Course guide
280621 - 280621 - Marine Pollution Prevention and Sustainability

Last modified: 27/05/2025

Unit in charge: Barcelona School of Nautical Studies
Teaching unit: 742 - CEN - Department of Nautical Sciences and Engineering.

Degree: BACHELOR'S DEGREE IN NAUTICAL SCIENCE AND MARITIME TRANSPORT (Syllabus 2010). (Compulsory subject).

Academic year: 2025 **ECTS Credits:** 6.0 **Languages:** Spanish

LECTURER

Coordinating lecturer: SANTIAGO ORDAS JIMENEZ

Others: Primer quadrimestre:
SANTIAGO ORDAS JIMENEZ - GNTM

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
1. Knowledge of environmental technologies and sustainability in the marine environment.

Transversal:
2. SUSTAINABILITY AND SOCIAL COMMITMENT - Level 1. Analyzing the world¿s situation critically and systemically, while taking an interdisciplinary approach to sustainability and adhering to the principles of sustainable human development. Recognizing the social and environmental implications of a particular professional activity.

TEACHING METHODOLOGY

Teaching will be conducted through lectures and presentations withthe support of audiovisual material.
Once a topic is started, it may raise group activities that motivaránа students to participate actively, providing news and documents; previously will be prepared as a group, the topics addressed in the course.

Critical and analytical mind would be an advantage; which must be applied in different case studies and events that occur in class.

LEARNING OBJECTIVES OF THE SUBJECT

This course will evaluate the following STCW competences (STCW A-II/1):

Ensure compliance with pollution prevention requirements
Monitor compliance with legislative requirements

? Receive, understand and synthesize knowledge.
? Set up and solve problems.
? Develop critical thinking and reasoning and defend it orally or in writing.
? Perform work and activities individually or in groups.

On the other hand, one of the objectives of this subject is provide the knowledge, understanding and proficiency of the competencies:

- Prevention of pollution of the marine environment and response procedures.
- Knowledge of the precautions taken to avoid contamination of the marine environment.
- Response procedures and all related equipment.

competencies required and defined in Section A-II/2 (Mandatory minimum requirements for certification of masters and chief mates on ships of 500 gross tonnage or more) of the Seafarers? Training, Certification and Watchkeeping (STCW) International Code.

STUDY LOAD

Type	Hours	Percentage
Self study	90,0	60.00
Hours large group	60,0	40.00

Total learning time: 150 h

CONTENTS

INTRODUCTION TO MARINE POLLUTION. OIL PROPIERTIES

Description:
Students are introduced to the basic topics of pollution and properties of oil and pollutant gases.

Full-or-part-time: 20h
Theory classes: 8h
Self study : 12h

LEGAL CONTEXT IN PREVENTION POLLUTION FIELD. MARPOL CONVENTION.

Description:
MARPOL convention explained in general terms of its articles.

Specific objectives:
This knowledge is necessary in accordance with STCW Code A-III/1 and it's developed according to OFFICER IN CHARGE OF A NAVIGATIONAL WATCH (Model course 7.03) (2014 Edition)

Basic working knowledge of the relevant IMO conventions concerning safety of life at sea, security and protection of the marine environment

Full-or-part-time: 12h 30m
Theory classes: 5h
Self study : 7h 30m

ANNEX I. PREVENTION OF POLLUTION BY OIL. PORT FACILITIES

Description:
Annex I of MARPOL is explained, about the prevention of oil pollution

Specific objectives:
This knowledge is necessary in accordance with STCW Code A-II/1 and it's developed according to OFFICER IN CHARGE OF A NAVIGATIONAL WATCH (Model course 7.03) (2014 Edition)

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

Full-or-part-time: 25h
Theory classes: 8h
Practical classes: 2h
Self study : 15h

ANNEX II Prevention of pollution by noxious liquid substances

Description:
Annex II of MARPOL on the prevention of pollution by toxic substances is explained.

