and online security concepts.		N/A
		10.2.2	Use the web browser and manage browser settings, bookmarks, web outputs.		
		10.2.3	Search effectively for online information and critically evaluate web content		
		10.2.4	Understand key copyright and data protection issues.		



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		10.2.5	Understand concepts of online communities, communications and e-mail.		
		10.2.6	Send, receive e-mails and manage e-mail settings.		
		10.2.7	Organize and search e-mails and use calendars.		
10.3	<b>Module – 3 (Word Processing)</b>				
	N/A	10.3.1	Work with documents and save them in different file formats. .		N/A
		10.3.2	Choose built-in options such as the Help function to enhance productivity		
		10.3.3	Create and edit small-sized word processing documents that will be ready to share and distribute.		
		10.3.4	Apply different formats to documents to enhance them before distribution and recognize good practice in choosing the appropriate formatting options.		
		10.3.5	Insert tables, images and drawn objects into documents.		
		10.3.6	Prepare documents for mail merge operations.		
		10.3.7	Adjust document page settings and check and correct spelling before finally printing documents.		
10.4	<b>Module – 4 (Spreadsheets)</b>				
	N/A	10.4.1	Work with spreadsheets and save them in different file formats.		N/A
		10.4.2	Choose built-in options such as the Help function within the application to enhance productivity		
		10.4.3	Enter data into cells and use good practice in creating lists. Select, sort and copy, move and delete data.		
		10.4.4	Edit rows and columns in a worksheet. Copy, move, delete and appropriately rename worksheets.		
		10.4.5	Create mathematical and logical formulas using standard spreadsheet functions. Use good practice in formula creation and recognize error values in formulas.		
		10.4.6	Format numbers and text content in a spreadsheet		
		10.4.7	Choose, create and format charts to communicate information meaningfully.		
		10.4.8	Adjust spreadsheet page settings and check and correct spreadsheet content before finally printing spreadsheets.		
10.5	<b>Module – 5 (Using Databases)</b>				
	N/A	10.5.1	Understand what a database is and how it is organized and operated.		N/A
		10.5.2	Create a simple database and view the database content in various modes.		



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	10.5.3	Create a table, define and modify fields and their properties; enter and edit data in a table.		
	10.5.4	Sort and filter a table or form; create, modify and run queries to retrieve specific information from a database.		
	10.5.5	Understand what a form is and create a form to enter, modify and delete records and data in records.		
	10.5.6	Create routine reports and prepare outputs ready for distribution.		

**11. Chart work (Total number of hours - 24)**

Ref. No	Competence	Knowledge, understanding and proficiency		Time Allocation (Hrs)	STCW Ref/Page
N/A	N/A	11.1	Basic introduction to nautical charts which includes different publishers	1.5	N/A
		11.2	Introduction to upkeep of charts	0.5	
		11.3	Introduction to BA 5011	0.5	
		11.4	Introduction to NP 131	0.5	
		11.5	Position fixing by means of latitude and longitude	9.0	
		11.6	Position fixing by means of range and bearing	9.0	
		11.7	Plotting of courses	3.0	

**12. Safe mooring, anchoring, rigging/securing of gangway & entering/working in enclosed spaces (Total number of hours - 36)**

Ref. No	Competence	Knowledge, understanding and proficiency		Time Allocation (Hrs)	STCW Ref/Page
N/A	N/A	10.1	Safe mooring	12.0	N/A
		10.2	Safe anchoring	12.0	
		10.3	Enclosed space entry and working in an Enclosed space	9.0	
		10.4	Rigging and securing of gangway	3.0	