



Course guide

280815 - 280815 - Maintenance, Management and Life Cycle Optimization

Last modified: 27/05/2025

Unit in charge: Barcelona School of Nautical Studies

Teaching unit: 742 - CEN - Department of Nautical Sciences and Engineering.

Degree: MASTER'S DEGREE IN NAVAL AND OCEAN ENGINEERING (Syllabus 2017). (Compulsory subject).

Academic year: 2025 **ECTS Credits:** 5.0 **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer: RAMON GRAU MUR

Others: Primer quadrimestre:
RAMON GRAU MUR - MUENO

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:

MUENO_CE13. Knowledge of systems engineering applied to the definition of a ship, artifact or maritime platform through the analysis and optimization of its life cycle

MUENO_CE15. Knowledge of economics and business management in the maritime field

General:

MUENO(CG2). Ability to conceive and develop solutions that are technically, economically and environmentally appropriate to the needs of maritime or integral transportation of people and goods, of the use of oceanic resources and of the marine subsoil (fishing, energy, minerals, etc.), adequate use of the marine habitat and means of defense and maritime security)

MUENO(CG5). Ability to design and control the construction, repair, transformation, maintenance and inspection processes of previous mills

MUENO(CG7). Ability to integrate complex maritime systems and translation into viable solutions

MUENO(CG12). Ability to manage the operation of ships and maritime devices, and the engineering necessary for their safety, operation, logistical support and maintenance

MUENO(CG14). Ability to analyze, assess and correct the social and environmental impact of technical solutions

MUENO(CG15). Ability to organize and direct multidisciplinary work groups in a multilingual environment, and to generate reports for the transmission of knowledge and results

Transversal:

CT2. SUSTAINABILITY AND SOCIAL COMMITMENT: Know and understand the complexity of economic and social phenomena typical of the welfare society, being able to relate welfare to globalization and sustainability; acquire skills to use in a balanced manner compatible technology, technology, economics and sustainability.

CT3. TEAMWORK: Ability to work as a member of an interdisciplinary team, either as a member or performing management tasks, with the aim of contributing to projects pragmatically and sense of responsibility, assuming commitments considering the resources available.

CT4. EFFECTIVE USE OF INFORMATION RESOURCES: Manage the acquisition, structuring, analysis and visualization of data and information in the field of specialty, and critically evaluate the results of this management.

CT5. THIRD LANGUAGE Learning a third language, preferably English, with adequate oral and written and in line with the future needs of the graduates.



Basic:

CB6. Possess knowledge and understanding that provide a basis or opportunity to be original in the development and / or application of ideas, often in a research context.

CB7. That the students can apply their knowledge and ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their study area.

CB8. Students should be able to integrate knowledge and handle the complexity of making judgments based on information that, being incomplete or limited, includes reflections on the responsibilities social and ethical linked to the application of their knowledge and judgments.

CB9. That students can communicate their conclusions and the knowledge and rationale underpinning to specialists and non specialists clearly and unambiguously.

CB10. Students must possess the learning skills that enable them to continue studying in a way that will be largely self-directed or autonomous.

TEACHING METHODOLOGY

Receive, understand and synthesize knowledge.

Develop reasoning and critical spirit.

LEARNING OBJECTIVES OF THE SUBJECT

Develop and manage the engineering of logistical support and the maintenance and repair of ships and artefacts

STUDY LOAD

Type	Hours	Percentage
Hours large group	45,0	36.00
Self study	80,0	64.00

Total learning time: 125 h

CONTENTS

1. Management and exploitation of maritime industries

Description:

Management and exploitation of maritime industries.

Maintenance management

Full-or-part-time: 14h

Theory classes: 3h

Guided activities: 3h

Self study : 8h



2. Systems engineering

Description:

Operational and logistic requirements, sustainability, process of obtaining a system, management plans, production and strategies.

Application of engineering to a vessel and / or device.

Analysis techniques

Organization of works

Full-or-part-time: 45h

Theory classes: 18h

Guided activities: 18h

Self study : 9h

3. Systems logistics

Description:

Life cycle, configuration, life time analysis, reliability, maintenance, logistic support analysis.

Maintenance contracts.

Application of logistics to a vessel and / or device

Full-or-part-time: 41h

Theory classes: 16h

Guided activities: 16h

Self study : 9h

4. Costs

Description:

Concepts of price, investment, expense and cost.

Application to the project and construction of ship and artifact.

Costs of a ship throughout its life.

Profitability and business profit

Full-or-part-time: 25h

Theory classes: 8h

Guided activities: 8h

Self study : 9h

GRADING SYSTEM

The final grade is the sum of the following partial grades:

$$N_{final} = 0,2 \, N1c + 0,2 \, N2c + 0,6 \, Naf$$

N_{final} : final grade of the subject

$N1c$: qualification of the first evaluation

$N2c$: qualification of the second evaluation

Naf : qualification of the final evaluation

EXAMINATION RULES.

If one of the assessment activities is not carried out, it will be considered not rated.

It will be considered Not Presented when a minimum of 80% of the assessment activities is not carried out.



BIBLIOGRAPHY

Basic:

- Conde Cavero, Ricardo; García Saura, Antonio; Martínez Vidal, Flori. Guía práctica de gestión del mantenimiento industrial. Cornellà de Llobregat: Balarti, 2012.
- Duffuaa, Salih; Raouf, A.; Campbell, John Dixon. Sistemas de mantenimiento : planeación y control. México D.F.: Limusa Wiley, 2000. ISBN 9681859189.
- Bona, José Ma de. La gestión del mantenimiento : guía para el responsable de la conservación de locales e instalaciones : criterios para la subcontratación. Madrid: Fundación Confemetal, 1999. ISBN 848978681X.
- González Fernández, Francisco Javier. Teoría y práctica del mantenimiento industrial avanzado. 5a edición. Madrid: Fundación Confemetal, [2015]. ISBN 9788415781356.
- Peidró Barrachina, Jorge L.; Tormos Martínez, Bernardo; Olmeda González, Pablo. Problemas de ingeniería del mantenimiento. Valencia: Universidad Politécnica de Valencia, 2000. ISBN 8477219664.