Specific objectives:
This knowledge is necessary in accordance with STCW Code A-II/1 and it's developed according to OFFICER IN CHARGE OF A NAVIGATIONAL WATCH (Model course 7.03) (2014 Edition)

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

Full-or-part-time: 12h 30m
Theory classes: 3h 30m
Practical classes: 1h 30m
Self study : 7h 30m

Prevention of pollution by harmful substances in packaged form

Description:
Prevention of pollution by harmful substances in packaged form is explained.

Specific objectives:
This knowledge is necessary in accordance with STCW Code A-II/1 and it's developed according to OFFICER IN CHARGE OF A NAVIGATIONAL WATCH (Model course 7.03) (2014 Edition)

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

Full-or-part-time: 7h 30m
Theory classes: 3h
Self study : 4h 30m

Prevention of pollution by sewage from ships

Description:
Prevention of pollution by sewage from ships is explained.

Specific objectives:
This knowledge is necessary in accordance with STCW Code A-II/1 and it's developed according to OFFICER IN CHARGE OF A NAVIGATIONAL WATCH (Model course 7.03) (2014 Edition)

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

Full-or-part-time: 10h
Theory classes: 4h
Self study : 6h

Prevention of pollution by garbage from ships

Description:
Prevention of pollution by garbage from ships is explained. Garbage Management Plans.

Specific objectives:
This knowledge is necessary in accordance with STCW Code A-II/1 and it's developed according to OFFICER IN CHARGE OF A NAVIGATIONAL WATCH (Model course 7.03) (2014 Edition)

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

Full-or-part-time: 10h
Theory classes: 4h
Self study : 6h

Prevention of air pollution from ships

Description:
Prevention of air pollution from ships is explained. Reduction technologies. Fate of air emissions. EEDI, EODI, SEEMP.

Specific objectives:
This knowledge is necessary in accordance with STCW Code A-II/1 and it's developed according to OFFICER IN CHARGE OF A NAVIGATIONAL WATCH (Model course 7.03) (2014 Edition)

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

Full-or-part-time: 15h
Theory classes: 4h
Practical classes: 2h
Self study : 9h

OTHER CONVENTIONS INVOLVED IN THE MARINE POLLUTION

Description:
Different legal instruments internationally engaged in the fight against marine pollution are detailed.

Specific objectives:
This knowledge is necessary in accordance with STCW Code A-III/1 and it's developed according to OFFICER IN CHARGE OF A NAVIGATIONAL WATCH (Model course 7.03) (2014 Edition)

Basic working knowledge of the relevant IMO conventions concerning safety of life at sea, security and protection of the marine environment

Full-or-part-time: 10h
Theory classes: 4h
Self study : 6h

Spill Response. Contingency Planning and Advice

Description:
Different systems and elements are described, for pollution control and initiative of ports of refuge within the second legislative package Erika.

Specific objectives:
This knowledge is necessary in accordance with STCW Code A-II/1 and it's developed according to OFFICER IN CHARGE OF A NAVIGATIONAL WATCH (Model course 7.03) (2014 Edition)

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

Full-or-part-time: 10h
Theory classes: 3h
Practical classes: 1h
Self study : 6h

Ballast Water Management. BWM Convention

Description:
BWM Convention is explained. Treatment Technologies.

Specific objectives:
This knowledge is necessary in accordance with STCW Code A-II/1 and it's developed according to OFFICER IN CHARGE OF A NAVIGATIONAL WATCH (Model course 7.03) (2014 Edition)

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

Full-or-part-time: 10h
Theory classes: 4h
Self study : 6h

Ship Recycling. Hong Kong Convention

Description:
Hong Kong Convention is explained. Fate of ship recycling.

Specific objectives:
This knowledge is necessary in accordance with STCW Code A-II/1 and it's developed according to OFFICER IN CHARGE OF A NAVIGATIONAL WATCH (Model course 7.03) (2014 Edition)

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

Full-or-part-time: 7h 30m
Theory classes: 3h
Self study : 4h 30m

GRADING SYSTEM

The final score is the sum of the following partial grades:
Npf Nfinal = 0.5 Npf + 0.3 Nact + 0.2 Naca

Nfinal: final grade.
Npf: final test score.
Nact: continuous assessment work.
Naca: continuous assessment activities rating.

