

## SUBJECT TEACHING GUIDE

G428 - Graphic Representation Techniques

Degree in Mechanical Engineering

Academic year 2022-2023

1. IDENTIFYING DATA					
Degree	Degree in Mechanical Engineering			Type and Year	Core. Year 1
Faculty	School of Industrial Engineering and Telecommunications				
Discipline	Subject Area: Graphical Expression Basic Training Module				
Course unit title and code	G428 - Graphic Representation Techniques				
Number of ECTS credits allocated	6	Term	Semester based (1)		
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	CRISTINA MANCHADO DEL VAL
E-mail	crisrina.manchado@unican.es
Office	E.T.S. de Ingenieros Industriales y de Telecomunicación. Planta: - 2. DESPACHO (S2003)
Other lecturers	JOSE ANDRES DIAZ SEVERIANO PEDRO LASTRA GONZALEZ

### 3.1 LEARNING OUTCOMES

- Perform, manage and properly develop industrial drafts.
- Ability to use computer-aided design applications in order to:
  1. Solve geometric problems.
  2. Visualize solids, mechanisms and industrial designs.
  3. Generate and read industrial drafts in engineering projects.

#### 4. OBJECTIVES

- Ability to apply graphical engineering technique, descriptive geometry and normalization to develop industrial drafts.
- Graphical description of mechanical engineering design and ideas for visualization and communication by freehand sketching

#### 6. COURSE ORGANIZATION

CONTENTS	
1	Graphic representation techniques. Visualization. Descriptive and metric geometry.
2	Graphic representation techniques. Descriptive and metric geometry. <ul style="list-style-type: none"> <li>- Points, lines, and planes. CAD.</li> <li>- Projections and traces. CAD</li> <li>- Intersections. CAD.</li> <li>- Distances. CAD.</li> <li>- Angles. CAD</li> <li>- Curves and surfaces. CAD</li> <li>- Pyramids and cones. CAD</li> <li>- Prysms.CAD</li> <li>- Developing surfaces. CAD</li> </ul>
3	Developing of industrial drafts and freehand sketching <ul style="list-style-type: none"> <li>- Views, cuts and sections. Auxiliary views.</li> <li>- Annotations.</li> <li>- Freehand sketching.</li> <li>- Industrial drafts.</li> <li>- 3D Modelling and CAD</li> </ul>
4	Topography <ul style="list-style-type: none"> <li>- Surfaces.</li> <li>- Grading</li> </ul>

#### 7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Evaluation in laboratory (with CAD tools)	Laboratory evaluation	No	Yes	30,00
Evaluation in laboratory (with CAD Tools).	Laboratory evaluation	No	Yes	30,00
Freehand sketching exam.	Written exam	No	Yes	30,00
Freehand sketching Exam	Written exam	No	Yes	10,00
<b>TOTAL</b>				<b>100,00</b>
<b>Observations</b>				
I) Classwork is taken into account. II) submitting works in the correct dates is compulsory. III) Attendance at classes is essential. III) Marks for each part are saved to the end of the course				
- NOTE: Given the current uncertain health situation, in case the competent health and educational authorities don't allow any physical evaluation in the classroom / lab, a distance evaluation modality will be adopted using online technologies				
<b>Observations for part-time students</b>				
Check conditions with the teacher as soon as possible.				

## 8. BIBLIOGRAPHY AND TEACHING MATERIALS

### BASIC

- Jesús Félez y M<sup>a</sup> Luisa Martínez. Ingeniería Gráfica y Diseño. Editorial Síntesis. ISBN: 97-88497564-99-1. 2008
- AENOR. Normas UNE-EN ISO-128 e UNE-EN ISO-129

- OpenCourseWare de la UC

<http://ocw.unican.es/enseanzas-tecnicas/disenio-asistido-por-ordenador>

<http://ocw.unican.es/enseanzas-tecnicas/cad-3d>

<http://ocw.unican.es/enseanzas-tecnicas/expresion-grafica-y-dao>

Sist. de representación:

- GEOMETRÍA DESCRIPTIVA. F. Izquierdo Asensi

- GEOMETRÍA DESCRIPTIVA. (Tomo 1 - 2) F.J. Rodríguez de Abajo.

- EJERCICIOS DE SISTEMAS DE PLANOS ACOTADOS Y SU APLICACIÓN AL DIBUJO TOPOGRÁFICO. J.I.Alvaro

- EXPRESIÓN GRÁFICA Y DAO. EJERCICIOS. F. Fadón

- 50 PROBLEMAS RESUELTOS DE GEOMETRÍA DESCRIPTIVA. Villar, Otero

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