(STCW Competences Map for Bachelor of Science in Marine Transportation (BSMT))

BSMT STCW Competences Map

ompetenc	е	Knowledge Understanding and Proficiency	NAV 1	SEAM 1	COLREGS	MET-0	NAV 2	SEAM 2	NAV 3	NAV 4	NAV 5	NAV 6	D-WATCH	SEAM 3	TRIMSTAB	SEAM 4	SEAM 5	MARLAW	MAR ENV	MAR COM	MGMT 1	MGMT 2	ICT	MARPOW	SDSD	E E
ABLE A	-11/1	FUNCTION: NAVIGATION AT THE OPERA	TIO	VAL	LEV	EL														2			_	2		
Plan and conduct a		Celestial navigation					-		-			1	1		-	-			_	_		_				
passage and letermine	1	Ability to use celestial bodies to determine the ship's position								1																
osition		Terrestrial and coastal navigation																								
	2	Ability to determine the ship's position by use of: .1 landmarks .2 aids to navigation, including lighthouses, beacons and buoys, .3 dead reckoning, taking into account winds, tides, currents and estimated speed					1																			
	3	Thorough knowledge of and the ability to use nautical charts and publications, such as sailing directions, tide tables, notices to mariners, radio navigational warnings and ship's routeing information	1				1																			
	4	Electronic systems of position fixing and navigation Ability to determine the ship's position by use of electronic navigational aids							1																	
	5	Echo-sounders Ability to operate the equipment and apply the information correctly							/										1							
	6	Compass – magnetic and gyro Knowledge of the principles of magnetic and gyro- compasses												1							+					
	7	Ability to determine errors of the magnetic and gyro-compasses, using celestial and terrestrial means, and to allow for such errors	1							1																
	8	Steering and control systems Knowledge of steering control systems, operational procedures and change-over from																								



	9	manual to automatic control and vice versa. Adjustment of controls for optimum performance			/								
	10	Meteorology Ability to use and interpret information obtained from shipborne meteorological instruments		1									
	11	Knowledge of the characteristics of the various weather systems, reporting procedures and recording systems		1									
	12	Ability to apply the meteorological information available		1									
Maintain a safe navigation al watch	1	Watchkeeping Thorough knowledge of the content, application and intent of the International Regulations for Preventing Collisions at Sea, 1972, as amended	/				1						
	2	Thorough knowledge of the Principles to be observed in keeping a navigational watch					1						
	3	The use of routeing in accordance with the General Provisions on Ship's Routeing					1				T		
	4	The use of information from navigational equipment for maintaining a safe navigational watch											
	5	Knowledge of blind pilotage techniques					1						
	6	The use of reporting in accordance with the general principles for a ship reporting system and with VTS procedures											
	7	Bridge resource management Knowledge of the bridge resource management principles, including: .1 allocation, assignment, and prioritization of resources .2 effective communication .3 assertiveness and leadership .4 obtaining and maintaining situational .5 consideration of team experience					1						
Use of RADAR and ARPA to maintain safety of navigation	1 2	Radar navigation Knowledge of the fundamentals of radar and automatic radar plotting aids (ARPA) Ability to operate and to interpret and analyse information obtained from radar, including the following: Performance, including;					1						



	3 4	.1 factors affecting performance and accuracy .2 setting up and maintaining displays .3 detection of misrepresentation of information, false echoes, sea return, etc., racons and SART Use, including: .1 range and bearing; course and speed of other ships; time and distance of closest approach of crossing, meeting overtaking ships .2 identification of critical echoes; detecting course and speed changes of other ships; effect of changes in own ship's course or speed or both .3 application of the International Regulations for Preventing Collisions at Sea, 1972, as amended .4 plotting techniques and relative- and true- motion concepts .5 parallel indexing Principal types of ARPA, their display characteristics, performance standards and the dangers of over-reliance on ARPA Ability to operate and to interpret and analyse information obtained from ARPA, including: .1 system performance and accuracy, tracking capabilities and limitations, and processing delays .2 use of operational warnings and system tests .3 methods of target acquisition and their limitations .4 true and relative vectors, graphic representation of target information and danger areas .5 deriving and analysing information, critical echoes, exclusion areas and trial manoeuvres						
Use of ECDIS to maintain the safety of navigation	1	Navigation using ECDIS Knowledge of the capability and limitations of ECDIS operations, including: .1 a thorough understanding of Electronic Navigational Chart (ENC) data, data accuracy, presentation rules, display options and other chart data formats		1				



