UNIVERSITAT POLITÈCNICA DE CATALUNYA BARCELONATECH

Course guide
280634 - 280634 - Graphic Expression

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

Degree:	BACHELOR'S DEGREE IN MARINE TECHNOLOGIES (Syllabus 2010). (Compulsory subject). BACHELOR'S DEGREE IN NAVAL SYSTEMS AND TECHNOLOGY ENGINEERING (Syllabus 2010). (Compulsory subject).

Academic year: 2024   **ECTS Credits:** 6.0   **Languages:** Catalan, Spanish, English

LECTURER

Coordinating lecturer:	JOSE MANUEL DE LA PUENTE MARTORELL
Others:	Primer quadrimestre: JOSE MANUEL DE LA PUENTE MARTORELL - GESTN, GTM MARTÍ GIRÓ CORCOLL - GTM Segon quadrimestre: JOSE MANUEL DE LA PUENTE MARTORELL - GESTN, GTM

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
GTM.CE4. Capacity for spatial vision and knowledge of mapping techniques, both traditional methods of geometry and metric geometry, as by the ions app computer-aided design.
GESTN.CE5. Visual spatial ability and knowledge of graphic techniques, both traditional and metric geometry descriptive geometry, and through applications of computer aided design.

TEACHING METHODOLOGY

- To develop and foster a sense of spatial reasoning, the order in the visual information, and
the graphic communication capacity.
- To recognize particular codes in Technical Drawing and visual representation, especially in the
representation of mechanic parts and mechanisms.
- To acknowledge the singularities of technical representation of ships, and the specificity of map projections.
- To get acquainted with graphic digital tools, and to acquire skills by means of strategies of drafting, design and
imaging.
- To understand and synthesize knowledge of the area through practical exercises and continuous assessment.

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LEARNING OBJECTIVES OF THE SUBJECT

Students should get a professional level in their three-dimensional vision capabilities, in their analytical spatial knowledge, and in design, using techniques of representation and graphical information, both through conventional means or analog-traditional methods of descriptive geometry and through digital or automated means, devices and software for drawing and CAD.

An introdution to Computer Graphics software aimed to future graduates and engineers

The expected learning outcomes are:

- Solving graphics problems that arise in the field of engineering and mapping
- Applying knowledge of design problems in engineering
- Developing the capacity for abstraction and creativity in three-dimensional space
- Identifying objectives of representation and design, and being able to develop plans to achieve them
- Using resources and informational services to perform tasks of representation and design

STUDY LOAD

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

Total learning time: 150 h

CONTENTS

1. Technical drawing and methods of graphical representation

Description:
Groundings of technical graphical information. Technical drawing and industrial representation. Standardization. Introduction to Computer Graphics and Compuer Aided Design

Specific objectives:
Students should acquire a professional level in their ability to read tridimensional objects, to analyze space, and to represent and design basic mechanical pieces; using both drafting procedures and computerized techniques.

Full-or-part-time: 2h 55m
Theory classes: 0h 55m
Guided activities: 1h
Self study : 1h

2. Representació de peces i mecanismes I

Description:
Symbols, standards and regulations. Scale.

Full-or-part-time: 4h
Theory classes: 1h
Practical classes: 1h
Guided activities: 1h
Self study : 1h

3. Representació de peces i mecanismes II

Description:
CAD concepts and strategies

Full-or-part-time: 4h
Theory classes: 1h
Practical classes: 1h
Guided activities: 1h
Self study : 1h

4. Representació de peces i mecanismes III

Description:
Technical sketching, Measurements, Cuts and Sections.

Full-or-part-time: 4h
Theory classes: 1h
Practical classes: 1h
Guided activities: 1h
Self study : 1h

5. Representació tècnica del vaixell

Description:
Vessel plans. Ship design drawings.

Full-or-part-time: 4h
Theory classes: 1h
Practical classes: 1h
Guided activities: 1h
Self study : 1h

6. Cartography and geometric projections

Description:
Cartography, chart drawing and geometric projections

Specific objectives:
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Full-or-part-time: 4h
Theory classes: 1h
Practical classes: 1h
Guided activities: 1h
Self study : 1h

Technical Drawing and Computer Graphics in Engineering

Description:
An introduction to Compuer Graphics and CAD sofware

Full-or-part-time: 1h
Theory classes: 1h

GRADING SYSTEM

The final grade is obtained from two axis: 1) the student work and tests performed during the classes (50%), and 2) the score of the final exam.

A qualification reassessment test will be performed for students who meet the requirements of the regulations of the center. That final exam will encompass all subjects taught during the course.

EXAMINATION RULES.

The final exam is mandatory to get a final grade. Otherwise, the final grade will be 'Not Presented'

BIBLIOGRAPHY

Basic:
- Codina Muñoz, Xavier. Geometría descriptiva para dibujo técnico : sistema diédrico directo, sistema axonométrico y poliedros. Barcelona: Media, 1995. ISBN 8489288003.
- Asociación Española de Normalización y Certificación. Dibujo técnico : normas básicas. 2a ed. Madrid: AENOR, 1995. ISBN 8481432717.
- Chevalier, A. Dibujo Industrial. México: Limusa, 1992. ISBN 968183948X.
- Larburu Arrizabalaga, Nicolás. Técnica del dibujo. 5a ed. Madrid: Paraninfo, 1988. ISBN 8428305250.
- Sánchez Gallego, Juan Antonio;Villanueva Bartrina, Lluís. Dibuix Tècnic. Barcelona: Universitat Politècnica de Catalunya, 2000. ISBN 9788483013861.
- Company, Pedro P. Dibujo Normalizado. València: Universidad Politécnica de Valencia. Servicio de Publicaciones, DL 1997, 2003. ISBN 84-7721-468-9.
- Gomis MartiÍ, José Mª. Expresión Gráfica.: sistemas de representación. València: Universidad Politécnica de Valencia, Servicio de publicaciones, 2003. ISBN 9788477211174.
- Ramos Barbero, Basilio; García Maté, Esteban. Dibujo técnico [on line]. 3a edición. Madrid: AENOR, [2016] [Consultation: 01/09/2022]. Available on: https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=8888. ISBN 9788417891237.

Complementary:
- Giesecke, Frederick. Modern graphics communication. Upper Saddle River, NJ: Prentice Hall, 2010. ISBN 9780135151037.
- Tupper, E. C. Introduction to naval architecture. 4a ed. Amsterdam: Elsevier, Butterworth Heinemann, [2004]. ISBN 9780750665544.
- Gomis Marti, José Maria. Curvas y superficies en diseño de ingeniería. València: Universidad Politécnica de Valencia, 1996. ISBN 8477213682.

RESOURCES

Other resources:
AUTOCAD