Example syllabus on

Marine Environment Awareness Course

2016

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Co-funded by the Erasmus+ Programme of the European Union

1. Foreword

Vocational education and training in the maritime field is regulated by the International Maritime Organization's (IMO) International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW). The Convention aims to provide universal regulations for maritime education, qualifications and watchkeeping – or at least set the minimum requirements. However, despite the STCW Convention, there are major differences between countries - and VET institutions - in the content and structure of maritime education and training (MET).

This document provides a course outline as an instrument to implement a course on environment awareness, taking into account all maritime environment legislation. The course offers two options, a 2-day programme as a refresher course for the seafarers who have gone through the IMO course and are familiar with most of the updates; and a 5-day programme for incorporation into cadet education and training programme.

The course provided follows the principles of the European Union's ECVET (European Credit System for Vocational Education and Training) Recommendations in order to facilitate the transfer, recognition and accumulation of assessed learning outcomes achieved in formal, non-formal and informal contexts by individuals who are aiming to achieve a qualification. The Marine Environment Awareness Course outline has been created by a consortium of universities, vocational training institutes and MET actors from Finland, Germany, Italy, Malta and the UK as part of a MariePRO - Promoting Maritime ECVET Actions - project. The partners involved in the project include Centre for Factories of the Future (UK), ITTL Nautico San Giorgio (IT), Mediterranean Maritime Research and Training Centre (MT), University of Bremen, Institute Technology and Education (DE), and University of Turku, Centre for Maritime Studies (FI). The MariePRO project is co-funded by Erasmus+ programme of the European Union. In Finland CIMO, the national agency for the European Union's education and youth programmes, administers and is responsible for implementing the Erasmus+ programme. The European Commission accepts no responsibility for the contents of this publication.

2. Introduction

At this moment (July 2016) the STCW Convention doesn't require mandatory courses about marine environment pollution prevention; only an optional model course is provided - *IMO Model course 1.38, Marine environment awareness course.*

This clashes to some extent with the multiplication of the environment related provisions, involving both amendments to the existing Conventions - MARPOL,, and new regulations that are expected to enter into force in the future, for example the BWM Convention and the Hong Kong Convention.

This shows that there is an increasing need of competence in the field of the marine environment issues management, both for the seafarers and the shore based personnel.

3. Aims and objective

The aim of this document is to provide an effective instrument to carry out a course on environment awareness, taking into account all maritime environment legislation, with particular regard to the measures to prevent pollution.

The aim of the course is to ensure that the learner achieves the necessary theoretical knowledge and leader's abilities to implement and maintain the required documents and procedures for all activities to preserve surrounding environments from the garbage produced on board. As well as to provide high quality information and knowledge on the marine environment to marine professionals based to IMO Model Course 1.38, and the requirements of Sections A-II/1 of Chapter II, A-III/1 and A-III/6 of Chapter III of the STCW 78 as amended in 2010.

The course content emphasises concise communications, interpretation of documents and analysis of complex managerial issues in the maritime sector dealing with various high-ranking officials

This course is useful to support maritime institutions to provide a non-mandatory, ECVET compliant maritime environment awareness course of great relevance for the seafarers and shore based personnel who can benefit from acquiring concrete competences in the care of marine environment.

The objective should be always an increasing awareness of the problems linked to maritime pollution among the "people of shipping".

The imminent entering into force of the BWM Convention will expose the need for a good understanding of its provisions among seafarers; the same problem relates to the recent MARPOL amendments in the Annexes III, IV, V and VI. This course offers knowledge and abilities for the implementation of the new or updated documentation required for maritime environmental awareness and protection as well as covering the managing of the pollution prevention plan, the environment-related inspections on board and actions in case of the emergencies.

4. Targets

The targets of this course are diversified, and minor changes are deemed necessary to adapt the teaching techniques and the content to different category of trainees.

Given the importance of the topic is desirable that this course could form part of the basic MET programmes carried out in the EQF 4/5 institutions, but it should also be provided at the EQF 6 level and for Officers in service, in order to clarify how to make on-board procedures more effective and keep the crew always updated with the continually changing legislation.

The course has been developed for, and will be useful to, international marine professionals both deck officers and engineers including electrical engineers, ship owners, shipping management staff (aboard the ship or onshore), ISM designated persons (DPAs) and maritime inspectors.

The major impulse that drives the decision of a Company to provide this kind of course to on-board crew and shore based personnel is the lifelong learning concept.

5. Entry standards

Trainees should have previous basic in physics, chemistry and ship technology; a general knowledge on the role, function and structure of the IMO and the methods for IMO Convention adoption and implementation is also required.

More experienced seafarers who have completed an IMO Model Course *1.38, Marine Environment Awareness course,* and/or completed training in any of the related IMO conventions concerning safety of life at sea, security and protection of the marine environment may take advantage of Accreditation of Prior Learning (APL), if agreed by training provider/institution, and seek credit for their prior learning by demonstrating competence.