		.2 the dangers of over-reliance .3 familiarity with the functions of ECDIS required by performance standards in force						
	2	Proficiency in operation, interpretation, and analysis of information obtained from ECDIS, including:						
		.1 use of functions that are integrated with other navigation systems in various installations, including proper functioning and adjustment to desired settings .2 safe monitoring and adjustment of information, including own position, sea area display, mode and orientation, chart data displayed, route monitoring, user-created information layers,						
		contacts (when interfaced with AIS and/or radar tracking) and radar overlay functions (when interfaced)						
		.3 confirmation of vessel position by alternative means						
		.4 efficient use of settings to ensure conformance to operational procedures, including alarm parameters for anti-grounding, proximity to contacts and special areas, completeness of chart data and chart update status, and backup arrangements						
		.5 adjustment of settings and values to suit the present conditions .6 situational awareness while using ECDIS including safe water and proximity of hazards, set and drift, chart data and scale selection, suitability of route, contact detection and management, and integrity of sensors						
			(
Respond to emergenci es	1	Emergency procedures Precautions for the protection and safety of passengers in emergency situations		1	1			
	2	Initial action to be taken following a collision or a grounding; initial damage assessment and control			1			
	3	Appreciation of the procedures to be followed for rescuing persons from the sea, assisting a ship in distress, responding to emergencies which arise in port			1			



Respond to a distress signal at sea	1	Search and rescue Knowledge of the contents of the International Aeronautical and maritime Search and Rescue (IAMSAR) Manual						1		
Use the IMO Standard Marine Communic ation Phrases and use English in written and oral form	1	English language Adequate knowledge of the English language to enable the officer to use charts and other nautical publications, to understand meteorological information and messages concerning ship's safety and operation, to communicate with other ships, coast stations and VTS centres and to perform the officer's duties also with a multilingual crew, including the ability to use and understand the IMO Standard Marine Communication Phrases (IMO SMCP)	1					1		
Transmit and receive information by visual signalling		Visual signalling Ability to use the International Code of Signals Ability to transmit and receive, by Morse light, distress signal SOS as specified in Annex IV of the International Regulations for Preventing Collisions at Sea, 1972, as amended, and appendix 1 of the International Code of Signals, and visual signalling of single-letter signals as also specified in the International Code of Signals	1					/		
Manoeuvre the ship	1	Ship manoeuvering and handling Knowledge of: .1 the effects of deadweight, draught, trim, speed and under-keel clearance on turning circles and stopping distances .2 the effects of wind and current on ship handling .3 manoeuvres and procedures for the rescue of person overboard .4 squat, shallow-water and similar effects .5 proper procedures for anchoring and mooring						1		

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Monitor the loading, stowage,	1	Cargo handling, stowage and securing Knowledge of the effect of cargo, including heavy lifts, on the seaworthiness and stability of the														Ī	1										
securing		ship																									
and unloading cargoes and their	2	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															1										
care during - the voyage and the unloading of cargoes	3	Ability to establish and maintain effective communications during loading and unloading															1										
									M						I,	\perp											
Inspect and report defects and damage to cargo	1	Knowledge* and ability to explain where to look for damage and defects most commonly encountered due to: .1 loading and unloading operations .2 corrosion .3 severe weather conditions															1										
spaces, hatch covers and ballast	3	Ability to state which parts of the ship shall be inspected each time in order to cover all parts within a given period of time Identify those elements of the ship structure which are critical to the safety of the ship																									
tanks	4	State the causes of corrosion in cargo spaces and ballast tanks and how corrosion can be identified and prevented																									
	5	Knowledge of procedures on how the inspections shall be carried out																									
	6	Ability to explain how to ensure reliable detection of defects and damages																									
	7	Understanding of the purpose of the "enhanced survey programme"																									
TABLE A-II (COMMON		INCTION: CONTROLLING THE OPERATION	ON O)F 1	THE	SH	IP A	ND	CA	RE	FOF	PE	RS	ONS	S 0	N E	BOA	RD.	AT	THE	OF	ER	ATIC	NAI	LLE	VEL	
Ensure compliance with	1	Prevention of pollution of the marine environment and anti-pollution procedures				4														1							



pollution- prevention		.1 Knowledge of the precautions to be taken to prevent pollution of the marine environment							
requiremen		.2 Anti-pollution procedures and all associated equip	oment						
ts		.3 Importance of proactive measurers to protect the marine environment							
Maintain seaworthin ess of the ship	1	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 of partial loss of intact			1	1			
	3	buoyancy Understanding of the fundamentals of watertight inte	earity		1				
	4	Ship construction General knowledge of the principal structural members of a ship and the proper names for the various parts		*					
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Prevent, control and fight fires	2	Fire prevention and fire-fighting appliances Ability to organize fire drill Knowledge of classes and chemistry of fire							
on board	3	Knowledge of fire-fighting systems Knowledge of action to be taken in the event of fire, including fires involving oil systems							
Operate life- saving appliances	1	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							
Apply medical first aid on board ship	1	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							

