



# TEACHER'S MANUAL

Course:  
Occupational Safety Onboard

*Part I - Introduction for a vessel as a working environment*

# OCCUPATIONAL SAFETY ON BOARD – VESSELS AS A WORKING ENVIRONMENT, 1 ECTS = 27 HOURS

## TEACHER'S MANUAL

The purpose of the teacher's manual is to assist teachers in organizing and introducing training courses. It is not the intention of teacher's manual to provide teachers with a rigid teaching package which they are expected to "follow blindly", because national educational systems, groups size and the cultural backgrounds of trainees in maritime subjects vary considerably from country to country. The teacher can choose suitable parts for target group and can even make changes that is needed to achieve the learning outcomes.

The teacher's manual has been designed to give ideas how to you use material developed in the OnBoard Med –project. Teacher's manuals content is: objectives, content, target group and student's amount, implementation and learning methods, assessment, learning process (summary) and tips for the teacher.

Due to the immensely different environment on a ship as compared to ashore, new seafarers must be prepared for a life at sea. The work, methods and organization vary depending on the size and type of ship. Ships come in many types; small and large dry cargo ships, ferries and ro-ro ships for short or long trips, tankers are only a few examples. Working on a ship can be hazardous occupation for the uninitiated.

This course will give new seafarers an insight into the vessel as a working environment, various safety hazards on board the ship and elements of a ship and working procedures on board so that they adjust to the shipboard environment and are better prepared to cope with any unforeseen circumstances.

### Objectives: Student

A trainee successfully completing this course will be able to:

- recognize different types of ships;
- understand different areas of the ship;
- recognize different emergency situations
- recognize different working environments during common ship's operations such as mooring operations, cargo handling, work on height etc.
- to know how to perform higher risk ship's operations such as entry to enclosed space, hot works etc.

### Target group and student amount:

- Mariners, nurses and students for those fields.
- Online learning no limitation, practical exercise max 15 person exception big virtual simulation

## Content:

CONTENT	TIME	LEARNING METHODS and MATERIAL	ASSESSMENT
Shipboard Familiarization. Introduction to Basic Safety onboard.	2 h	Individual V1; T2, ch.4	study diary
Different types of cargo ships	1 h	Lecture PP1; T1, ch.24;	study diary
International rules and regulations	1h	Lecture PP1;	study diary
Crew onboard and occupation groups in different working environment. (Choose any known ships to show as example) <ul style="list-style-type: none"> <li>▫ Deck (outside),</li> <li>▫ Kitchen,</li> <li>▫ Engine room,</li> <li>▫ Accomodation;</li> </ul>	2 h	Lecture PP1; PP2; T2, ch3; T3, ch3;	study diary
Different workplaces: <ul style="list-style-type: none"> <li>▫ mooring operations,</li> <li>▫ safety during Lifeboat drills,</li> <li>▫ load-unload cargo,</li> <li>▫ work on height (outboard),</li> <li>▫ use of equipment and machinery</li> </ul>	2h	Lecture PP1; T3, ch4;	study diary
Introduction to High risk shipboard operations, such as: <ul style="list-style-type: none"> <li>▫ access to enclosed spaces</li> <li>▫ hot works</li> <li>▫ work at height</li> </ul>	3h	Workshop PP2 V3	study diary
Online discussion: <ul style="list-style-type: none"> <li>▫ Investigation of shipboard accident(s)</li> </ul>	4h	Group exercises T4; T5;	Pass/fail
Use of PPE – use of breathing apparatus		Workshop V4	Pass/fail
Investigation of accident(s)	2h	Workshop T6	Pass/fail
Simulation. Entrance into enclosed space. Use of PPE	3 h	Simulations T7	Pass/fail
Final test	1h		Pass/fail

## Implementation and learning methods:

- Individual, pair and group exercises
- Lectures (online and face to face)

- Workshops
- Skill labs and simulations

## Assessment:

- study diary (fail, 1-5)
- written paper (group work) (fail, 1-5)
- online discussions (pass / fail)
- skill lab and simulations (fail / pass)

## Learning materials

### PowerPoint Presentation (PP)

- PP1 - Vessel as a Working Environment. Part 1 -Cargo ship. (Optima)
- PP2 - Vessel as a Working Environment. Part 2 -Emergency situations. (Optima)

