UNIVERSIDAD DE CASTILLA - LA MANCHA

GUÍA DOCENTE

1. General information

Course: ENGINEERING GRAPHICS
Code: 56400
Type: BASIC
ECTS credits: 6
Degree: 420 - UNDERGRADUATE DEGREE PROGRAMME IN MECHANICAL ENGINEERING
Academic year: 2022-23
Center: 605 - SCHOOL OF INDUSTRIAL ENGINEERS. AB
Group(s): 14 15 16 11 12 13
Year: 1
Duration: C2
Main language: Spanish
Second language: English
Use of additional languages:
English Friendly: Y
Web site:
Bilingual: N

Lecturer: **JOSE VICENTE ATIENZAR FUENTES** - Group(s): **15**

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Lecturer: **MARIA DE LAS NIEVES SANCHEZ CASADO** - Group(s): **14**

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2. Pre-Requisites

It is necessary that the students have skills to use the drawing tools and some previous knowledge as following:

- Basic concepts of geometry and trigonometry.
- Basic skills in 3D-space perception.
- Basic skills the technical tools: drawing tools and computer skills.

3. Justification in the curriculum, relation to other subjects and to the profession

This subject belongs to the basic learning in the Degree framework. The learning competences which are expected can be summarize in: 1) vision and resolution of 3D-problems, 2) reading and interpretation of pieces plans, 3) appropriate apply of the standardization in technical drawings.

The concepts deal in this subject will be used in next others mandatory subjects in this Degree which are common to the Industrial branch like Technical Drawing II, CAD Techniques, Engineering Projects, among others.

4. Degree competences achieved in this course

Course competences

Code	Description
CB02	Apply their knowledge to their job or vocation in a professional manner and show that they have the competences to construct and justify arguments and solve problems within their subject area.
CB03	Be able to gather and process relevant information (usually within their subject area) to give opinions, including reflections on relevant social, scientific or ethical issues.
CB04	Transmit information, ideas, problems and solutions for both specialist and non-specialist audiences.
CB05	Have developed the necessary learning abilities to carry on studying autonomously
CEB05	Capacity for spatial vision and knowledge of graphic representation techniques, using both traditional methods of metric geometry and descriptive geometry, and computer-aided design applications.
CG03	Knowledge of basic and technological subjects to facilitate learning of new methods and theories, and provide versatility to adapt to new situations.
CG04	Ability to solve problems with initiative, decision-making, creativity, critical reasoning and to communicate and transmit knowledge, skills and abilities in the field of industrial engineering.
CG06	Ability to handle specifications, regulations and mandatory standards.
CT02	Knowledge and application of information and communication technology.
CT03	Ability to communicate correctly in both spoken and written form.

5. Objectives or Learning Outcomes

Course learning outcomes

Description

Ability to interpret simple geometric shapes.
Ability to represent objects by means of multiple views and sections.
Ability to graphically depict simple objects with a sketch or drawing.
Understanding the role of standardisation in engineering design.
Understanding of the classic 2D systems for the representation of 3D objects
Knowledge of the basic rules of representation and dimensioning.
Knowledge of the most important 2D geometric transformations
Skill in the use of traditional and computerised tools for drawing up plans.
Understanding and usinge basic concepts and 2D formats in computer graphics.
Acquisition of reasonable freehand drawing skills.
Capacity for spatial design.
Acquisition of the habits and mental dexterity required to perform 2D-3D transformations.

6. Units / Contents

Unit 1:
Unit 2:
Unit 3:
Unit 4:

ADDITIONAL COMMENTS, REMARKS

This subject has 3 blocks:

Block 1. Representation systems (Lessons: 1, 2, 3, 4 and 7)

Block 2. Basic standardized representations (Lessons: 5 and 6)

Block 3. Fundamentals of Computer-Aided Design (Lessons: 8 and 9)

7. Activities, Units/Modules and Methodology

Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
Class Attendance (theory) [ON-SITE]	Lectures	CB02 CEB05 CG06 CT02	0.8	20	N	-	Presencial lectures.
Problem solving and/or case studies [ON-SITE]	Problem solving and exercises	CB02 CB03 CB04 CB05 CEB05 CG03 CG04 CG06 CT02 CT03	0.8	20	Y	N	Presencial activities with technical drawing tools.
Class Attendance (practical) [ON-SITE]	Practical or hands-on activities	CB02 CB03 CB04 CB05 CEB05 CG03 CG04 CG06 CT02 CT03	0.6	15	Y	N	CAD software.
Formative Assessment [ON-SITE]	Assessment tests	CB02 CB03 CB04 CB05 CEB05 CG04 CG06 CT02 CT03	0.2	5	Y	Y	
Study and Exam Preparation [OFF-SITE]	Self-study	CB02 CB03 CB05 CEB05 CG03 CG04 CG06 CT02 CT03	3.6	90	Y	N	
		Total:	**6**	**150**			
		Total credits of in-class work: 2.4					**Total class time hours: 60**
		Total credits of out of class work: 3.6					**Total hours of out of class work: 90**

