

SURF THE WAVE

SHORT TERM STUDY

STUDENT'S BOOK



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Державного університету інфраструктури та технологій
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INTRODUCTION

Speaking English (both General and Maritime) is an essential condition for all seafarers to get a job. The objective of the module is to develop communicative skills at Maritime English.

This Student's Book is designed for the first-year students (short-term study) of Navigation Department. It consists of eight units and appendix.

Each unit has these parts:

Target language

This part provides the individual items of language that the students should learn.

Reading



Reading is an essential part of language learning at every level because it supports learning in multiple ways. The students' purpose for reading is to obtain information about a subject they are studying.

After-reading tasks are designed to develop reading comprehension.

Speaking

The goal of language is communication and the aim of speaking in a language context is to promote communicative efficiency. There are activities for group and pair work.

Watching



References to video resources.

Some units suggest project or research work.

Approximate study time is 76 hours.

UNIT 1

NAVIGATIONAL EQUIPMENT

Target language

adhesive	GPS	to enable
AIS	IBS	to manoeuvre
anemometer	MF	to monitor
ARPA	NAVTEX	to record
barometer	psychrometer	to reproduce
chart magnifier	RADAR	parallel plotter
divider	SART	parallel ruler
drafting compass	to allocate	thermometer
ECDIS	to alter	triangle
EPIRB	to arrange	VDR
eraser	to determine	VHF
GMDSS		



Task 1. Watch the video tour around the navigation bridge.

https://www.youtube.com/watch?v=Bj3_peT4u9M

<https://www.youtube.com/watch?v=xr-mGYerSyk>



Describe:

- the location of the bridge on board a ship
- critical equipment of the bridge



Task 2. What do these abbreviations stand for?

- 1. GPS _____
- 2. RADAR _____
- 3. AIS _____
- 4. ECDIS _____
- 5. ARPA _____
- 6. EPIRB _____
- 7. SART _____
- 8. GMDSS _____
- 9. NAVTEX _____
- 10. VHF _____
- 11. MF _____
- 12. VDR _____
- 13. IBS _____



The bridge configuration, the arrangement of consoles and equipment location shall enable the officer of the watch to perform navigational duties and other functions allocated to the bridge as well as maintain a proper lookout from a convenient position on the bridge (workstation). A workstation for navigation and manoeuvring shall be arranged to enable efficient operation by a person under normal operating conditions. All relevant instrumentation and controls shall be easily visible, audible and accessible from the workstation. The bridge layout design and workstations are to enable the ship to be navigated and manoeuvred safely by two navigators in cooperation. External sound signals from ships and fog signals that are audible on the open deck shall also be audible inside the wheelhouse; a transmitting device shall be provided to reproduce such signals inside the wheelhouse.

The instrumentation and controls at the workstation for navigation and manoeuvring shall be arranged to enable the officer of the watch to:

- determine and plot the ship’s position, course, track and speed
- analyse the traffic situation
- decide on collision avoidance manoeuvres
- alter course
- change speed
- effect internal and external communications related to navigation and manoeuvring, radio communication on the VHF
- give and hear sound signals
- monitor course, speed, track, propeller revolutions (pitch), rudder angle and depth of water
- record navigational data

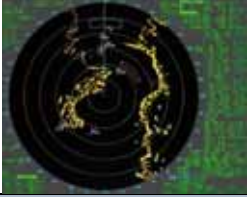






The bridge of a modern ship is totally enclosed by glass screens or windows to give protection from weather. The equipment normally encompasses the main bridge console with the plotting aids (ARPA), path finder radars (3 cm x-band radar and 10 cm s-band relative motion radar). A number of position fixing and communicational aids may be fitted within the main console, or separately such as satcom and satellite back-up radio-station, navtex receiver, RD finder, satnav with gyro and log interfaces, etc. The equipment also includes weather facsimile receivers, autopilot, gyro compass with repeaters, depth sounders, speed logs, sonar, etc. Radio-equipment is used for safety and commercial messages, and for ship-to-shore communications. It includes VHF radio telephone and radiotelegraph, MF transmitter, coastal radio-equipment, watchkeeping receiver (auto alarm). The type and layout of the bridge and bridge wings vary according to the ship types and to the changes in modern shipbuilding and navigation.





Task 3. Answer the questions.

1. What are the functions of the bridge?
2. How is the bridge protected from weather?
3. What are the plotting aids?
4. Which of the equipment in the text is used both for navigation and communications?
5. What OOW's duties should the bridge equipment ensure?

Task 4. Study the functions of navigational equipment. Label the pictures.

