# پودمان ۵

# کسب اطلاعات فنی ۲

## Unit One

### The Ship and Shipboard Terms

The terms that we will discuss here are part of the language used by many mariners in the world. To a great extent, the same terms are used by English spokensea fearers.

Since many maritime and naval traditions have been greatly influenced by the traditions and language of the British navy, English has become the international language of the seas. Every seaman should be familiar with nautical terms and definitions.

**Ship** is a seagoingvessel capable of making ocean trips. A boat is smaller and is normally designed for short trips in coastal waters.

**«Welcome aboard»** is the phrase that greets anyone boarding a ship for the first time.

**Deck** is that portion of the ship on which one stands or walks, like floor of a building.

**Gangway** is an entrance on the side of a ship that allows one to go on or off.

**Figure 1: Gangway**

Walking toward the front or bow of the ship, one is walking **forward**; walking toward the rear or stern of a ship, he is walking **aft**. Amidships refers to the middle of a ship.


**Figure 2**

Standing on the deck, facing toward the bow, on the right is the **starboard** side of the ship, and on the left is the **port** side of the ship.

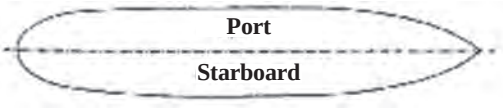



**Figure 3**

Cabins are individual rooms in a ship. The walls are called bulkheads. There are various openings in a ship such as doors, hatches, portholes, manholes, windows, etc.

Two types of hatch covers for cargo ships

**Some types of doors**

**Portholes**

## Exercise 1:

Match the words on the left with the definitions on the right according to this unit.

| | |
|---|---|
| Bow or stem | Left side of a ship. |
| Forward | The back portion of a ship |
| Stern | An opening ona deck |
| Aft | Right side of a ship |
| Amidships: | The front part of a ship |
| Starboard side | The direction toward the stern |
| Port side | The middle of a ship |
| Hatch | The direction toward the bow or front of a ship |

## Exercise 2:

Complete the following sentences with the appropriate word or phrase.

Example: The rear of a ship is called ……stern…….

1. A boat is smaller than a …….
2. A cargo hatch is normally found on the main …….
3. …… is the phrase that greetsanyone boarding a ship for the first time.
4. …….isan entrance on the side of a ship.

## STRUCTURES:

### Imperatives

***Study these sentences:***

***Instructions.*** We can use the imperative to give instructions.

Remove the bolts on the back lid of the pump.
Go forward and then turn to the port side.

First, disconnect the electricity,
Then, remove the old Lamp,
Next, screw in the new Lamp,
Finally, switch on the Lamp.

You must first report to the chief officer.
You should go through the security, into the base.
You may take a walk on the deck after your work time.

***Orders.*** We can use the imperative to give a direct order.

Alter your course to starboard!
Don't enter the engine room!
Stop/Avoid interrupting a transmission!
Repeat your distress message please!

## Exercise 3:

Put the words in order to make complete sentences:

a) instructions/ please/ the/ read.
……..
b) not/ control room/ do/ enter/ the.
…….
c) life/ Avoid/ in/ putting/ your/ danger.
…….
d) should/ to/ calls/ you/ respond/ always/ distress.
…….

## Exercise 4:

- Match the two halves of the sentences:

| | |
|---|---|
| 1 You must | a) the exam in one hour. |
| 2 Please help | b) after you are done watching. |
| 3 Stop | c) put your things in the cabin. |
| 4 You should finish | d) to clean the alley way. |
| 5 Finally report | e) interrupting the chief officer. |
| 6 You may rest | f) to the chief officer. |

## Unit Two

### Types of Ships

Ships are generally classified in two groups: Naval Ships, Merchant Ships.
**Naval Ships** are either warships or auxiliary ships. There are different types of naval vessels. For example, frigates such as I.R.I. Jamaran and Auxiliary support vessel I.R.I. Kharg.


**Merchant ships** can be classified by their purpose. Different types of merchantvessels are known by certain task‘’she’’ is required to perform. Generally, they belong to one of the following main types:

**Passenger ships:**

These ships are designed to carry passengers, their luggage and occasionally their cars.

**Cargo ships:**

**1. General cargo ships:** These vessels are designed to carry all types of general dry cargo.

**2. Reefer ships:** cargoes, such as vegetables, fruit, frozen meatand dairyneed to be stored and carried under particular temperature. Reefer ships are designed to carry such cargoes.

**Container ships:** Container itself, has recently changed the cargo carriage in many different ways. Container vessels are designed to carry containers.

**Bulk carriers:**

These ships are designed to carry bulk cargoes such as grains and ores. Bulk carriers are different in size and tonnage.

**Tankers:**

Tankers are designed to carry crude oil and its products. They are subdivided into Crude oil tankers, Product carriers, chemical tankers and gas carriers.

## STRUCTURES:

Quantifiers
A quantifier is a word or phrase which is used before a noun to indicate the amount or quantity: ‹some›, ‹many›, ‹a lot of› and ‹a few› are examples of quantifiers.
Some quantifiers can be used with both countable and uncountable nouns.
Examples:
There are **some** engineers working here.
He's got only **a few** personnel in the engine room.
How **much** money have you spent on your last travel?
There is **a large quantity of** fish in this river.
She's got **more** crewmembers than the other ship.
**Some important quantifiers:**

### With Uncountable Nouns

- Much (in negative and interrogative sentences)
- a little/little/very little *

### With Countable Nouns

- many(in negative and interrogative sentences)
- a few/few/very few **
- a number (of)
- several
- each/ every***
- both

### With Both

- all
- enough(enough+ a noun/ an adj.+ enough)
- more/most
- less/least
- no( with an affirmative verb)
- none of****
- not any

- any (in negative and interrogative sentences)
- a lot of(in affirmative, negative and interrogative sentences)
- lots of(in affirmative sentences)
- plenty of( in affirmative sentences)

**NOTES**:

*__little, very little__ mean that there is not enough of something.
**a little** means that there is not a lot of something, but there is enough.

**__few, very few__ mean that there is not enough of something.
**a few** means that there is not a lot of something, but there is enough.

***We use **every** or **each** with a singular noun to mean **all**:

****None is a pronoun and doesn't need a noun. It can be used for zero quantity in short answers. e.g.

- How much money do you have?
- None

## Exercise 1:

**In the following sentences, fill in the blanks with one of the quantifiers in parentheses.**

1 I am having …….. of trouble repairing this oil pump. (a lot- most – some – many)

2 Bulk carriers can carry (many – much – more – few) types of bulk cargo such as grains.

3 With the growing role of sea travel, there are (much – many -most – a lot of) passenger ships providing regular service between ports.