6. Course content and characteristics

The course can be provided as a stand-alone training/refreshment action or it can be embedded within the EQF 4 to 6 MET programmes. The course should incorporate the following STCW competences as a minimum (*Operational* and *Management* level).

Section AII/1 & AII/2 of chapter II (Master and Deck Officers) &A-II/5 – support level

STCW Code, as amended: Part A; Chapter II – Master and deck department
Table A-II/1, page 108
Function: Controlling the operation of the ship and care for persons on board at the operational level

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Ensure compliance with pollution-prevention requirements	Prevention of pollution of the marine environment and anti-pollution procedures Knowledge of the precautions to be taken to prevent pollution of the marine environment Anti-pollution procedures and all associated equipment Importance of proactive measures to protect the marine environment	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience 3. approved training	Procedures for monitoring shipboard operations and ensuring compliance with MARPOL requirements are fully observed Actions to ensure that a positive environmental reputation is maintained

STCW Code, as amended: Part A, Chapter II – Master and deck department
Table A-II/1, page 109
Function: Controlling the operation of the ship and care for persons on board at the operational level

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence

Monitor compliance with legislative requirements	Basic working knowledge of the relevant IMO conventions concerning safety of life at sea, security and protection of the marine environment	Assessment of evidence obtained from examination or approved training	Legislative requirements relating to safety of life at sea, security and protection of the marine environment and correctly identified

STCW Code, as amended: Part A; Chapter II – Master and deck department
Table A-II/2, page 118
Function: Cargo handling and stowage at the management level

Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Plan and ensure safe loading, stowage, securing, care during the voyage and unloading of cargoes	Ability to establish procedures for safe cargo handling in accordance with the provisions of the relevant instruments such as IMDG Code, IMSBC Code, MARPOL 73/78 Annexes III and V and other relevant information	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved simulator training, where appropriate	The frequency and extent of cargo condition monitoring is appropriate to its nature and prevailing conditions Unacceptable or unforeseen variations in the condition or specification of the cargo are promptly recognized and remedial action is immediately taken and designed to safeguard the safety of the ship and those on board Cargo operations are planned and executed in accordance with established procedures and legislative requirements Stowage and securing of cargoes ensures that stability and stress conditions remain within safe limits at all times during the voyage

STCW Code, as amended: Part A, Chapter II – Master and deck department
Table A-II/2, page 120
Function: Controlling the operation of the ship and care for persons on board at the management level

Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Monitor and control compliance with legislative requirements and	Knowledge of international maritime law embodied in international agreements and conventions Regard shall be paid especially to the following subjects:	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience	Procedures for monitoring operations and maintenance comply with legislative requirements

measures to ensure safety of life at sea, security and the protection of the marine environment	1. certificates and other documents required to be carried on board ships by international conventions, how they may be obtained and their period of validity 2. responsibilities under the relevant requirements of the International Convention on Load Lines, 1966, as amended 3. responsibilities under the relevant requirements of the International Convention for the Safety of Life at Sea, 1974, as amended 4. responsibilities under the International Convention for Prevention of Pollution from Ships, as amended 5. maritime declarations of health and the requirements of the International Health Regulations 6. responsibilities under international instruments affecting the safety of the ship, passengers, crew and cargo 7. methods and aids to prevent pollution of the marine environment by ships 8. national legislation for implementing international agreements and conventions	3. approved simulator training, where appropriate	Potential non-compliance is promptly and fully identified Planned renewal and extension of certificates ensures continued validity of surveyed items and equipment

STCW Code, as amended: Part A; Chapter II – Master and deck department
Table A-II/3, page 130
Function: Controlling the operation of the ship and care for persons on board at the operational level

Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Ensure compliance with pollution-prevention requirements	Prevention of pollution of the marine environment and anti-pollution procedures Knowledge of the precautions to be taken to prevent pollution of the marine environment	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience	Procedures for monitoring shipboard operations and ensuring compliance with MARPOL requirements are fully observed

	Anti-pollution procedures and all associated equipment		

STCW Code, as amended: Part A; Chapter II – Master and deck department
Table A-II/3, page 131
Function: Controlling the operation of the ship and care for persons on board at the operational level

Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Monitor compliance with legislative requirements	Basic working knowledge of the relevant IMO conventions concerning safety of life at sea, security and protection of the marine environment	Assessment of evidence obtained from examination or approved training	Legislative requirements relating to safety of life at sea, security and protection of the marine environment are correctly identified

STCW Code, as amended: Part A; Chapter II – Master and deck department
Table A-II/5, page 138
Function: Controlling the operation of the ship and care for persons on board at the support level

Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Apply precautions and contribute to the prevention of pollution of the marine environment	Knowledge of the precautions to be taken to prevent pollution of the marine environment Knowledge of the use and operation of anti-pollution equipment Knowledge of the approved methods for disposal of marine pollutants	Assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. practical training 3. examination 4. approved training ship experience	Procedures designated to safeguard the marine environment are observed at all times