### Textbooks and topics (T)

- T1- ACCIDENT PREVENTION ON BOARD SHIP AT SEA AND IN PORT ([https://www.ilo.org/wcmsp5/groups/public/@ed\\_protect/@protrav/@safework/documents/normativeinstrument/wcms\\_107798.pdf](https://www.ilo.org/wcmsp5/groups/public/@ed_protect/@protrav/@safework/documents/normativeinstrument/wcms_107798.pdf))
- T2 - CODE OF SAFE WORKING PRACTICES FOR MERCHANT SEAFARERS (COSWP), 2018 (<https://www.gov.uk/government/publications/code-of-safe-working-practices-for-merchant-seafarers-coswp-2018>)
- T3 - THE ULTIMATE GUIDE TO PERSONAL SAFETY ON BOARD SHIPS (<HTTP://TIPS.SEAMENSCLUB.RO/PDF/THE-ULTIMATE-GUIDE-TO-PERSONAL-SAFETY-ON-SHIPS.PDF>)
- T4 - CASE STUDIES (1): MV SAVA LAKE (LATVIAN FLAG) – TWO FATALITIES ONBOARD
- T5 - PASSENGER CRUISE SHIP SAGA ROSE - FATALITY ON BOARD / 11 JUNE 2008
- T6 - MV VIKING ISLAY - FATALITIES ON BOARD -ENCLOSED SPACE
- T7 – Simulation scenario – Entrance in enclosed space. Use of PPE

### Video (V)

- V1 - Shipboard Familiarization (<https://www.youtube.com/watch?v=x6Tz0Yf3FZc>)
- V2 - Healthy and Safety Requirements ([https://www.youtube.com/watch?v=ygwc7DRxes0&list=PLIXNHuHUDcsiRUeYS\\_u6in1qTGA2tT-hh&index=5&t=161s](https://www.youtube.com/watch?v=ygwc7DRxes0&list=PLIXNHuHUDcsiRUeYS_u6in1qTGA2tT-hh&index=5&t=161s))
- V3 - Enclosed Space Entry - Confined Space Entry (<https://www.youtube.com/watch?v=yEqJUfqW7DM&list=PLXNEJpAaCDcwmxkZlvSw6O0jIPm8WsdSw>)

- V4 - Breathing Apparatus - Different Types of Breathing Apparatus (<https://www.youtube.com/watch?v=Iz-9Xn95Twk&list=PLXNElpAaCDcwmxkZlvSw6O0jIPm8WsdSw&index=13>)

## Learning methods

**eLearning** is learning utilizing electronic technologies to access educational material outside a traditional classroom. eLearning can be f. ex. online videos, lectures, discussions, teacher consultation, e-testing.

**Exercise** is an activity carried out for a specific purpose in online or face to face and can be individual or group exercise. F. ex. pre tasks, classroom exercise, model answer questions.

**Lecture:** an educational and theoretical talk to the students which should be interactive. When the instructor incorporates engagement triggers and breaks the lecture at least once per class to have students participate in an activity that lets them work. The engagement triggers capture and maintain student attention and allow students to apply what they have learned or give them a context for upcoming lecture material. Lecture can be online, video lecture or face to face.

**Skill lab** provide students with an opportunity to learn and develop the skills essential to nursing / maritime practice within a supportive and safe environment.

**Simulation** is a form of experiential learning. Where teacher sets problems, events or scenario that can be used for training students, how to behave in authentic situation within a supportive and safe environment. It includes introduction, simulation and debriefing.

**Workshop** is a period of practical work on a particular subject in which a small group of people share their knowledge or experience. Workshop can also be like learning café where you develop new ideas or approaches to specific subject.

## SUMMARY

From this summary you as a teacher can easily choose by the learning subjects and material you want to use with you students (depends on the target group and the group size).

And also depending on the time that you can use in the subject, there is lectures, exercises to do in the classroom with bigger group.

## T4. CASE STUDIES (1)

### MV SAVA LAKE (LATVIAN FLAG) – TWO FATALITIES ONBOARD



Photo: [https://www.parismou.org/sites/default/files/Sava%20Lake\\_0.jpg](https://www.parismou.org/sites/default/files/Sava%20Lake_0.jpg)

On 18 January 2008, the Latvian registered cargo vessel Sava Lake was proceeding towards the Dover Strait when it was discovered that two of the vessel's able seamen were missing. During a search of the vessel, the bodies of the two missing crew were found at the bottom of the access ladder inside the forward store. The deaths were reported to the UK authorities, and Sava Lake diverted to Dover, where an investigation into the causes and circumstances of the accident was commenced.

Sava Lake had loaded parcels of "steel turnings" in Copenhagen and Horsens, Denmark, before sailing for Leixoes, Portugal on 15 January. Prior to loading, the master of Sava Lake had received conflicting information about the properties of the intended cargo. Notwithstanding this uncertainty, the master accepted the cargo, which was in fact an IMDG Code Class 4.2 material, ferrous metal turnings. This type of cargo is liable to self-heat, and can therefore reduce the levels of oxygen within the cargo hold. Documentation held on board the vessel specifically prohibited Sava Lake from carrying this type of cargo.