4 We're close to the project's deadline, but there is still (much – enough – several – many) time left.

5 Although there are (a little – a few – much – many) brilliant officers working on merchant ships, hundreds are working ashore.

6 Seaman Ghasem and Seaman Farid have taken (plenty of – many – much – a great deal) navigation courses.

7 I'm sorry, I can't buy those shoes, I have( little – less – few – a little) money with me.

8 Our ship has got (a little – little – much – enough) space for hundreds of passengers.

9 There isn't (much – a little – more – little) fuel left in the fuel oil tank.

## Exercise 2:

Choose the best answer.

a) There is …… need to be worried about tomorrow's test.

- no
- none

b) He has ……. time to study.

- few
- little

c) I have to work …….. , at least ten hours a day.

- much
- a lot

d) Do you speak French?Yes, ……..

- a little
- a few

e) There are …….. for the crew.

- compartments enough
- enough compartments

f ) How many seamen work with you?……..

- Any
- None

g) Can you give me ……. books for the exam?

- a couple of
- a bit of

h) When we got there, ……. ships had left the port.

- both the
- the both

i) Can you give me …….. advice?

- an
- some

## Unit Three

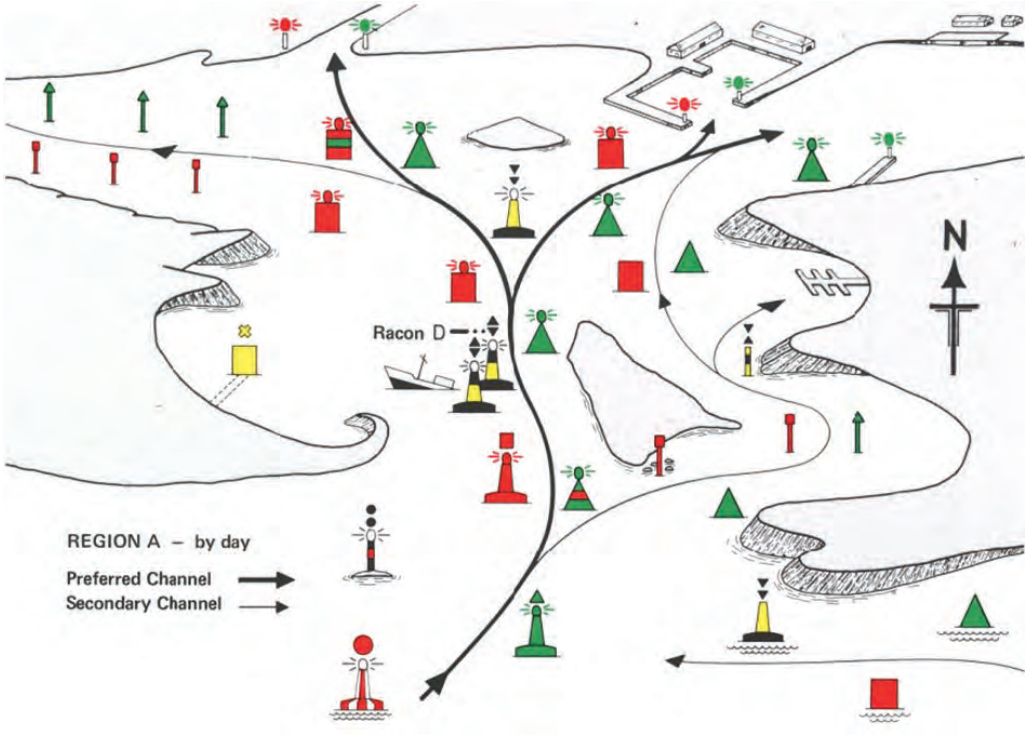
### Navigation

Navigation is a combination of both science and art. Methods of navigation have been changed throughout the time by new technologies.

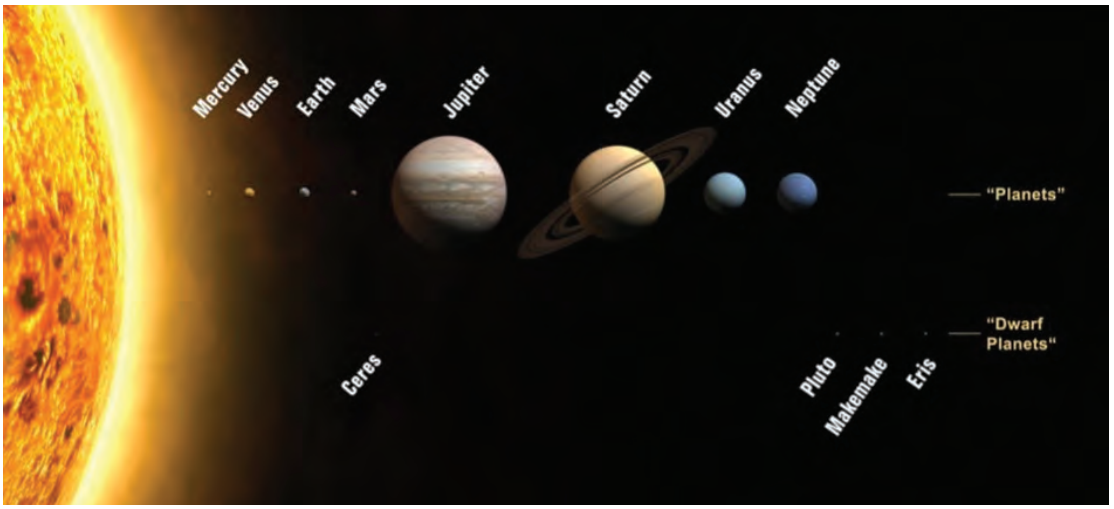
Navigation can be of three types: Coastal Navigation, Celestial navigation and Electronic Navigation.

**Coastal Navigation** involves navigating in or near coastal waters, using navigational marks and land marks.These navigational marks which aid navigationmay include lights, buoys andbeacons.

In coastal navigation, the range and bearing taken from land and navigational marks help to fix a position. The measurement of water depth,may also guide the mariners for safe navigation. The effect of wind and current shall be considered to estimate the position of the ship.




**Celestial Navigation** is the determination of position by observing the celestial bodies; the sun, themoon, planetsand stars. The angle of elevation above the horizon for a heavenly body is first measured with an observational instrument which is called **sextant**. The observed angle is thencompared with a mathematical calculation of that angle for the position of that heavenly body at that time. The difference between the observed angle and the mathematical angle is used to determine the location of the observer.




**Electronic Navigation** is forms of navigation to help navigators, which rely on technology powered by electricity.Methods of electronic navigation include:

- Satellite navigation; the use of satellite navigation systems such as GPS to fix an exact position.
- Radio navigation; the application of radio frequencies to determine a position.
- Radar navigation, the use of Radar, to determine position relative to known objects.