AIS	SART	VDR	ECDIS	EPIRB	NAVTEX
GPS	INMARSAT	RADAR	VHF	GMDSS	

	<p>It is used in identifying, tracking (with integrated ARPA) and positioning of vessels (including one's own vessel) among other things in order to adhere to the COLREGs so as to safely navigate a ship from one point to another. It is classified under the <i>x-band</i> (10 GHz) or <i>S-band</i> (3GHz) frequencies.</p>
	<p>It is used to send any kind of distress signal to a coastal authority or ships in the nearby vicinity during emergency. It basically sends a distress signal via a satellite or radio communication equipment. It's also used as a medium for sending or receiving maritime safety information and general communication channel. It includes NAVTEX, INMARSAT, EPIRB, SART, DSC.</p>
	<p>It is automated tracking system that displays other vessels in the vicinity. It is a broadcast transponder system which operates in the VHF mobile maritime band. Your own ship also shows on the screens of other vessels in the vicinity, provided your vessel is fitted with this kind of equipment. It must be switched on at all times unless the Master deems that it must be turned off for security reasons or anything else. The working mode of this appliance is continuous and autonomous.</p>
	<p>It is an invaluable piece of communication equipment. It is a combined transmitter and receiver and only operates on standard, international frequencies known as channels. It is used for a wide variety of purposes, including summoning rescue services and communicating with harbours, locks, bridges and marinas.</p>
	<p>It is an extremely vital equipment on the ship as it performs the job of a signal-man. It is a vital machine during distress for it helps in locating the position of the vessel in case it goes off-track. The combination of transmitter and receiver enables it to transmit as well as receive radio signals.</p>
	<p>It is a device to alert search and rescue services (SAR) in case of an emergency out at sea. It is a tracking equipment that transmits a signal on a specified band to locate a lifeboat, life raft, ship or people in distress. The device contains two radio transmitters, a 5-watt one, and a 0.25-watt one, each operating at 406 MHz, the standard international frequency typically signalling distress, 406MHz.</p>
	<p>It is a satellite-based navigation system. It provides position as long as there is unobstructed line of sight to at least 4 satellites.</p>

	<p>It is a device used on-board the vessels to provide short range Maritime Safety Information in coastal waters automatically. It can be used in ships of all types and sizes. The area covered by it can extend as far as 400 nautical miles from the broadcast station. It prints out navigational and meteorological warnings and forecasts as well as urgent Marine Safety Information to ships. It forms a vital element of the Global Maritime Distress Safety System (GMDSS).</p>
	<p>It is an instrument safely installed on a ship to continuously record vital information related to the operation of a vessel. It contains a voice recording system for a period of at least last 12 hours. This recording is recovered and made use of for investigation in events of accidents in a compressed and digitised format.</p>
	<p>It is a British satellite telecommunications company, offering global mobile services. It provides telephone and data services to users worldwide, via portable or mobile terminals which communicate with ground stations through thirteen geostationary telecommunications satellites.</p>
	<p>It is a geographic information system used for nautical navigation that complies with International Maritime Organization (IMO) regulations as an alternative to paper nautical charts.</p>

Let's discuss some pieces of bridge equipment in details.



Task 5. Watch the video

<https://www.youtube.com/watch?v=943Ci3Xv9Ig> and complete the sentences.



1. The radar systems comprise three basic components _____.
2. In many radar units transceiver is located in _____.
3. The detection of target depends on _____.
4. Marine radars operate on _____.



Task 6. Differentiate between x-band and s-band radars.



EPIRB

Task 7. Watch the video

<https://www.youtube.com/watch?v=xFv63YDFnts> and fill in the gaps.



1. The most common EPIRB operates with _____ MHz.
2. EPIRB transmits the signal via _____ which calculates the distress position and relays the information to the _____.
3. The 406 MHz EPIRB is attached to the vessel with a _____.
4. _____ is important in order the rescue centre knows the information about the vessel immediately.



SART

Task 8. Watch the video

<https://www.youtube.com/watch?v=udIj6zGXJ7o> and fill in the gaps.



1. SART is a device for locating _____ in distress.
2. SART operates on _____ GHz frequency band.
3. When searching vessel is approaching the SART, the device is seen as _____ on the screen.
4. For the person in distress the person the SART provides _____ and _____ signal.
5. The detection range between searching vessel and SART is _____, between SART and rescue helicopter is _____.



GMDSS

Task 9. Watch the video

<https://www.youtube.com/watch?v=tIRmx5WOiOc&list=PLNtMYzxFNRWr4FbP5PLWbL-DFINUmBi> and match the beginnings of the sentences and their endings.



1. GMDSS uses	a. distress, urgency, safety and routine messages, navigation and weather warnings
2. RCC	b. satellites and digital selective calling technologies.
3. The system transmits these types of messages:	c. receives the signal and coordinates the rescue operation.



Task 10. Watch the video

https://www.youtube.com/watch?v=6O1Hf_gkD9c and complete the table.



Area	Coverage
A 1	
A 2	
A 3	
A 4	