Section AIII/1 & AIII/2 (Engineers) & A-III/5- support level

STCW Code, as amended: Part A; Chapter III – Engine department
Table A-III/1, page 149
Function: Controlling the operation of the ship and care for persons on board at the operational level

Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Ensure compliance with pollution-prevention requirements	Prevention of pollution of the marine environment Knowledge of the precautions to be taken to prevent pollution of the marine environment Anti-pollution procedures and all associated equipment	Examination and assessment of evidence obtained from one or more of the following: 3. approved in-service experience 4. approved training ship experience 5. approved training	Procedures for monitoring shipboard operations and ensuring compliance with MARPOL requirements are fully observed Actions to ensure that a positive environmental reputation is maintained

	Importance of proactive measures to protect the marine environment		

STCW Code, as amended: Part A; Chapter III – Engine department
Table A-III/1, page 150
Function: Controlling the operation of the ship and care for persons on board at the operational level

Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Monitor compliance with legislative requirements	Basic working knowledge of the relevant IMO conventions concerning safety of life at sea, security and protection of the marine environment	Assessment of evidence obtained from examination or approved training	Legislative requirements relating to safety of life at sea, security and protection of the marine environment are correctly identified

STCW Code, as amended: Part A; Chapter III – Engine department
Table A-III/1, page 158
Function: Controlling the operation of the ship and care for persons on board at the management level

Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Monitor and control compliance with legislative requirements and measures to ensure safety of life at sea, security and the protection of the marine environment	Knowledge of relevant international maritime law embodied in international agreements and conventions Regard shall be paid especially to the following subjects: 9. certificates and other documents required to be carried on board ships by international conventions, how they may be obtained and the period of their legal validity 10. responsibilities under the relevant requirements of the International Convention on Load Lines, 1966, as amended 11. responsibilities under the relevant requirements of the International Convention for the Safety of Life at Sea, 1974, as amended 12. responsibilities under the International Convention for the Prevention of Pollution from Ships, as amended	Examination and assessment of evidence obtained from one or more of the following: 4. approved in-service experience 5. approved training ship experience 6. approved simulator training, where appropriate	Stability and stress conditions are maintained within safety limits at all times

	13. maritime declarations of health and the requirements of the International Health Regulations 14. responsibilities under international instruments affecting the safety of the ships, passengers, crew or cargo 15. methods and aids to prevent pollution of the environment by ships 16. knowledge of national legislation for implementing international agreements and conventions		

STCW Code, as amended: Part A; Chapter III – Engine department
Table A-III/5, page 168
Function: Controlling the operation of the ship and care for persons on board at the support level

Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Apply precautions and contribute to the prevention of pollution of the marine environment	Knowledge of the precautions to be taken to prevent pollution of the marine environment Knowledge of the use and operation of anti-pollution equipment Knowledge of the approved methods for disposal of marine pollutants	Assessment of evidence obtained from one or more of the following: 5. approved in-service experience 6. practical training 7. examination 8. approved training ship experience	Procedures designated to safeguard the marine environment are observed at all times

Section AIII/6 of Chapter III (Electrician)

STCW Code, as amended: Part A; Chapter III – Engine department
Table A-III/6, page 176
Function: Controlling the operation of the ship and care for persons on board at the operational level

Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Ensure compliance with pollution-prevention requirements	Prevention of pollution of the marine environment Knowledge of the precautions to be taken to prevent pollution of the marine environment Anti-pollution procedures and all associated equipment Importance of proactive measures to protect the marine environment	Examination and assessment of evidence obtained from one or more of the following: 6. approved in-service experience 7. approved training ship experience 8. approved training	Procedures for monitoring shipboard operations and ensuring compliance with pollution-prevention requirements are fully observed Actions to ensure that a positive environmental reputation is maintained

STCW Code, as amended: Part A; Chapter III – Engine department
Table A-III/7, page 182
Function: Controlling the operation of the ship and care for persons on board at the support level

Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Apply precautions and contribute to the prevention of pollution of the marine environment	Knowledge of the precautions to be taken to prevent pollution of the marine environment Knowledge of the use and operation of anti-pollution equipment/agents Knowledge of the approved methods for disposal of marine pollutants	Assessment of evidence obtained from one or more of the following: 9. approved in-service experience 10. practical training 11. examination 12. approved training ship experience	Procedures designated to safeguard the marine environment are observed at all times

The course content revolves around current environment prevention legislation guidance on emergency situations.

Maritime pollution has always been an issue that evokes diverse opinions and also involves the non-maritime community: news about pollution incidents always bounces across TV screens and newspapers around the world and effective media management should be carefully looked into and planned for by maritime actors.

Specific pedagogical instruments such as group work, simulation and role playing game are included to develop a brand new type of course where traditional lectures are reduced to a minimum, leaving room for active participation by the trainees: the topic is such that it would be easy to fall into the extremism of the pure theoretical approach which is boring for learners and not competence-oriented, so a more active inclusion of the learners was decided.

The course should preferably be held in English, in order to produce the minimum deviation from the original text of the legislation.