## Exercise 1:

Match the words on the left with definitions on the right.

| | |
|---|---|
| Celestial Navigation | Determining the position of ships by use of GPS. |
| Radar | Determining the position of ships by observing the celestial bodies. |
| Radio navigation | An observational instrument for measuring the angle of elevation above the horizon for a heavenly body. |
| Satellite navigation | Detection and ranging of objects. |
| Sextant | Determining the position of ships by radio frequencies. |

## Exercise 2:

Complete the following sentences with the appropriate word or phrase.

Example: …**Celestial navigation**... is the determination of position by observing the celestial bodies.

1 The study of ……is the learning of how to measure and use position, direction, distance, time, and speed.

2 The angle of elevation above the horizon for a heavenly body is first measured with ……..

3 The sun, the moon, planets, and stars are ……bodies.

4 ……involves navigating in or near coastal waters, using navigational marks and land marks.

## Exercise 3:

Choose the best answer:

1 How does Coastal Navigation determine position?

a) By advancing a known position for courses and distances.

b) By making use of specific aids to navigation such as buoys, beacons.

c) By measuring radio frequencies.

2 Which kind of navigation usessextant to measure the angle of elevation above horizon for a heavenly body?

a) Radio navigation

b) Satellite navigation

c) Celestial navigation

3 What kind of navigation can we use when the object's position is known?

a) Piloting

b) Celestial navigation

c) Radar navigation

4 **GPS** is the examples of ……..

a) Celestial navigation

b) Satellite navigation

c) Radar navigation

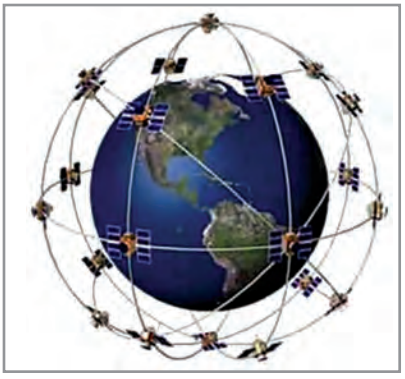
## Unit Four

### Satellite Positioning System

The Global Positioning System (GPS) is a utility that provides users with positioning, navigation, and timing services. This system consists of three segments: the space segment, the control segment, and the user segment. The United States(US) develops, maintains, and operates the space and control segments.

The GPS space segment consists of groups of satellites transmitting radio signals to users. For the past few years, the total number of operational GPS satellites has been 31. It is supposed to have 24 operational GPS satellites available almost at any time. GPS satellites fly in medium Earth orbit (MEO) at an altitude of approximately 20,200 km (12,550 miles). Each satellite circles the Earth twice a day.

The satellites in the GPS groups are arranged into six equally-spaced orbital planes surrounding the Earth. This arrangement ensures users can view at least four satellites from any points on the planet as each plane contains four satellites. The extra satellites may increase GPS performance.



**The Satellite Network**

**GLONASS** or Global Navigation SatelliteSystem, is a space-based satellite navigation system. It provides an alternative to **GPS** and is the second navigational system in operation with global coverage and of comparable precision.

**Galileo** is the global navigation satellite system (**GNSS**) that is currently being created by the European Union (**EU**) and the European Space Agency (**ESA**) which is named after the Italian astronomer Galileo Galilei.

The **BeiDou** Navigation Satellite System (**BDS**), is a Chinese satellite navigation system. It presently gives local services with planning to provide global coverage in future.

## Exercise 1:

Match the words on the left with definitions on the right.

| | |
|---|---|
| The number of satellites in the **GPS** groups | The second navigational system in operation with global coverage |
| Galileo | 6 satellites |
| **GLONASS** | Chinese satellite navigation system |
| **BeiDou** | Currently being created by the European Union |

## STRUCTURES:

### Indirect Questions:

**Direct questions** are the "normal" questions that we can ask friends, family members, and people thatwe know well.
Example of a direct question:

**"Where's the engine room?"**

**Indirect questions** are a little more formal and polite. We use them when talking to a person we don't know very well, or in professional situations. Indirect questions are formed in a different way.

Example of an indirect question:
**"Could you tell me where the engine room is?"**

**You may use the following patterns to begin indirect questions:**

- Could you tell me…?
- Do you know…?
- I was wondering…
- Do you have any idea…?
- I'd like to know…
- Would it be possible…?
- Is there any chance…?

Like direct questions, they demand a response, but they are expressed as declarations without the formal characteristics of a question. That is, they have no inversion, no interrogative words, and no special intonation.

- In indirect questions with **is/are,** the verb (is) comes **after** the subject.
- Example:

- In indirect questions, we don't use the auxiliary verbs **do/does/did.**
- Again, there is no auxiliary verb **did** in the indirect question.
- For direct questions with **can,** we can use the phrase "would it be possible…" to make it indirect.
- "Is there any chance…" is another option for forming indirect questions with **can.**
- The auxiliary verbs **have** and **has** can be used in both the direct and indirect questions – but in the direct question, "has" comes **before** the subject, and in the indirect question, "has" comes **after** the subject.

For instance:

- ( Direct Question ) What time is it?

- (Indirect Question) Do you know what time it is?

- ( Direct Question )Who is the shipowner ?

- (Indirect Question) I don't know who the ship owner is.

- ( Direct Question )Where can I find the master?

- (Indirect Question) Can you tell me where I can find the master?

- (Direct Question) How has he managed to perform so many duties?

- (Indirect Question) Do you have any idea how he's managed to perform so many duties?

* Be careful with do/does/did questions (simple present and past). We say:

- ( Direct Question ) What time does the container vessel arrive?

- (Indirect Question) Do you know what time the container vessel arrives?

- ( Direct Question ) How did you survive that heavy hurricane?

- (Indirect Question) I wonder how you survived that heavy hurricane.

- ( Direct Question ) Where do the cadets sleep?

- ( Indirect Question ) Can you tell me where the cadets sleep?

## Exercise 2:

1 Make indirect questions. (There maybe more than one correct answers.)

a) How can I get to the deck?

.....

b) What does a thermometer measure?

.....

c) What does a fire extinguisher do?

.....

d) When was this tanker built?

.....

## Exercise 3:

3 Order the words to make indirect questions:

a) the / capable / do / what / carpenter / of / know / is / you?

…….....

b) who / can / ship / the / is / you / charge / tell / of / me / in ?

.....

c) most / to / could / me / you / carry / tankers / what / tell /designed / are ?

……

d) means / know / what / aft / you / do .

……

NOTE: Use if or whether where there is no other question words (what, why, etc.):
e.g. Did anybody see you?
Do you know if (whether) anybody saw you?

