Course guide
280618 - 280618 - Stowage

Last modified: 13/02/2026

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:** 12.0 **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer: FRANCISCO JAVIER MARTINEZ DE OSÉS

Others: Segon quadrimestre:
CRISTINA CAMPOS TORESANO - Grup: GN
JUAN JOSÉ RIOS DELGADO - Grup: GN

PRIOR SKILLS

Elementary knowledge of ship's theory: ships' nomenclature, drafts, trim, stability, cutting stresses, bending moments.

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
2. Knowledge and ability to perform calculations stowage and securing of the goods. Meteorology of the wineries. Equipment for loading and unloading ships, operation and calculation. S special transport facilities afloat. Review, planning, calculation of loading, stowage and lashing. Dangerous goods. Protection of goods design and calculation. Measurement and control equipment.
3. Knowledge of the organization and management capacity for repair projects, installation, modification and maintenance of loading equipment, storage and security systems and means of loading and auxiliary vessel.
4. Knowledge of maintenance equipment load measurement and control systems of the atmospheres of cargo space and equipment of tankers for transportation of liquefied petroleum natural gas oil, transportation of crude oil derivatives and chemicals .

Transversal:
1. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 2. Using strategies for preparing and giving oral presentations. Writing texts and documents whose content is coherent, well structured and free of spelling and grammatical errors.

TEACHING METHODOLOGY

· Understanding, knowledgement and sintetizing of all the concepts
· Propose and resolve problems
· Propose and resolve loading and unloading plans, including stowage
· Perform individual and group works
· Develop reasoning and critical spirit and defend it orally and / or in writing.

LEARNING OBJECTIVES OF THE SUBJECT

The students at the end the subject will demonstrate:
- Know and is expert on the stowage and cargo lashing, systems.
- Is able to assess the loading and discharging, devices.
- Is able to carry out studies of stowage and lashing.
- Is able to design and calculate the cargo protection devices.
- Is able to organize and manage repairing projects, installation, modifying and maintenance of cargo, stowage and safety systems, cargo and auxiliary devices.

Competencies
The specific competencies included in CE 25, 26 and 27 together with the ones of chart A-II/1 of the STCW convention: "Monitor the loading, stowage, securing, care during the voyage and the unloading of cargoes" and part of the chart A-II/2: "PLan and ensure safe loading, stowage, securing care, during the voyage and unloading cargoes".

STUDY LOAD

Type	Hours	Percentage
Hours large group	120,0	40.00
Self study	180,0	60.00

Total learning time: 300 h

CONTENTS

(ENG) Estiba, introducción y evolución histórica.

Description:
Elements used for loading, unloading, and lashing. Cables, Cable calculations.

Full-or-part-time: 26h
Theory classes: 4h
Practical classes: 4h
Self study : 18h

(ENG) RO- RO Cargo

Description:
Stowage, transport, calculations and stowage plans

Full-or-part-time: 26h
Theory classes: 4h
Practical classes: 4h
Self study : 18h

(ENG) Containers.

Description:
Stowage, DG cargo segregation, transport, calculations and stowage plans

Full-or-part-time: 59h
Theory classes: 8h
Practical classes: 10h
Self study : 41h

(ENG) Cereals.

Description:
Stowage, transport, calculations and loading /unloading plans

Full-or-part-time: 26h
Theory classes: 4h
Practical classes: 4h
Self study : 18h

(ENG) Coal, minerals and concentrates

Description:
Stowage, transport, calculations and loading /loading plans

Full-or-part-time: 26h
Theory classes: 4h
Practical classes: 4h
Self study : 18h

(ENG) Heavy loads.

Description:
Vessel types, loading and unloading systems, stowage, transport .

Full-or-part-time: 13h
Theory classes: 2h
Practical classes: 2h
Self study : 9h

(ENG) Liquid and gas bulk cargo.

Description:
Vessel types. loading and unloading systems, calculations, loading/unloading plans.

Full-or-part-time: 41h
Theory classes: 6h
Practical classes: 6h
Laboratory classes: 2h
Self study : 27h

(ENG) Operation in other type of vessels.

Description:
Reefer ships
Woodships carriers
Cement carriers
OBO, OSV, etc.

Specific objectives:
To provide the basic particulars and preliminary elements of working; of other types of ships not seen in other chapters.

Related activities:
Practical loading activities of the described ships' types.

Full-or-part-time: 34h
Theory classes: 24h
Guided activities: 10h

GRADING SYSTEM

The final mark is the sum of the partial marks as follows:
Nfinal = 0,4 Npp1 + 0,4 Npp2 + 0,2 Nec
Only students having delivered all the course activities, will be afforded to do the final exam, having attended the 80% of the classes.

Nfinal: Final mark
Npp1: First partial exam mark
Npp2: Second partial exam mark
Nec: Continuous evaluation

The GNTM is a presential career, then the student that had no attended the 85% minimum of classes, will not pass.

EXAMINATION RULES.

All activities and/or continuous evaluation acts, not made or late delivery, will not be evaluated.
It is not afforded any kind of documents during the velauation activities. Professors will provide tables and or information needed for the developping of the exercices.
Copy or talk, during during an exam, will mean the retirement of the exam.

BIBLIOGRAPHY

Basic:
- González Blanco, Ricardo. Manual de estiba para mercancías sólidas [on line]. Barcelona: Edicions UPC, 2006 [Consultation: 29/06/2020]. Available on: http://hdl.handle.net/2099.3/36707. ISBN 9788483018941.
- Knot t, John R. Lashing and securing of deck cargoes : incluiding packaged timber, vehicles on ro-ro vessels and ISO containers in non-purpose built ships. 2nd ed. London: The Nautical Institute, 1994. ISBN 1870077180.
- Marí Sagarra, Ricard ... [et al.]. El Transporte de contenedores : terminales, operatividad y casuística [on line]. Barcelona: Edicions UPC, 2003 [Consultation: 29/06/2020]. Available on: http://hdl.handle.net/2099.3/36758. ISBN 8483016907.

Complementary:
- International Association of Classification Societies. Bulk carriers : guidance and information on bulk cargo loading and discharging to reduce the likelihood of over-stressing the hull structure. London: IACS, 1997.
- International Chamber of Shipping. Safe transport of containers by sea : guidelines on best practices. London: Marisec, 2008.
- Roberts, Peter. Watchkeeping safety and cargo management in port : a practical guide. London: The Nautical Institute, 2008. ISBN 1870077296.
- Thomas, Owen O.; Thomas, R. E. Thomas' stowage : the properties and stowage of cargoes. 2nd ed. Glasgow: Brown, Son & Ferguson, 1985. ISBN 0851745032.

- House, D. J. Cargo work for maritime operations. 8th ed. Oxon: Routledge, 2016. ISBN 0750665556.
- Alders, A.W.C. Reefer transport and technology. Rotterdam: Rotterdam Marine Chartering Agents, 1995. ISBN 9090084002.
- Swadi, Dhananjay. Cargo notes. Lanarkshire: Seamanship International, 2005. ISBN 1905331142.
- Fothergill, M. G. Lumber deck cargo loading manual : a practical manual for lumber deck cargoes loaded on the West Coast of Canada. London: The Nautical Institute, 2002. ISBN 9781870077422.
- Gonzalez Sañudo, Francisco. El Contenedor : la revolución permanente. Lima: Quad/Graphics, [2016]. ISBN 9789962120964.