Course guide
280626 - 280626 - Routes & Compasses

Last modified: 26/01/2024

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: 2023 **ECTS Credits:** 4.5 **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer: JORDI MONCUNILL MARIMÓN - GNTM
ÀFRICA UYÀ JUNCADELLA - GNTM

Others:

PRIOR SKILLS

All the acquired capacities in previous courses, especially Mathematics, Physics and Coastal Navigation

REQUIREMENTS

Coastal Navigation (280610)

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
1. Knowledge of navigation techniques based on the determination of the position, heading, time, speed and distance. Ability to perform calculations: navigation co Ster kinematics of the ship, reckoning, plane sailing, navigation, great circle, celestial navigation, electronic navigation and inertial navigation. Lift charts.
CE4MENTM. Develop a travel plan, including the ship's track and the management and correction of charts and publications.
CE19.GEN. Ability to carry out the installation, repair and optimize elements of navigation and marine safety.

TEACHING METHODOLOGY

MD1. Lectures
MD2. Participative lectures
MD3. Self-study by solving exercices
MD5. Learning based in problems / projects

LEARNING OBJECTIVES OF THE SUBJECT

Knowledge and use of the navigation techniques based on the determination of the position, the course, the time, the speed and distance. Be able of carrying out calculations for loxodromic and rhumb line, navigation. Knowledge the installations, repair and optimization principles of the maritime navigation elements.
Knowledge, understanding and proficiency to determine and allow for errors of the magnetic and gyroâ□□compasses.
Knowledge of the principles of magnetic and gyroâ□□compasses
An understanding of systems under the control of the master gyro and a knowledge of the operation and care of the main types of gyroâ□□compass

Competencies
The specific competency CE 18 together to the ones of the chart A-II/1 of the STCW convention: "Plan and conduct a passage and determine position" in its section Compass - magnetic and gyro and steering control system and the ones in chart A-II/2 "Determine and allow for compass errors".

STUDY LOAD

Type	Hours	Percentage
Hours medium group	20,0	17.78
Guided activities	4,0	3.56
Hours large group	21,0	18.67
Self study	67,5	60.00

Total learning time: 112.5 h

CONTENTS

Topic 1. Rhumb line and great circel ruote

Description:
Description and mathematical development of rhumb line and great circle routes. Know its advantages and disadvantages of the orthodromic navigation on the loxodromic. Course calculation and orthodromic distance. Study of the constants of the orthodromic route and its calculation. Particular cases of orthodromic routes . Equation of the orthodromic and its calculation.

Full-or-part-time: 13h 20m
Theory classes: 4h
Practical classes: 4h
Self study : 5h 20m

Topic 2.Composite great circle route

Description:
Topic 2. Composite great circle route. Discussion. Orthodromic route points. Drawn orthodromic routes on the mercator charts and in the gnomonic charts also.

Full-or-part-time: 0h 16m
Theory classes: 0h 04m
Practical classes: 0h 04m
Self study : 0h 08m

Topic 3. Route Planning .

Description:
Route Planning .Voyage plan, Marine charts, sailing directions , pilot books , books of headlights and radios, etc. Best routes . Combination of routes.

Full-or-part-time: 0h 06m
Theory classes: 0h 02m
Practical classes: 0h 01m
Self study : 0h 03m

Topic 4. Compasses

Description:
1.Different types of compasses
2. Magnetic compass, gyroscope machanical and optical,
3. Introduccion of magnetisme . Deviation equation.

Full-or-part-time: 0h 10m
Theory classes: 0h 04m
Practical classes: 0h 02m
Self study : 0h 04m

Topic 5. Preliminary compensation and rectification.

Description:
Preliminary compensation and rectification. Components of the coefficients B and C. Elements used in compensation.

Full-or-part-time: 0h 27m
Theory classes: 0h 08m
Practical classes: 0h 04m
Guided activities: 0h 04m
Self study : 0h 11m

GRADING SYSTEM

Examen of routes: 50 %
Examen of compasses: 50 %

EXAMINATION RULES.

The student will not be presented as not present in the Routes and / or Compass tests.
In the performance of the tests, the students will only be able to have pens, pencil and non-programable calculator.

BIBLIOGRAPHY

Basic:
- Moreu Curbera, José María; Martínez Jiménez, Enrique. Astronomía y navegación. Vol. 3. 3a ed.. Vigo: [s.n.], 1972.
- Moreu Curbera, José María. Problemas de navegación. [Madrid]: [l'autor], 1977. ISBN 8440037414.
- Moreu Curbera, José María; Martínez Jiménez, Enrique. Astronomía y navegación. Vol. 1 i Vol. 2. 3a ed. Vigo: [s.n.], DL 1987-. ISBN 8485645014.

Complementary:
- Gurney, Alan; Tremps, Alistair. El Compás : una historia de exploración e innovación. Barcelona: Juventud, 2005. ISBN 8426134661.

RESOURCES

Audiovisual material:
- Nom recurs. Magnetic compass, Gyroscope