## Exercise 4:

4 Choose the correct indirect question, then supply a proper answer for each one.

**Is the tanker the largest type of cargo ship?**

a) Can you tell me if is the tanker the largest type of cargo ship?
b) Do you know if the tanker is the largest type of cargo ship?
c) Do you happen to know whether cargo ship is the largest type of the tanker?

**Is the port on the left side of the ship?**

a) Do you have any idea if the ship is on the left side of the port?
b) Could you tell me if is the port on the left side of the ship?
c) Can you tell me whether the port side is on the left side of the ship?

## Unit Five

### Safety Onboard

Safety onboard the ships is an important matter. Normally at sea and often very far from any possible assistance, there is nobody to help. To have a safe ship, a high degree of importance must be given to safety onboard.

Onboard training and regular drills are held in order to ensure that the crew has enough safety awareness. The crew also requires to be trained to use the safety equipment in case of emergency. The ship's crewneeds to be educated and to have certificate of competency. They need to pass safety courses before joining to the ship for the first time. These courses must contain all safety precautions and measures such as **basic safety, First Aid and Firefighting**.

**Safety clothing**: It is essential to wear the proper safety clothing onboard. Safety helmet and safety shoes are the requirement for working onboard. In addition, certain operations will require safety harnesses to be worn specially when working aloft.

**Electrical safety**: Ship's power supplies may look similar to shore systems, but have slight and potentially dangerous differences. Do not interfere with any electrical equipment on board at any time unless you are responsible for.

**Lifesaving Appliances:**

**Life jackets**: Life jackets are provided for everybody's safety on board. They must have a light and a whistle. They are usually stored in the cabins, but sometimes in navigational bridge, engine control room and boxes near the lifeboats.

**Immersion suit**:There should be one set of immersion suit per person onboard. The insulating quality of the immersion suits has to be such that the body temperature does not drop more than 2° C after 6 hours in water with a temperature between 0° and 2° C.

**Life buoys**: A number of Life buoys, depending on the ship's length, are positioned around the vessel. On each bridge wing there has to be a life buoy, when released, drop by gravity into the sea. Attached to these buoys, there is a floating smoke and light signals.

Life boats: Lifeboats have to be fitted on ships and shall be capable of accommodating everybody on board.

**Life rafts**: Inflatable life rafts located on different parts of vessels to be used in abandoning ship.

**Safety Signs onboard Ship**:They alert the crew to hazards, safety equipment, escape way, enclosed spaces, no entry zones, etc.

Some safety signs on board ship are as below:




What have been mentioned above are the basic safety measures, but there are a lot more for your own safety. However, if you have a safety problem, you should call the master or the officer on duty.

## Exercise 1:

Match the words on the left with the definitions on the right.

| | |
|---|---|
| Lifeboats | A number of these appliances, depending on the ship's length, are positioned around a vessel. |
| Life jackets | These inflatable appliances are located on different side of a vessel. |
| Life buoys | These alert the crew to hazards, safety equipment, escape routes, etc. |
| Safety signs | These appliances have to be fitted on board a ship, capable of accommodating everybody onboard. |
| Life rafts | These lifesaving appliances are provided for everybody on board. They must have a light and a whistle. |

## Exercise 2:

Choose the proper answer.

1 According to the text, courses are held and regular drills are carried out to make sure the crew …….

a) is familiar with ship's spare parts.
b) is familiar with safety on board.
c) is familiar with the organization of the ship.

1 It is important for the crew to use ……. in case of emergency.

a) the improper uniform
b) the personal baggage
c) the right safety equipment

3 When an individual gets the proper diploma, enough sea service and certain safety courses; he can obtain …….

a) certificate of seamanship.
b) Sea service certificate.
c) certificate of competency.

4 Crew shall wear at least ……. and …….. on deck or in the engine room.

a) Safety helmets - safety shoes
b) Safety belts- foot wear
c) life jackets- harness

5 What does the following sign mean on board a ship?

a) Explosive hazards
b) Stretcher
c) Fire main section valve

6 Which one of the signs below means ‘‘life buoy’’?

a)

b) 


c) 

## STRUCTURES:

**PREFIXES AND SUFFIXES**

**Adding affixes to the existing word (the base or root) to form new words is common in English. Prefixes are added to the front of the base (like→dislike), whereas suffixes are added to the end of the base (active→activate). Prefixes usually do not change the part of speech of the base word, but suffixes usually change the part of speech of the word.**

**Prefixes and suffixes added to verbs:**

prefix + verb →verb

| Prefix | Meaning | Examples |
|---|---|---|
| re- | again or back | restructure, rewrite, reappear, rebuild, reread |
| dis- | reverses the meaning of the verb | disappear, disagree, disarm, disconnect, discontinue |
| un- | reverses the meaning of the verb | unbend, uninstall, unfasten |
| mis- | badly or wrongly | mislead, misundrestand, misidentify |
| co- | together | co-exist, co-operate, co-act |

Suffixes used to form verbs with the meaning “cause to be”.

| Suffix | Example |
|---|---|
| *-ise, ize | stabilise, characterise, symbolise, visualise, specialise |
| -ate | differentiate, liquidate, duplicate, fabricate |
| -fy | classify, solidify, simplify, justify |
| -en | awaken, fasten, shorten, moisten |

Prefixes and suffixes added to nouns

prefix + noun→ noun

| Prefix | Meaning | Examples |
|---|---|---|
| anti- | against | antibiotic, anticancer, antioxidant |
| auto- | self | autobiography, autopilot |
| co- | joint | co-founder, co-owner, co-writer |
| dis- | opposite | discomfort, dislike |
| mis- | wrong | misconduct, mislead, mismanagement |
| re- | again | re-organization, re-assessment, re-examination |
| ultra- | beyond | ultrasound, ultraviolet |

| Suffix | Meaning | Examples |
|---|---|---|
| -ity | state or quality of being A | ability, similarity, responsibility, curiosity |
| -ness | state or quality of being A | darkness, goodness, awareness |
| -cy | state or quality of being A | urgency, efficiency, frequency |

**Suffixes added to verbs and nouns:**

Suffix added to verbs or nouns →adjective

| Suffix | Example |
|---|---|
| -al | central, political, national, optional, professional, mechanical |
| -ent | different, dependent, excellent |

| Suffix | Example |
|---|---|
| -ive | attractive, effective, imaginative, repetitive |
| -ous | continuous, dangerous, famous |
| -ful | beautiful, peaceful, careful |
| -less | endless, homeless, careless, hopeless, wireless |
| -able | drinkable, countable, avoidable |
| -ance | guidance, assistance, importance |