The active approach fits well with the CLIL (Content and Language Integrated Learning) methodology, using English as second language; this would be particularly useful for the youngest trainees or in each case where there is a need of a growth in the language competences. CLIL is a teaching methodology well established all over Europe, in which students learn a certain subject by means of a foreign language: it has a dual-focused purpose, namely the learning of the content and the simultaneous learning of a foreign language. CLILs main characteristics are the particular attention paid to the use of active learning strategies (such as group work, simulation, etc.). The use of authentic teaching materials and the use of Information and Communication Technologies are also often encouraged.

7. Course duration and timetable

The course can be provided with different lengths, in order to fit with the various trainee categories:

- ✓ *refreshment version*: requires 2 days (16 hours) teaching time, intended for Navigation Officers/Engineer Officers and shore based personnel (experts)
- ✓ *extended version*: requires 5 days (40 hours) teaching time, intended for cadets and shore based personnel (other than experts)

In designing this extended course the numbers of days or hours are for reference only whereas in the case of the shorter version, designed for seafarers, two days is considered sufficient.

The extended version covers all the relevant aspect of the legislation, with sufficient time left for the execution of the in class tasks to prove that learning is taking place; a suggested timetable for the course is as follows:

Extended version		
Days of course	*Morning* *8:00 – 12:00*	*Afternoon* *13:00 – 17:00*
Day 1	Describe the types of pollution and intervention techniques	Recognize the main sources of law in the marine environment field (with TASK)
Day 2	Apply the BWM Convention technical content	Apply the BWM Convention technical content (TASKS)
Day 3	Apply the MARPOL Convention technical content	Apply the MARPOL Convention technical content (TASKS)
Day 4	Apply the MARPOL Convention technical content	Apply the MARPOL Convention technical content (TASKS)
Day 5	Deal with a pollution incident	Deal with a pollution incident (TASK) + final written test

The refreshment version is largely oriented towards new issues and the latest amendments to the Conventions dealing with marine pollution; a suggested timetable for the course is as follows:

Refreshment version		
Days of course	*Morning* *8:00 – 12:00*	*Afternoon* *13:00 – 17:00*

Day 1	New MARPOL amendments and the BWM Convention technical content	Apply the new MARPOL amendments and the BWM Convention technical content (TASKS)
Day 2	Further studies on new issues about marine environment protection (Energy efficiency, noise reduction, Polar Code etc.)	Deal with a pollution incident (TASK) + final written test

8. *Teaching facilities and equipment*

The course requires a flipchart, video projectors or any arrangements to show slide presentations, computers (3 to 5 as a minimum) to be left available for trainees, with internet access, nautical charts including relevant MARPOL special area zones, videos as deemed necessary, an up-to-date copy of each Convention that is topic of the course or, at least the MARPOL and BWM Convention (electronic formats are allowed and desirable).

For the execution of the active tasks facsimile certificates and real-life formats of the record books are also needed; sample certificates have to be compiled in such a way that seems to be authentic, but some of them should be expired.

Certificates:

- ✓ *International Oil Pollution Prevention (IOPP) Certificate*
- ✓ *International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk*
- ✓ *International Sewage Pollution Prevention (ISPP) Certificate*
- ✓ *International Air Pollution Prevention (IAPP) Certificate*
- ✓ *Engine International Air Pollution Prevention (EIAPP) Certificate*
- ✓ *International Energy Efficiency (IEE) Certificate*

Plans and books:

- ✓ *Shipboard Oil Pollution Emergency Plan*
- ✓ *Oil Record Book, parts I and II*
- ✓ *Shipboard Marine pollution emergency plan for Noxious Liquid Substances*
- ✓ *Procedures and Arrangements Manual (chemical tankers)*
- ✓ *Cargo Record Book*
- ✓ *Garbage Management Plan*
- ✓ *Garbage Record Book*
- ✓ *Bunker delivery notes*

Note: traditional lectures by slide presentations should be kept to a minimum, but for this purpose relevant presentations should be prepared by the trainer with no particular requirements other than the adequacy to the course, as evaluated on the basis of his professional judgement skills.

9. *Evaluation*

The final assessment should follow a dual mechanism:

1. Theoretical evaluation: written/oral test (recommended weight 40%);
2. Competence oriented evaluation: results from observations during simulation activity (recommended weight 60%).

Each assessment action should be followed by a debriefing, that allows it to be positive and not punitive, in order to really provide a strong competence-oriented evaluation. Ongoing assessment is also to be performed.

Since the content can slightly differ from one course to another and the course itself should be adapted to the audience, by opinion of the trainer, also taking into account prior learning, the topics to be included in the written test can be chosen by the trainer.

However, section 11 of this document provides some guidelines about the most suitable type of assessment for each subject.

The adequateness of the dialogues during simulation (in terms of politeness too) and the behavior during eventual remarks within the debriefing are elements of evaluation.

