SUBJECT TEACHING GUIDE

G437 - Graphic Expression

First Degree in Nautical Engineering and Maritime Transport

Academic year 2026-2027

1. IDENTIFYING DATA					
Degree	First Degree in Nautical Engineering and Maritime Transport			Type and Year	Core. Year 1
Faculty	School of Maritime Engineering				
Discipline	Subject Area: Graphical Expression Basic Training Module				
Course unit title and code	G437 - Graphic Expression				
Number of ECTS credits allocated	6	Term		Semester based (1)	
Knowledge Field	Industrial engineering, mechanical engineering, automation engineering, industrial organization engineering and navigation engineering				
Web					
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. INGENIERIA GEOGRAFICA Y TECNICAS DE EXPRESION GRAFICA
Name of lecturer	JOSE ANDRES DIAZ SEVERIANO
E-mail	joseandres.diaz@unican.es
Office	E.P. de Ingeniería de Minas y Energía. Planta: + 2. DESPACHO (236)
Other lecturers	RAQUEL ARMESTO ALONSO JOAQUIN DIEZ GUTIERREZ

4. OBJECTIVES
Enable the representation of components and assemblies used in engineering applications through the use of Representation Systems
Evaluate the necessity of employing technical drawing as the most appropriate medium of communication among the vessel, the workshop, and the shipyard.
Provide the student with the requisite competencies for the precise interpretation of ship schematics
Promote the development of spatial visualization skills and their application in the calculation of geometric projections
Handle the elements of Technical Drawing, including drawing instruments, presentation formats, and scales
Achieve proficiency in the standards and normalization criteria governing technical drawing practices
Develop the capacity to infer and implement fundamental principles of engineering design
Interpretation of machinery drawings and manuals, as well as diagrams of piping, hydraulic, and pneumatic systems, in accordance with the competency 'Maintenance and repair of shipboard machinery and equipment' as defined in Regulation A-III/1 of the STCW Convention, as amended

6. SUBJECT PROGRAM	
CONTENTS	
1	1: Metric geometry and descriptive geometry. Representation systems. General concepts of metric representation systems General notions of representation. Visualization Isometric projection. Oblique projection: cavalier and cabinet projection. Perspective projections.
2	2: Metric geometry and descriptive geometry. Multiview orthographic projection system. (Spatial resolution of DAO exercises) Point, line and plane. Representation of objects. DAO. True magnitudes of flat shapes. DAO. Intersections. DAO. Minimum distances. DAO. Angles. DAO. Curves and surfaces. Polyhedra. DAO. The pyramid and the cone. The prism and the cylinder. DAO. Intersection and development of surfaces. DAO. Volume of solids.
3	3: Technical Drawing. Plane generation. Standardized representations. Auxiliary views. Sections and breaks Dimensioning. Scales. Representation of threaded elements. Sketching. Ship forms. Generation and interpretation of planes. Getting DAO planes.
4	4: Metric geometry and descriptive geometry. System dimension drawings. Digital terrain models. Point, line and plane. Intersections. Roofs. Minimum distances. True magnitudes. Topographical drawing. Representation of the terrain. Digital Terrain Models. Profiles. Grades. MDT

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Works and three exams along the course.	Work	No	No	10,00
There will be an exam on the contents of block IV between weeks 12 and 13 (22.5% of the course). There will be an exam on the contents of block III (27.5% of the course).	Written exam	No	Yes	50,00
There will be an exam on the contents of block II between weeks 8 and 9 (22.5% of the course). There will be an exam on the contents of DAO from blocks III and IV (3D modeling) (17.5% of the course).	Laboratory evaluation	No	Yes	40,00
TOTAL				100,00

Observations

Students who do not pass the continuous evaluation will be able to take the Final Exam, which has similar characteristics to the midterm exams, in the Extraordinary Exam.

Observations for part-time students

Follows the same dynamics at presential students

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

OCW
http://ocw.unican.es/ensenanzas-tecnicas/expresion-grafica-y-dao
Sist. de representación:
GEOMETRÍA DESCRIPTIVA. F. Izquierdo Asensi
GEOMETRÍA DESCRIPTIVA. (Tomo 1 - 2) F.J. Rodriguez de Abajo.
EJERCICIOS DE ... J.I.Alvaro
EXPRESIÓN GRÁFICA Y DAO. EJERCICIOS. F. Fadón
Dibujo técnico:
Dibujo Técnico. Ediciones BACHMANN – FORBERG
NORMALIZACIÓN DEL DIBUJO INDUSTRIAL. R. Villar del Fresno, R. García, J.L. Caro.
MANUAL DE NORMAS UNE SOBRE DIBUJO. Ed. AENOR
DIBUJO TÉCNICO. R. de Abajo y Alvarez. Ed. Donostiarra
D.A.O.
GRÁFICAS POR COMPUTADORA. Hearn y Baker.
http://personales.unican.es/saizl