6 Monitor complianc with legislative requirements		Basic working knowledge of the relevant IMO conventions concerning safety of life at sea, security and protection of the marine environment
7 Application	1 1	Working knowledge of shipboard personnel ✓
of	' '	management and training
leadership	2	A knowledge of related international maritime
and		conventions and recommendations, and national
teamworki	3	legislation Ability to apply task and workload management including:
ng skills	ŭ	.1 Planning and coordination
140		.2 Personnel assignment
		.3 Time and resource constraints
		.4 Prioritization
	4	Knowledge and ability to apply effective resource management: .1 Allocation, assignment and prioritization of resources
		.2 Effective communication on board and ashore
		.3 Decisions reflect consideration of team experiences
		.4 Assertiveness and leadership, including motivation
		.5 Obtaining and maintaining situational awareness
	5	Knowledge and ability to apply decision-making techniques:
		.1 Situation and risk management
1		.2 Identify and consider generated options
		.3 Selecting course of action
		.4 Evaluation of outcome effectiveness
8 Contribute		Knowledge of personal survival techniques
to the safety of	2	Knowledge of fire prevention and ability to fight and extinguish fires
personnel	3	Knowledge of elementary first aid
and ship	4	Knowledge of personal safety and social responsibilities
TABLE A	-IV/2 I	FUNCTION: RADIOCOMMUNICATIONS AT THE OPERATIONAL LEVEL
1 Transmit and receive	1	In addition to the requirements of the Radio Regulations, a knowledge of:



information using GMDSS subsystem s and equipment and fulfilling the functional requirements of GMDSS	.1 search and rescue radiocommunications, including procedures in the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual .2 the means to prevent the transmission of false distress alerts and the procedures to mitigate the effects of such alerts .3 ship reporting systems .4 radio medical services .5 use of the International Code of Signals and the IMO Standard Marine Communication Phrases .6 the English language, both written and spoken, for the communication of information relevant to safety of life at sea Note: This requirement may be reduced in the case of the Restricted Radio Operator's Certificate	
(Radio Regulations , Article 47 -	 Detailed practical knowledge of the operation of all the GMDSS sub-systems and equipment. Ability to send and to receive correctly by 	
Operator's	radiotelephone and direct-printing telegraphy. 3 Detailed knowledge of the regulations applying to radiocommunications, knowledge of the documents relating to charges for radiocommunications and knowledge of those provisions of the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended which relate to radio.	
	Sufficient knowledge of one of the working languages of the Union. Candidates should be able to express themselves satisfactorily in that language, both orally and in writing.	
2 Provide radio services in emergenci es	 The provision of radio services in emergencies such as: 1 abandon ship 2 fire on board ship 3 partial or full breakdown of radio installations Preventive measures for the safety of ship and personnel in connection with hazards related to radio equipment, including electrical and non-ionizing radiation hazards 	ON OF THE SHIP AND CARE FOR PERSONS ON BOARD AT THE SUPPORT LEVEL

1 Contribute to the safe operation of deck equipment and machinery	1	Knowledge of deck equipment, including: .1 function and uses of valves and pumps, hoists, cranes, booms and related equipment .2 function and uses of winches, windlasses, capstans and related equipment .3 hatches, watertight doors, ports and related equipment .4 fibre and wire ropes, cables and chains, including their construction, use, markings, maintenance and proper stowage .5 ability to use and understand basic signals for the operation of equipment, including winches, windlasses, cranes and hoists .6 ability to operate anchoring equipment under various conditions, such as anchoring, weighing		1							
	2	anchor, securing for sea, and in emergencies Knowledge of the following procedures and ability to: .1 rig and unrig bosun's chairs and staging .2 rig and unrig pilot ladders, hoists, rat-guards and gangways .3 use marlin spike seamanship skills, including the proper use of knots, splices and stoppers		1							
	3	Use and handling of deck and cargo-handling gear .1 access arrangements, hatches and hatch covers, ramps, side/bow/stern doors or elevators .2 pipeline systems – bilge and ballast suctions and wells .3 cranes, derricks, winches	and	1							
2 Apply occupation al health and safety precaution s	1	Working knowledge of safe working practices and personal shipboard safety including: .1 working aloft .2 working over the side .3 working in enclosed spaces .4 permit to work systems .5 line handling .6 lifting techniques and methods of preventing back injury .7 electrical safety .8 mechanical safety .9 chemical and biohazard safety .10 personal safety equipment		1							



	TABLE A-	II/5 F	UNCTION: MAINTENANCE AND REPAIR	AT.	THE	SU	PPC	RT	LEV	EL								
3	Contribute to	1	Ability to use painting, lubrication and cleaning materials and equipment		1													
	shipboard maintenan	2	Ability to understand and execute routine maintenance and repair procedures															
	ce and repair	3	Knowledge of surface preparation techniques															
	i epan	4	Understanding manufacturer's safety guidelines and shipboard instructions		1 -													
		5	Knowledge of safe disposal of waste materials															
		6	Knowledge of the application, maintenance and use of hand and power tools															

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