As an example, the written tests can be arranged as follows (example of two T/F questions where any of the four statements can be true or false):

1. Non-tankers ship with gross tonnage of 400 GT or more should have:	**T**	**F**
IOPP		
SOPEP		
Oil record book – Part I		
Oil record book – Part II		
2. The *MARPOL, Annex II:*	**T**	**F**
deals with chemicals		
deals with petrochemicals		
identifies 5 substances categories		
sets limits on the residual cargo content inside the tanks		

…

As an example, one of the check-lists to be used to carry out observations during simulation activities/group works can be arranged as follows:

	EXCELLENT (4)	**GOOD (3)**	**SUFFICIENT (2)**	**POOR (1)**
JOINT EFFORT	☐ Fully carries out her/his part and even more ☐ Takes the initiative in helping the group to	☐ Performs adequately her/his part ☐ Takes active part in the group internal organization	☐ Carries out the most of her/his part ☐ Provides some contributes to the group	☐ Carries out her/his part partially ☐ Doesn't provide contributes to the group

	improve the internal organization ☐ Provides a lot of ideas for the development of the teamwork ☐ Assists other group mates	☐ Takes active part in the discussion of the topic ☐ Offers encouragement to others	internal organization ☐ Listens to others, on rare occasions suggests something ☐ Is worried about her/his performance	internal organization ☐ Assumes a bored attitude during activities ☐ Show no interest in the group performance
COMMUNICATION	☐ Communicates clearly desires, ideas, personal needs and feelings ☐ Frequently expresses appreciation for the other members of the group ☐ Expresses positive feedbacks to others ☐ Accepts feedbacks from others	☐ Usually shares feelings and the thoughts with other partners of the group ☐ Often encourages and appreciates others members of the group ☐ Expresses feedbacks in ways that do not offend ☐ Accept feedbacks, but try to give them little importance	☐ Rarely expresses feelings and preferences ☐ Sometimes encourages and appreciates others ☐ It seems that her/he considers as due the others' effort ☐ Sometimes her/he hurted the feelings of ☐ others with feedbacks ☐ Her/he keeps supporting her/his point of view after feedbacks	☐ Never has expressed excitement and/or frustration ☐ Never has encouraged and appreciated others ☐ Is openly rude when giving feedbacks ☐ She/he refused to listen to feedbacks
TIME MANAGEMENT	☐ The work has always been completed on time or sometimes earlier than required	☐ The work has been completed within the agreed time limit	☐ The work has been delayed but completed in time to be accepted	☐ The work is incomplete

10.Course outline

Knowledge understanding and proficiency	*Lecture hours*	*Tasks hours*
1. Describe the types of pollution and intervention techniques		
1.1. General causes and effects of marine pollution	1,0	
1.1.1. Difference between organic and non-organic substances		
1.1.2. Eutrophication		
1.1.3. Effect on plankton		
1.2. Systems to counteract an oil pollution incident	3,0	
1.1.4. Use of booms		
1.1.5. Skimmers		
1.1.6. Sorbers		
1.1.7. Dispersants		
1.1.8. Procedures for biological action and in situ burning		
1.1.9. *Case studies*		
	4,0	
2. Recognize the main sources of law in the marine environment field		
2.1. Brief history of the marine environment legislation	0,25	
2.2. General legislation about maritime pollution	1,0	
2.2.1. UNCLOS (Montego Bay)		
2.2.2. Local legislation (where applicable)		
NB: countries that must comply with the EU legislation, it has to be analyzed (ex. directive 2009/123/CE)		
2.3. Brief analysis of the main IMO instruments about environment protection and pollution prevention:	1,75	
2.3.1. PSSAs concept		
2.3.2. Anti-fouling (*AFS Convention* and *Biofouling Guidelines*)		
2.3.3. Ship recycling (*Hong Kong Convention*)		
2.3.4. *BWM Convention*		
2.3.5. *MARPOL Convention* (history from OILPOL until today)		
2.3.6. MEPC resolutions systems		
2.3.7. Polar code		
Task 1		1,5
Debriefing of Task		0,5
	2,0	**2,0**
3. Apply the BWM Convention technical content		
3.1. Necessity of the ballast on board and associated risks for the spreading of *Aquatic Invasive Species*	0,5	
3.2. Application of the Convention	0,25	
3.3. Ballast water management Documentation	0,5	