**Negative prefixes added to adjectives:**

negative + adjective→ adjective

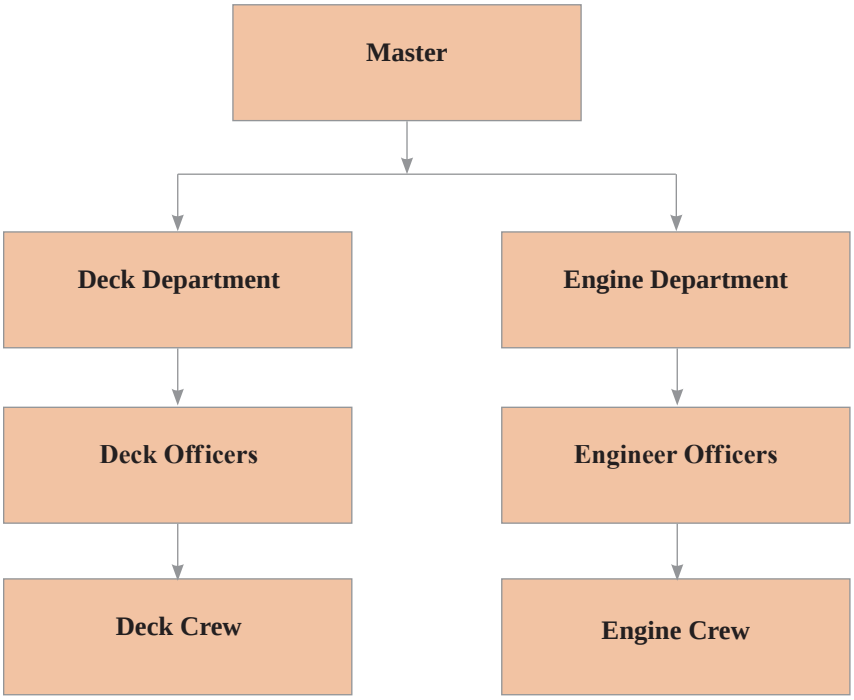
| Prefix | Examples |
|---|---|
| un- | unfortunate, uncomfortable, unjust |
| im-/in-/ir-/il- | immature, impatient, improbable, inconvenient, irreplaceable, illegal |
| non- | non-fiction, non-political, non-neutral |
| dis- | disloyal, dissimilar, dishonest |

## Exercise 3:

**According to the given meaning, useproper prefixes for the following <u>nouns, adjectives, and verbs</u>:**

a) Possible:…… (negative meaning)
b) Management: …….(negative meaning)
c) Appear: ……(negative meaning)
d) Biography: ……..(self)
e) Honest: ……..(negative meaning)
f) Reliable: ……..(negative meaning)
g) Comfortable: ……(negative meaning)
h) Understand: ……(negative meaning)
i) Build: …….(again)
j) Similar: ……(negative meaning)
k) Operation: ……( joint)
l) Sound: ……(beyond)

## General Organization of a Ship




### Captain / Master

The ship's master is responsible to the crew and for the ship as well as her assigned missions. Ship's captain is legally responsible for the day-to-day affairs of the vessel. It is his duty to ensure that all departments under his command perform safely to the requirements of the ship's operation.

### Deck department

**Chief officer**: The Chief (First) officer is the head of the deck department. He keeps 4-8 am/pm navigational watch.Chiefmateissecond-in-command after the master. The chief officer's prime responsibilities are the vessel's cargo operations, her stability and deck crew supervision. The chief mate isresponsible for the safety and security of the ship, as well as the welfare of the crew on board. His duties also include maintenance of the ship's hull, cargo gears, accommodations, the Life Saving Appliances (**LSA**) and the Fire Fighting Apparatus. (**FFA**).

**Second Office**: The 2nd Officer keeps 12-4 am/pm navigational watch. At the same time, he serves as the ship's **safety officer**. The Second Mate is also the **navigational officer** aboard a

ship. He plans the ship's passage in advance, using **nautical charts** and Publications. He is the vessel's **medical officer** too, acting as the ship's doctor who is taking care of the ship's hospital and medical chest.

**Third Officer**: The 3rd Officerkeeps 8-12 am/pm navigational watch.The Third Mateassists the chief officer in maintenance of **LSA**and **FFA** onboard.

**Deck Cadet:** A deck cadet is a juniorofficer under training in much the same way as in a military context. His role as a trainee is to observe and learn.

**Boatswain:** A boatswain is also spelled and pronounced as **bosun**, who is the most senior among the ratings.

**Able Seaman:** An able seaman (**AB**) is a key member of the deck department.He must holdtherequired certificates allowing him to serve as wheelman and deck gears operator.

**Ordinary Seaman:** An ordinary seaman (**OS**) is an entry-level position in ships' deck department.

**Chief Cook:** A chief cook directs and participates in the preparation and serving of meals; inspects galley equipment for cleanliness and proper storage of provisions and its inventory.

**Steward:** A Steward serves the daily meals and cleans the accommodation area as well as mess rooms under supervision of the Caterer in charge.

**Engine Department**

**Chief Engineer Officer:** A chief engineer is the official title of someone qualified to manage the engine department. He is responsible for all operations and maintenance whichneed to be doneon themachineries throughout the ship. He also provides technical advice to the Master.

**Second Engineer Officer:** A 2nd Engineer is the engineer responsible for supervising the daily maintenance and operation of the engine room.

**Third Engineer Officer:** A 3rd Engineer is the engineer responsible for supervising the daily maintenance and operation of the main engine(s).

**Fourth Engineer Officer:** A 4th Engineer is the engineer responsible for supervising the daily maintenance and operation of the auxiliary engines.

**Electronic Engineer Officer:** An Electrician is responsible for radio communication and all electrical equipment onboard.

## Exercise 1:

Choose the best answer.