The investigation found that:

1. To clear the cargo hold ventilation trunking of any build up of cargo residues from the hold, or sea water from the deck ventilator, an earlier crew had cut the flexible bellow pieces that were fitted adjacent to the ventilation fan. This created a direct air path from the cargo hold into the forward store.
2. Air in the hold, with oxygen levels of around 6% by volume, almost certainly migrated into the forward store, leading to the asphyxiation of the two ABs when they entered the unventilated space. The reason why the two men entered the forward store, without the knowledge of the vessel's senior officers, could not be established.
3. Notwithstanding the nature of the cargo stowed in the adjacent hold, the ship's staff did not consider the forward store to be an enclosed space, therefore no precautions were taken before the store was entered.

[Report on the investigation of the death by asphyxiation of two crewmen on board Sava Lake approaching Dover Strait on 18 January 2008](#)

## T5. CASE STUDIES (2)

### PASSENGER CRUISE SHIP SAGA ROSE - FATALITY ON BOARD / 11 JUNE 2008



On 11 June 2008, a motorman found an experienced petty officer lying at the bottom of a ballast tank on board the passenger cruise ship Saga Rose while the ship was visiting Southampton, UK.

The petty officer was the vessel's second bosun who had been sent to the tank to determine whether it contained fresh or salt water. The motorman raised the alarm and then returned to the scene and entered the tank to help the petty officer, who was a close friend. The motorman then also collapsed.

The onboard emergency response team quickly arrived with breathing apparatus, and the local emergency services were called to assist. The motorman was successfully revived and evacuated from the tank, but the second bosun died before he could be recovered.

The second bosun was instructed to test the water in the tank on the assumption that the tank was full and the water was within easy reach from outside the tank.

As a result, a permit to work was not deemed to be necessary. However, the tank contained only a small amount of water and the second bosun entered it despite being aware of, and practised in, the vessel's procedures for entering enclosed spaces. The atmosphere inside the tank contained insufficient oxygen to sustain human life due to the corrosion of the tank's steel structure.

1. The second bosun entered the ballast tank, the atmosphere of which contained insufficient oxygen to sustain human life, despite being fully aware of the vessel's procedures for entering enclosed spaces.



2. The motorman's attempt to rescue the second bosun was undoubtedly instinctive and well intended. Nevertheless, he put himself into serious danger and ultimately hindered the recovery of his friend.
3. The need for further action to improve seafarers' knowledge and appreciation of the risks involved with entry into enclosed spaces and compliance with onboard procedures is compelling.

[Report on the investigation of the fatality on board passenger cruise ship Saga Rose in Southampton, England on 11 June 2008](#)

## T6 CASE STUDIES (3)

### MV VIKING ISLAY - FATALITIES ON BOARD -ENCLOSED SPACE



## WP-3. Occupational Safety




Marine Occupational Safety  
Simulation Scenario

LMA  
06/03/2019

Rīga

## WP-3. Occupational Safety

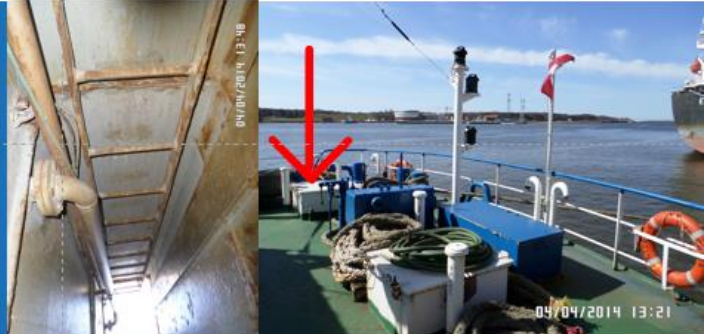


<u>Objectives</u>	<u>Prework:</u>
<ul style="list-style-type: none"><li>• UNDERSTAND THE SHIP AS A SPECIFIC WORKING ENVIRONMENT;</li><li>• UNDERSTAND PHISICAL RISKS ONBOARD THE SHIP;</li><li>• UNDERSTAND BASIC PRINCIPLES OF RISK ASSESMENT;</li><li>• UNDERSTAND USE OF PERSONAL PROTECTIVE EQUIPMENT;</li></ul>	<ul style="list-style-type: none"><li>• use Optima to prepare for simulations</li><li>• study Occupational Safety (online lecture, presentations)</li><li>• <a href="#">Watch online videos of Enclosed Space Entry - Confined Space Entry – (V3)</a></li><li>• Complete pre-test – <a href="#">Occupational Safety</a>. ( not less than 80% of correct answers) <b>(to be developed!)</b></li></ul>

**Marine Occupational Safety simulation scenario – Objectives/Prework**

## WP-3. Occupational Safety

- The vessel, dry cargo ship carrying the cargo: iron scrap. Following the heavy storm weather it was appeared that necessary to attend the cargo hold through the access hatch (red arrow on the photo).
- Describe possible physical risks, and action to mitigate that risks
- Describe PPE to be used during activities



Situation description



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