3.3.1. *Ballast Water Record Book* 3.3.2. *International Ballast Water Management Certificate* 3.4. Ballast water technical management 3.4.1. Ballast water exchange 3.4.2. *Ballast water management system – BWMS* 3.4.3. Special provisions in polar waters 3.5. Biologic pollution cases 3.5.1. *Zebra Mussel* 3.5.2. *Golden mussel* 3.5.3. *North American Comb jelly* 3.5.4. *Clad-oceran Water Flea* 3.5.5. *Mitten crab* 3.5.6. *Round Goby* 3.5.7. *North Pacific Seastar* 3.5.8. *Asian kelp* 3.5.9. *European Green Crab* 3.6. Technologies for the ballast water treatment 3.6.1. Filtering 3.6.2. Disinfection by UV, ozone, oxidation, chlorination, etc. 3.6.3. Analysis of the main products on the market Relevant IMO products: ✓ *Resolution A.868(20)* ✓ *Resolution MEPC.124(53)* ✓ *Resolution MEPC.174(58)* ✓ *Resolution MEPC.127(53)* ✓ *Resolution MEPC.149(55)* ✓ *Resolution MEPC.150(55)* *Task 1, Task 2, Task 4* *Debriefing of Tasks*	1,0 0,5 1,25 **4,0**	3,0 1,0 **4,0**
4. Apply the MARPOL Convention technical content 4.1. Pollution by oil (Annex I) 4.1.1. Generals 4.1.2. Special areas 4.1.3. Survey and certificates 4.2. Requirements for machinery spaces (Annex I) 4.2.1. Discharge of oily mixtures 4.2.2. Filling of the oil record book, part I 4.3. Requirements for the cargo area of oil tankers (Annex I)	0,5 1,5 2,0	

4.3.1. SBTs 4.3.2. Double hull and double bottom 4.3.3. Slop tank 4.3.4. Crude oil washing 4.3.5. Stability 4.3.6. Oil discharge monitoring and control system 4.3.7. Filling of the oil record book, part II 4.3.8. Special provisions in polar waters		
4.4. Shipboard Oil Pollution Emergency Plan – SOPEP (Annex I)	1,0	
4.5. Control of pollution by noxious liquid substances (Annex II) 4.5.1. Generals 4.5.2. Survey and certificates 4.5.3. Special area 4.5.4. Retain and discharge of residues 4.5.5. Procedures and Arrangements Manual 4.5.6. Cargo record book	1,0	
4.6. Prevention of pollution by harmful substances carried by sea in packaged form (Annex III) 4.6.1. Stowage 4.6.2. Marking and labelling 4.6.3. Documentation 4.6.4. Packing	1,0	
4.7. Prevention of pollution by sewage from ships (Annex IV) 4.7.1. Risks from sewage 4.7.2. Survey and certificates 4.7.3. Special areas 4.7.4. Discharge of sewage 4.7.5. Special provisions in polar waters	1,0	
4.8. Prevention of pollution by garbage from ships (Annex V) 4.8.1. Definition of garbage 4.8.2. Special areas 4.8.3. Discharge of garbage 4.8.4. Garbage management plan 4.8.5. Filling the garbage record book 4.8.6. Special provisions in polar waters	2,0	
4.9. Prevention of Air Pollution from Ships (Annex VI) 4.9.1. Survey and certificates 4.9.2. Special areas 4.9.3. Ozone-depleting substances (relation with Montreal P.) 4.9.4. Nitrogen oxides NOx 4.9.5. Sulphur oxides SOx and particulate matter 4.9.6. Volatile organic compounds – VOC	2,0	

4.9.7. Shipboard incineration 4.9.8. Reception facilities 4.9.9. Bunker delivery note 4.9.10. Greenhouse gas – GHG (relation with Kyoto P.) 4.9.11. Energy efficiency for ships and related technology 4.9.12. Noise reduction from ships Relevant IMO products: ✓ *Resolution A.446(XI), A.497(XII), A.897(21)* ✓ *Resolution A.496(XII)* ✓ *Resolution MEPC.193(61)* ✓ *Resolution MEPC.201(62)* ✓ *Resolution MEPC.202(62)* ✓ *Resolution MEPC.203(62)* ✓ *Resolution MEPC.245(66)* ✓ *Resolution MEPC.251(66)* *Task 1, Task 2, Task 3, Task 4, Task 5* *Debriefing of Tasks*	 **8,0**	 7,0 1,0 **8,0**
5. Deal with a pollution incident 5.1. Manage the emergency 5.2. Contact competent authorities 5.3. Dealing with media *5.4. Case studies* *Task 6* *Debriefing of Tasks*	 1,0 0,5 1,0 1,5 **4,0**	 2,0 1,0 **3,0**
Final written test ***TOTAL***	 **22,0**	1,0 **18,0**

Note: Lecture hours and tasks hours are for guidance only

11.Learning outcomes summary

The following table provides a summary of the learning outcomes to be demonstrated at the end of the course. The reference numbers refer to the content groups specified in the Course Outline (Section 10).