1 A ……. is legally responsible for the day-to-day affairs of the vessel.
- a) Chief mate
- b) Second mate
- c) Master

2 A chief officer is the head of the …….
- a) engine department
- b) deck department
- c) catering department

3 A …… is also the vessel's Medical Officer.
- a) second officer
- b) third officer
- c) boatswain

4 The third officer assistschief officer in maintenance of ….. .
- a) LSA.
- b) FFA.
- c) boos a and b.

5 A/An ……. has the entry position in deck department?
- a) deck cadet
- b) able seaman (AB)
- c) Ordinary Seaman (OS)

6 Who is in charge of the engine department?
- a) A chief mate
- b) A chief engineer
- c) A master

7 A/An …… is responsible for all electrical equipment onboard.
- a) chief engineer
- b) electrician
- c) second engineer

8 A ……. serves the daily meals and cleans mess rooms.
- a) chief cook
- b) steward
- c) cadet

# Unit Seven

## Main Engines

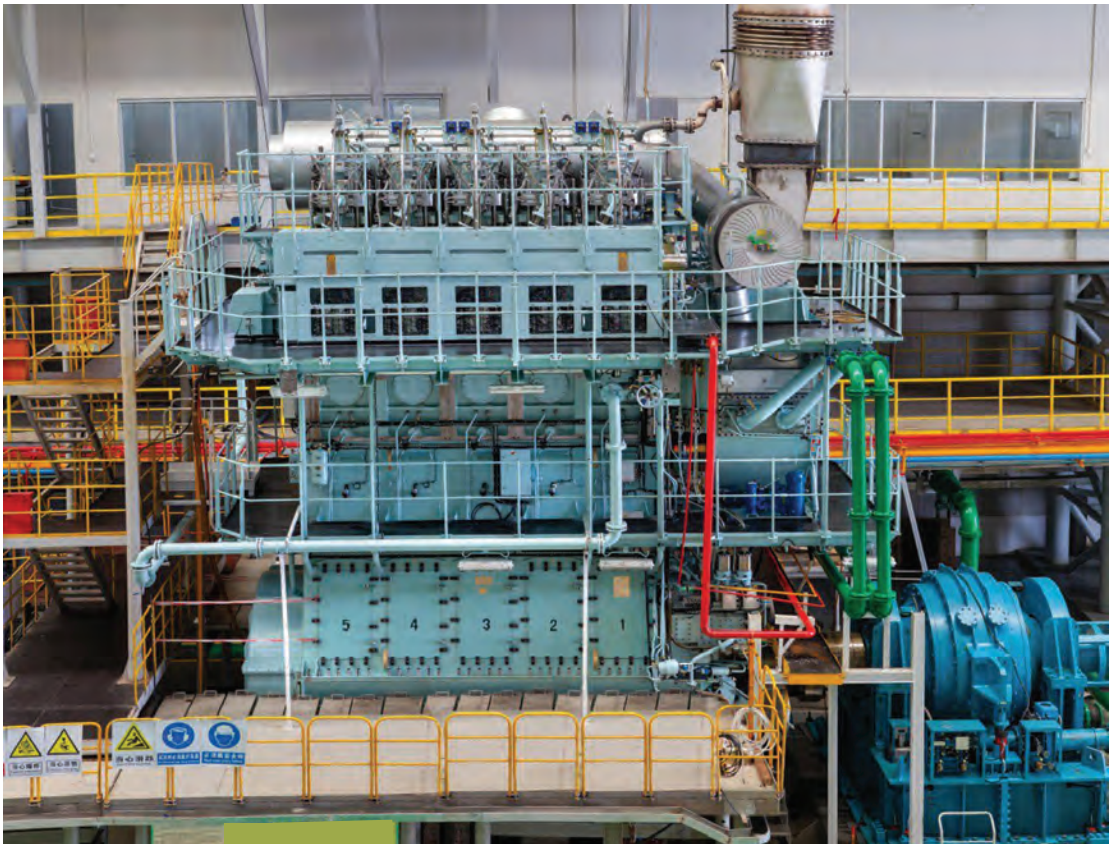
Main engines are the only machinery to create propulsion enabling a ship to move throughthe water. Basically, marine diesel engines can be divided into two types: slow speed and medium to high speed engines

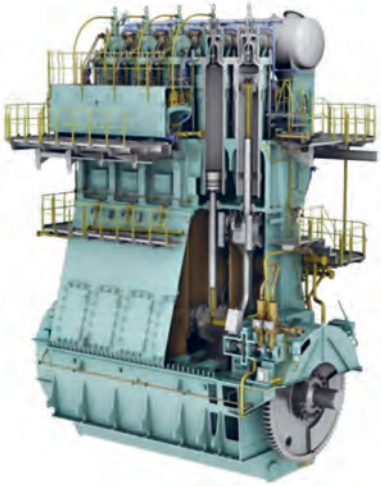
**Slow speed engines:**

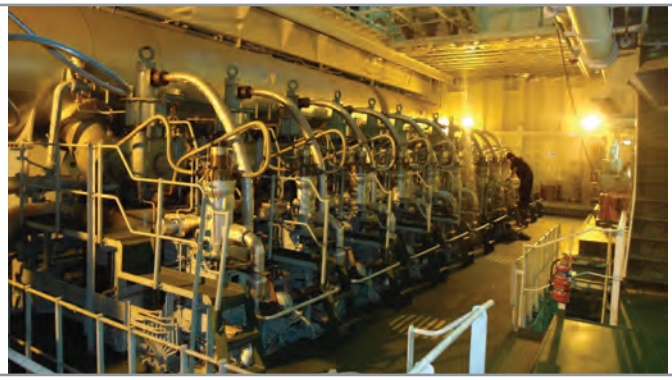
These types of engines generally run between 55 to 150 r.p.m. (revolution per minute). Slow speed engines usually operate on the two-stroke cycle and are of crosshead construction which allows isolation between the cylinders and the crankcase. They are designed to consume low quality fuel to get best possible efficiency.

**Medium to high speed engines**

Most of these engines are designed to operate on the four-stroke cycle and are of trunk position construction. They are much lighter and smaller than slow speed engines. As these engines run between 400 and 1000 r.p.m., they usually require having some additional gears to reduce the r.p.m. They normally consume less fuel.







## Exercise 1:

**Choose the best answer.**

1 …… are the only machinery to create propulsion enabling the ship to move through the water.
a) Axillary engines
b) Main engines
c) Engines

2 …… generally run between 55 to 150 r.p.m.
a) High speed engines
b) Medium speed engines
c) Slow speed engines

3 …… run between 400 and 1000 r.p.m.
a) Medium speed engines
b) Medium to high speed engines
c) Slow speed engines

## STRUCTURES:

**PASSIVE FORMS → Passive Forms**

We use passive form of a verb when we are interested in the object or when we do not know who caused the action.

**Example: Appointments are required in such cases.**

We can form a passive sentence from an active sentence when there is an object in the active sentence.

**Form**

to be + past participle

In order to form a passive sentence:

- The object of an “active” sentence becomes the subject in the “passive” sentence.
- Verb ‘‘to be’’ is used in the same tense.
- The past participle of the verb is used after ‘‘to be’’.
- The subject of the “active” sentence becomes the “object” in the “passive” sentence placed after by(or is left out).

| | | | |
|---|---|---|---|
| Active: | Naval architects | design | ships. |
| |  | | |
| Passive: | Ships | are designed | by naval architects. |

**Examples**

| | | | | |
|---|---|---|---|---|
| Active | Naval architects | are designing | ships. | Present Progressive |
| | | | | |
| Passive: | ships | arebeing designed | by Naval architects. | |

| | | | | |
|---|---|---|---|---|
| Active: | Naval architects | were designing | ships. | Past Progressive |
| | | | | |
| Passive: | ships | were being designed | by Naval architects. | |

| | | | | |
|---|---|---|---|---|
| Active: | Naval architects | have designed | ships. | Present Perfect |
| | | | | |
| Passive: | ships | have been designed | by Naval architects. | |

| | | | | |
|---|---|---|---|---|
| Active: | Naval architects | can design | ships. | Modals |
| | | | | |
| Passive: | ships | can bedesigned | by Naval architects. | |

## Exercise 2:

- Rewrite the sentences in the passive form.

a) A computer controls the amount of heat.