The final test consists of a part with issues related to the learning objectives of the course in terms of knowledge or understanding concepts, and a set of application exercises. Continuous assessment consists of different activities, both individual and group, summative and formative, made during the course (in the classroom and outside of it).

The reassessment of the course will consist of a final exam that will include all the contents of the subject.

EXAMINATION RULES.

If not any of the ongoing evaluation activities performed, shall be deemed not scored.

Be deemed not submitted the student / a not present at the final test or have not submitted at least 50% of the work and activities.

BIBLIOGRAPHY

Basic:
- Organización Marítima Internacional. Convenio Marpol : artículos, protocolos, anexos e interpretaciones unificadas del Convenio internacional para prevenir la contaminación por los buques, 1973, modificado por el Protocolo de 1978 y 1997. Ed. refundida. Londres: Organització Marítima Internacional, 2011. ISBN 9789280131031.
- Comprehensive manual on port reception facilities. 2nd ed. Londres: International Martime Organization, 1999. ISBN 928016094X.
- Directrices de la OMI sobre el reciclaje de buques. 2006. Londres: Organització Marítima Internacional, 2006. ISBN 9789280101478.
- Ballast water management convention. 2005. Londres: Organització Marítima Internacional, 2005. ISBN 9280100335.
- Anti-fouling systems : International Convention on the Control of Harmful Antif-Fouling Systems on Ships. 2005. Londres: Organització Marítima Internacional, 2005. ISBN 9280141953.
- Convenio de cooperación : convenio iInternacional sobre cooperación, preparación y lucha contra la contaminación por hidrocarburos. Londres: Organització Marítima Internacional, 1991. ISBN 9280134612.
- Marpol : anexo VI y código NOx 2008 y directrices para la implantación. 3a ed. Londres: Organització Marítima Internacional, 2013. ISBN 9789280131116.
- International Chamber of Shipping. Reducing greenhouse gas emissions : a guide to IMO regulatory compliance. London: Marisec Publications, [2022]. ISBN 9781913997311.
- Anwar, Nadeem; Churcher, Linda. Ballast water management. 14th edition. Scotland, UK: Witherbys, 2023. ISBN 9781914993640.

Complementary:
- Manual sobre la contaminación ocasionada por hidrocarburos, vol. 1, Prevención. 2a ed. Londres: Organització Marítima Internacional, 2011. ISBN 9789280131062.
- Manual on chemical pollution : section 2: Search and recovery of padkaged goods lost at sea. 2007. London: Organització Marítima Internacional, 2007. ISBN 9789280142228.
- Manual on oil pollution : section III: Salvage. 2nd ed. Londres: Organització Marítima Internacional, 1997. ISBN 9789280114423.
- Manual on oil pollution : section IV, combating oil spils. Londres: Organització Marítima Internacional, 2005. ISBN 9280141775.
- Manual on oil pollution : section V: Administrative aspects of oil pollution response. 2nd ed. Londres: Organització Marítima Internacional, 2009. ISBN 9789280115000.
- Civil liability for oil pollution damage. Londres: Organització Marítima Internacional, 1996.
- Directrices OMI/PNUMA sobre aplicación de los dispersantes de derrames de hidrocarburos y consideraciones ambientales. 2a ed. Londes: Organització Marítima Internacional, 1995. ISBN 9280135082.
- Organització Internacional Marítima. Manual on oil pollution : section VI: IMO guidelines for sampling and identification of oil spills. London: International Maritime Organization, 1998. ISBN 9789280114515.
- Manual sobre la contaminación ocasionada por hidrocarburos : parte IV: Lucha contra los derrames de hidrocarburos. 2a ed. Londres: Organización Marítima Internacional, 2005. ISBN 9280100823.