Reference number	***Competence***	***Knowledge***	***Skills***	***Learning Outcomes***	***Assessment Suggested***	***Nominal Hours Suggested***
1	*Applies different types of pollution and intervention techniques*	Basis of the applicable marine ecology Biofouling procedures for produced Ships and company procedures for environment preserving	Implement correctly and on time all techniques and means for marine environment protections Motivate all crew to safeguard the sea environment	Able to apply intervention techniques in different types of pollution at sea scenarios Properly handle a pollution incident	Written/Oral Ongoing assessment is also to be performed	4h
2	*Identifies the main sources of law in the marine environment field*	Basic international requirements and local rules and marine regulatory framework IMO products implementation status and feedback		Identifies different sources of law about specific type of pollution at sea	Written/Oral	4h
3	*Apply the BWM Convention technical content*	Ship's ballast plan Ballast system and respective controlling equipment	Initiate correct actions in order to prevent any pollution into the sea Operate with the ballast and over board	Handle the ballast water system Monitor the adequateness of the relevant documents and log book	Written/Oral/ Simulation	8h

			discharge systems Maintain and correctly record relevant entries in the ships log book for solid waste and ballast operations			
4	*Apply the MARPOL Convention technical content*	Principles and safe methods of arranging for the proper loading, stowage and carriage of oil, gas and chemical cargoes Garbage handling on board Vessel's plan for solid waste handling Sewage handling and discharge Controlling machinery providing emission content information	Initiate correct actions in order to prevent any pollution into the sea Operate relevant discharge controlling apparatus Maintain and correctly record relevant entries in the ships log book for solid waste and ballast operations	Handle oil, chemical products, harmful substances in packaged form, sewage and garbage Properly manage discharges at sea Monitor the adequateness of the relevant documents and log book	Written/Oral/ Simulation	16h
5	*Deal effectively with a pollution incident*	Emergency procedures	Correctly communicate in case of actual marine pollution	Execute the right procedures in the case of an emergency	Simulation/Oral	7h

12.Specific tasks

The following are examples of active tasks designed to offer a competence based approach and to facilitate the final course assessment.

TASK 1 – Searching for legislative information other than IMO prescription (group work)

Phase 1: the trainer should create a situation requiring a need of information about the laws adopted by certain Country that use different or more stringent requirements in respect to the IMO prescriptions dealt with during the formal lessons;

Phase 2: the trainees should be divided into groups (from 2 to 5 persons), each group should be provided with internet access;

Phase 3: the trainer should assign a subject to the groups, clearly specifying the information to be found on the web, involving local regulations (for example EU regulations, directives and recommendations);

Phase 4: enough time should be left to the trainees to find information on the web and produce a brief report;

Phase 5: each group should present what has been found to the other trainees and to the trainer, in order to create a peer-to-peer teaching experience; the content, the use of appropriate terms and the exposition/dialectic performance of each learner are included as elements of assessment.

The task can involve different subjects for different groups or the same subject for each group, in order to make comparison between different performances.

TASK 2 - Searching for IMO technical information (group work)

Phase 1: the trainer should create a situation which requires a need for more detailed information about the topics dealt with during the frontal lessons, to be found on specific resolutions;

Phase 2: the trainees should be divided into groups (from 2 to 5 persons), each group should be provided with internet access;

Phase 3: the trainer should assign a subject to the groups, clearly specifying the information to be found on the web, mainly involving IMO resolutions called back from the conventions;

Phase 4: enough time should be left to the trainees to find information on the web and produce a brief report;

Phase 5: each group should present what has been found to the other trainees and to the trainer, in order to create a peer-to-peer teaching experience; the content, the use of appropriate terms and the exposition/dialectic performance of each learner are included as elements of assessment.

The task can involve different subjects for different groups or the same subject for each group, in order to make comparison between different performances.

TASK 3 - Navigation involving special areas (group work)

Phase 1: the trainer should create a certain number of passage planning sheets involving positions with different distance from the coast and different placing in respect to the MARPOL special areas, and in addiction she/he can prepare a scenario involving special coastal advice in form of a NAVTEX warnings (for example involving areas not to be considered adequate for the ballast intake) or special needs of the ship;

Phase 2: the trainees should be divided into groups (from 2 to 5 persons), and each group should be asked to prepare a plan for the discharge of MARPOL products or the intake of ballast, taking into account the information provided;

Phase 4: enough time should be left to the trainees to find information, if needed, about the boundaries of the special areas in order to prepare a list of actions that can be carried out without contravening MARPOL prescriptions, for each leg/position of the voyage plan;

Phase 5: each group should then present the conclusions to the class; the content, the use of appropriate terms and the exposition/dialectic performance of each learner are included as elements of assessment.

TASK 4 - Technical arrangements and ship documentation (project work/group work)

Phase 1: the trainer should create different ship's data sheets including, but not limited to, type, date of keel laying, GT,NT, dimensions;

Phase 2: the trainees should be divided into groups (from 2 to 5 persons), and each group should be asked to prepare a list of all the requirements that the assigned ship should respect to be in compliance with MARPOL and BWM Conventions, both from the technical and administrative point of view (plants, arrangements, certificates, registers, books, etc.);

Phase 5: each group should then present the conclusions to the class; the content, the use of appropriate terms and the exposition/dialectic performance of each learner are inclded as elements of assessment...