……

b) The ship builder built the tanker in a year.

……

c) The Engineers and technicians will equip the ship with necessary equipment.

……

d) You can find your cabin in this alleyway.

……

e) The classification society has approved the drawings.

……

f) The second engineer is repairing the generator now.

……

g) My alarm clock didn't wake me up this morning.

……

h) The crewdiscussed the problems in the meeting.

……

## Exercise 3:

Complete the following sentences with proper form of the verbs.

a) This door …… (not lock) this week.

b) The ship …….. (launch) yesterday.

c) All the instructions …….. (write) in English.

d) Most cadets ……... (educate) in public nautical schools.

e) Don't worry, when you wake up tomorrow morning, the port ……(see) from your porthole.

f) Your lunch……(may serve) in the mess room.

g) With the new generation of mechanical and electronic equipment in near future, the role of human skills ……(be) limited.

## Exercise 4:

Put the words in the right order to make complete sentences.

a) have/ fruit/ in/ reefer/ been/ and/ carried/ meat/ ship/ this.

……

b) / to/ cargo/ cargo/ general/ ships/ designed/ of/ general/ carry/ types/ are/ all/ dry.

……

c) is/carriers/ dry/ bulk/ carried/ cargo / bulk /in

……

d) year/ this/ bridge/ until/ will/ river/ a/ over/ next/ be/ new/ built

……

# Unit eight

## Auxiliary machinery

Besides running and maintaining the main propulsion of the ship, the engineers have many auxiliary machineries to care.Auxiliary machinery covers everything mechanical on board a ship except the main engines and boilers. It includes almost all the pipes and fittings and the equipment used to carry out a number of functions.

– To supply the needs of main engines and boilers: Air compressors are used to supply compressed air for starting engines. Coolers are used for cooling either oil or water. Water for the boilers is also heated before admitted into boiler by feed water heaters. This increases the efficiency of the boilers.

– To keep the ship dry and trimmed: This is done through the bilge and ballast pumping systems. The former removes water which has gathered in machinery, cargo and other spaces. The latter pumps water in and out of ballast tanks.

**ballast pump**

– To supply domestic needs such as fresh water generator plant, sanitation from sewage plant and heating and ventilation from heaters and air-conditioners.

**sewage treatment plant**

– To apply the main power of the engines for propulsion and maneuvering: The engine power is transmitted to the propeller by a line of steel shafting. This is made up of thrust shaft; intermediate shafts and the propeller shaft.

**propulsion shaft**

– Steering gear is also necessary to operate the rudder for maneuvering.
– To supply the ship with electrical power and lighting: This is done by diesel-powered generators.
– To moor the ship and handle cargo: Deck machinery is extensive and varied. It can be divided into anchor-handling machinery (windlass), mooring machinery (winches) and cargo-handling machinery (cranes). It also includes cargo oil pumps in tankers.
– To provide for safety, firefighting and fire detection equipment, lifeboat engines and launching gear also included.

**Life boat and bunker davit**

## Exercise 1:

Choose the best answer.

1 Which one of the following is not considered auxiliary machinery:

a) the coolers

b) the main engine

c) the air compressors

d) pumping systems

2 Engines are started by …….

a) heated oil or water

b) boilers

c) compressed air

d) water heaters

3 A ……..pumping system removes water which has gathered in machinery.

a) Ballast

b) Cold water

c) Hot water

d) Bilge

## STRUCTURES:

**Reflexive Pronouns**

We use a reflexive pronoun when we want to refer back to the subject of the sentence or clause. Reflexive pronouns end in “-self” (singular) or “-selves” (plural).

There are eight reflexive pronouns:

| | reflexive pronoun |
|---|---|
| singular | **myself** |
| | **yourself** |
| | **himself, herself, itself** |
| plural | **ourselves** |
| | **yourselves** |
| | **themselves** |

Look at these examples:

| the underlined words are NOT the same person/thing | the **underlined** words are the SAME person/thing |
|---|---|
| **Ali** saw **me**. | I saw **myself** in the mirror. |
| Why does **he** blame **you**? | Why do **you** blame **yourself**? |
| **Reza** sent **him** a copy. | **Reza** sent **himself** a copy. |
| **Reza** sent **her** a copy. | **Maryam** sent **herself** a copy. |
| **That cat** hurt **the mouse**. | **The cat** hurt **itself**. |
| **We** blame **you**. | **We** blame **ourselves**. |
| Can **you** help **my children**? | Help **yourselves**? |
| **They** cannot look after **the babies**. | **They** cannot look after **themselves**. |

**Intensive pronouns**

We can also use these pronouns to emphasize the subject. Look at these examples:

- I made it **myself**. OR I **myself** made it.
- Have you **yourself** seen it? OR Have you seen it **yourself**?
- The President **himself** promised to decrease the inflation.
- She spoke to me **herself**. OR She **herself** spoke to me.

- The exam **itself** wasn't difficult, but the exam room was horrible.

- Never mind. We'll do it **ourselves**.

- They recommend this book even though they **themselves** have never read it. OR They recommend this book even though they have never read it **themselves**.

**NOTE.**

**How and What like**

**We generally use how to ask about things that change- for example people's moods and health.**
**We prefer what … like to ask about things that do not change- for example people's character and appearance:**

- How is the captain? He's very well.

- What's the captain like? He's quiet and a bit serious.

- How's the weather today? It is windy. / It is snowy. / It is foggy. / It is hot and humid.

- What's the weather like in Istanbul? It is quite agreeable.

- What is your new teacher like? He is really intelligent and nice to everyone

- What is your new cabin like? It is really spacious.

## Exercise 2:

**Complete the sentences with a proper reflexive pronoun.**

a) He looked at …… in the mirror.

b) I'm not angry with you. I'm angry with ……

c) This light is automatic. It turns on and off by ……

d) You work too hard. You never have any time for …… (one person)

e) I cut …… while I was working with the knife.

f) We'd like to know more about your job background. Please tell us about …… (one person)

## Exercise 3:

Put in **How** or **What … like**.

a) …… was the film you saw last night?

b) …… is the food in the ship you work in?

c) What's the weather …… in your hometown?

d) …… is the food like in this restaurant?

e) ……is the chief mate today?