TASK 5 - PSC inspection simulation (role playing game)

Phase 1: the trainer should create a scenario providing information such as the type of ship concerned (flag, GT, etc.) and the Country where the inspection takes place;

Phase 2: the trainees should be divided into two groups one expected to act like PSC Officers and the other expected to act like the crew of the ship; this second group should be provided with mock Certificates;

Phase 3: enough time should be left for the trainees to study the situation and prepare the simulation; in this phase attention from the assessor should be paid to the crew because they have to demonstrate the ability to select the correct documentation for their ship, mind the validity of the certificate and simulate the correct filling of at least one page of the record books;

Phase 4: the simulation takes place and all the events are up to the trainees; in this phase attention from the assessor should be paid to the PSCO because they have to demonstrate the ability to check the correctness and validity of the documentation presented and the adequate filling of the proper record books. For both groups the completion of an appropriate conversation and the behaviour during the assessor eventual remarks of each learner are inclded as elements of assessment...

TASK 6 - Simulation of pollution accident (role playing game)

Phase 1: the trainer should create a scenario providing information such as the type of ship concerned (flag, GT, etc.) and the waters/port where the casualty takes place;

Phase 2: the trainees should be divided into the following groups),each expected to act as required by their own role:

- ✓ Group 1: Ship's crew (from 3 to 8 persons), that means Master, Officers, Environmental Officer where applicable, Safety Officers etc.
- ✓ Group 2: Company (from 3 to 8 persons), that means DPA, media referent, crisis unit, managers, etc.
- ✓ Group 3: Coastal State Authorities and rescue crew (from 1 to 4 persons), that means harbour master, SAR units etc.
- ✓ Group 4: Media (from 1 to 3 persons), that means local and global media (TV and newspaper journalists etc.)
- ✓ Group 5 (optional): ship's classification societies and flag Authorities
- ✓ Group 6 (optional): other ships' crew
- ✓ Group 7 (optional): salvage crew
- ✓ Group 8 (optional): P&I clubs or other insurance companies

Phase 3: groups will be placed in different rooms, if possible, allowing them to communicate each other using VHF W/T or interphone where applicable; enough time should be left for the trainees to study the situation and prepare the simulation, but no information should be submitted about the type of emergency because it should be unexpected;

Phase 4: the simulation takes place when the trainer will inform the group acting like the crew of the ship about the type of emergency; the trainer has to provide groups with sheets containing information coherent with their own role (press releases, ship's plan etc.), but events are up to the trainees. For both groups the completion of appropriate conversations, documents and actions as well as the behaviour during eventual assessor remarks of each learner are included as elements of assessment.

Appendix –ECVET Additional Requirements

The MariePRO Maritime Environment Awareness course included **Learning outcomes,** which are statements of knowledge, skills, and competence that can be achieved in a variety of contexts and acknowledges that **Units of learning outcomes** are components of qualifications. Units can be assessed, validated and recognized. The course also is in line with the following requirements.

ECVET points give additional information about learning outcomes and qualification in a numerical form. **Credit** will be given for assessed and documented learning of a learning outcome of a learner and that Credit will be considered to be transferred to other contexts and accumulated to achieve a qualification on the basis of the qualification standards and regulations existing in the participating countries.

Mutual Trust and partnership among participating organisations will be expressed in Memoranda of Understanding and Learning Agreements that is to say that organisations involved are fully aware of the requirements for the agreement as outlined below. A **Memorandum of Understanding (**MoU) is expected to form the framework for cooperation between the competent institutions with the aim of establishing first the mutual trust between the partners involved. In this MoU partner organisations have mutually accepted their respective criteria and procedures for quality assurance, validation and recognition of knowledge, skill and competence for the purpose of transferring **Credit**. There should also be a provision for Agreements set up by sector based organisations (e. g. by Chambers, regional and national authorities). There will be a list of organisations such as VET providers, companies, etc., who are able to operate in the framework set up by the MoU.

In order to recognise **Credit**, the competent institution in charge should be confident that the required learning outcomes have been assessed in a reliable and valid manner. It should trust that the learner's credit does concern the learning outcomes expected and these are at the appropriate level.

On the basis of the assessed outcomes, the credit should be validated and recognised by another competent institution. The transfer process should include three distinct stages:

The hosting institution should assess the learning outcomes achieved and award credit to the learner. The learning outcomes achieved and corresponding ECVET points should be recorded in a learner's personal transcript. **The sending institution** then should recognise learning outcomes that have been acquired; this recognition gives rise to the award of the units/learning outcomes and their corresponding ECVET points, according to the rules of the home system.

Credit accumulation is a process through which learners can acquire qualifications progressively by successive assessment and validation of learning outcomes. Accumulation of credit will be decided by the competent institution responsible for the award of the qualification. When the learner has accumulated the credit required and when all conditions for the award of the qualification are fulfilled, the learner should be awarded the qualification.

NB: The institutions which are interested in using the MariePRO Maritime Environment Awareness Course could make references to some existing ECVET projects for sample MoUs or Agreements or as to how ECVET requirements were implemented.

An useful example is: http://www.ecvet-projects.eu/Documents/MOTO_MoU.pdf .
For more example please refer to http://www.ecvet-projects.eu/Toolbox/Methodologies.aspx