## Exercise 4:

Put in myself, yourself, ourselves, … or me, you, us, …

a) We had a great cruise. We enjoyed …….

b) It's not my fault. You can't blame ……

c) What I did was really bad. I'm ashamed of ……

d) We've got a problem. I hope you can help …….

e) This lifejacket is not my size. Can you give …… another one, please?

f) Don't worry about us. We can take care of ……..

g) Don't worry about the passengers. I can take care of ……

## ارزشیابی کسب اطلاعات فنی ۲

| عنوان پودمان (فصل) | تکالیف عملکردی (شایستگی‌ها) | استاندارد عملکرد (کیفیت) | نتایج | استاندارد (شاخص‌ها، داوری، نمره‌دهی) | نمره |
|---|---|---|---|---|---|
| کسب اطلاعات فنی ۲ | توانایی ارتباط مکالمه‌ای با شناورها و ایستگاه‌های ارتباطی | به‌کارگیری اطلاعات فنی در حوزه تخصصی | بالاتر از حد انتظار | ۱ـ کاربرد اصطلاحات تخصصی را بداند.<br>۲ـ توانایی نقشه‌خوانی، کاتالوگ‌خوانی و استفاده از کتب دریایی را داشته باشد.<br>۳ـ توانایی استخراج و کسب اطلاعات از منابع به روز را داشته باشد.<br>* هنرجو توانایی انجام همهٔ شاخص‌ها را داشته باشد. | ۳ |
| | | | در حد انتظار | ۱ـ کاربرد اصطلاحات تخصصی را بداند.<br>۲ـ توانایی نقشه‌خوانی، کاتالوگ‌خوانی و استفاده از کتب دریایی را داشته باشد.<br>۳ـ توانایی استخراج و کسب اطلاعات از منابع به روز را داشته باشد.<br>* هنرجو توانایی انجام دو مورد از شاخص‌ها را داشته باشد. | ۲ |
| | | | پایین‌تر از حد انتظار | ۱ـ کاربرد اصطلاحات تخصصی را بداند.<br>۲ـ توانایی نقشه‌خوانی، کاتالوگ‌خوانی و استفاده از کتب دریایی را داشته باشد.<br>۳ـ توانایی استخراج و کسب اطلاعات از منابع به روز را داشته باشد.<br>* هنرجو توانایی انجام یک مورد از شاخص‌ها را داشته باشد. | ۱ |
| **نمرهٔ مستمر از ۵** | | | | | |
| **نمرهٔ شایستگی پودمان از ۳** | | | | | |
| **نمرهٔ پودمان از ۲۰** | | | | | |

## ارزشیابی شایستگی کسب اطلاعات فنی ۲

**۱ شرح کار:**

- پاسخگویی به کلیهٔ فعالیت‌های پودمان
- شرکت در بحث‌های کلاسی
- ارائهٔ سخنرانی با موضوع دلخواه

**۲ استاندارد عملکرد:**

- به‌کارگیری اطلاعات فنی در حوزهٔ تخصصی
- **شاخص‌ها:**
- توانایی خواندن، نوشتن و بیان اطلاعات فنی

**۳ شرایط انجام کار، ابزار و تجهیزات:**

- **شرایط:** کلاس درس مجهز به پرده‌نگار باشد.
- **ابزار و تجهیزات:** در کلاس امکان نمایش فایل‌های صوتی و تصویری وجود داشته باشد.

**۴ معیار شایستگی:**

| ردیف | مرحله کار | حداقل نمرهٔ قبولی از ۳ | نمرهٔ هنرجو |
|---|---|---|---|
| ۱ | توانایی خواندن و درک مطلب | ۲ | |
| ۲ | توانایی استخراج و کسب اطلاعات فنی از کتب دریایی | ۱ | |
| | **شایستگی‌های غیرفنی، ایمنی، بهداشتی، توجهات زیست‌محیطی و ... :**<br>۱ـ رعایت نکات ایمنی دستگاه‌ها؛<br>۲ـ دقت و تمرکز در اجرای کار؛<br>۳ـ شایستگی تفکر و یادگیری مادام‌العمر؛<br>۴ـ اخلاق حرفه‌ای. | ۲ | |
| | **میانگین نمرات** | | * |

* حداقل میانگین نمرات هنرجو برای قبولی و کسب شایستگی (۲) می‌باشد.

## منابع


۱ برنامهٔ درسی ملی جمهوری اسلامی ایران،۱۳۹۱.

۲ برنامهٔ درسی رشتهٔ ناوبری، سازمان پژوهش و برنامه‌ریزی آموزشی، دفتر تألیف کتاب‌های درسی فنی و حرفه‌ای و کاردانش،۱۳۹۲.

۳ استاندارد شایستگی حرفهٔ رشتهٔ ناوبری، سازمان پژوهش و برنامه‌ریزی آموزشی، دفتر تألیف کتاب‌های درسی فنی و حرفه‌ای و کاردانش،۱۳۹۲.

۴ استاندارد ارزشیابی حرفهٔ رشتهٔ ناوبری، سازمان پژوهش و برنامه‌ریزی آموزشی، دفتر تألیف کتاب‌های درسی فنی و حرفه‌ای و کاردانش،۱۳۹۲.

۵ راهنمای عمل طراحی و تألیف بسته تربیت و یادگیری رشته‌های فنی و حرفه‌ای، سازمان پژوهش و برنامه‌ریزی آموزشی، دفتر تألیف کتاب‌های درسی فنی و حرفه‌ای و کاردانش،۱۳۹۲.

۶ زبان تخصصی، رشتهٔ ناوبری، دفتر تألیف کتاب‌های درسی فنی و حرفه‌ای و کاردانش،۱۳۹۴.

۷ IMO STANDARD MARINE COMMUNICATION PHRASES (SMCP): PUBICATION AND CD , FRENCH EDITION.

ارگان‌ها و مؤسساتی که در فرایند اعتبارسنجی این کتاب مشارکت داشته‌اند:

۱ـ ادارهٔ کل امور دریایی و سازمان‌های تخصصی بین‌المللی سازمان بنادر و دریانوردی

۲ـ مؤسسهٔ آموزشی کشتیرانی جمهوری اسلامی ایران؛

۳ـ نیروی دریایی راهبردی ارتش جمهوری اسلامی ایران؛

۴ـ نیروی دریایی سپاه پاسداران انقلاب اسلامی ایران؛

۵ـ مرزبانی نیروی انتظامی جمهوری اسلامی ایران؛

۶ـ دبیرخانهٔ کشوری هنرستان‌های علوم و فنون دریایی.