As: Assessable training activity
Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

8. Evaluation criteria and Grading System

Evaluation System	Continuous assessment	Non-continuous evaluation*	Description
Projects	15.00%	15.00%	The works of board on Standardisation realised in the classroom will be valued.
Laboratory sessions	5.00%	5.00%	The works carried out on Standardisation by the student will be assessed.
Assessment of activities done in the computer labs	10.00%	10.00%	Evaluation of the competences acquired through a test in the equator of the subject.
Progress Tests	10.00%	0.00%	Evaluation of the competences acquired through a final global test of the subject.
Final test	60.00%	70.00%	
Total:	**100.00%**	**100.00%**	

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject , an ordinary and an extraordinary one (evaluating 100% of the competences).

Evaluation criteria for the final exam:

Continuous assessment:

The grade of the final test will be assessed with a maximum of 6 points, adding to it the score obtained by the different activities carried out during the course

depending on their specific weight. The subject will be passed if the overall score of the sum of the different activities is equal to or greater than 5 points.

The student must overcome the compulsory activities. If block 3 is not approved in the continuous evaluation, the student must submit to a face-to-face test with a date subsequent to the final test.

If these criteria are not met, it will inevitably entail a global grade of the subject not exceeding 4 points.

Non-continuous evaluation:

Evaluation criteria not defined

Specifications for the resit/retake exam:

The subject will be passed if the overall score of the activities programmed in the extraordinary call is equal to or greater than 5 points.

If block 3 is not approved in the continuous evaluation, the student must submit to a face-to-face test with a date subsequent to the final test.

If these criteria are not met, it will inevitably entail a global grade of the subject not exceeding 4 points.

Those grades of the ordinary evaluation equal or superior to 5 points of the global of block 1 or of block 2 will be conserved in this call, exempting the student from attending the activities programmed for these blocks.

Specifications for the second resit / retake exam:

The subject will be passed if the overall score of the activities programmed in the special call for completion is equal to or greater than 5 points.

The student must overcome the compulsory activities: Achieve at least 3 points on 10 points in each of blocks 1 and 2. You must also achieve in block 3 a grade equal to or greater than 5 points.

If these criteria are not met, it will inevitably entail a global grade of the subject not exceeding 4 points.

9. Assignments, course calendar and important dates

Not related to the syllabus/contents	
Hours	**hours**
Formative Assessment [PRESENCIAL][Assessment tests]	4
Unit 1 (de 4):	
Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	15
Formative Assessment [PRESENCIAL][Assessment tests]	.5
Study and Exam Preparation [AUTÓNOMA][Self-study]	40
Unit 2 (de 4):	
Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	2.5
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	10
Formative Assessment [PRESENCIAL][Assessment tests]	.25
Study and Exam Preparation [AUTÓNOMA][Self-study]	15
Unit 3 (de 4):	
Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	2.5
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	10
Formative Assessment [PRESENCIAL][Assessment tests]	.25
Study and Exam Preparation [AUTÓNOMA][Self-study]	15
Unit 4 (de 4):	
Activities	**Hours**
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	15
Study and Exam Preparation [AUTÓNOMA][Self-study]	20
Global activity	
Activities	**hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	20
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	20
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	15
Formative Assessment [PRESENCIAL][Assessment tests]	5
Study and Exam Preparation [AUTÓNOMA][Self-study]	90
Total horas:	150

10. Bibliography and Sources

Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
Rodríguez de Abajo, F.J.	Geometría Descriptiva, Tomo III. Perspectiva Axonométrica	Donostiarra		978-84-7063-466-6	2007	
Rodríguez de Abajo, F.J.	Geometría Descriptiva, Tomo IV. Sistema de perspectiva caballera	Donostiarra		978-84-7063-466-6	2007	
Félez, J., Martínez, M.L.	Ingeniería Gráfica y Diseño (3ª ed.)	Síntesis		978-84-9756-499-1	2008	
Chacón, J.M., Sánchez-Reyes, J.	Expresión Gráfica en Ingeniería Industrial	Donostiarra		978-84-7063-476-5	2013	
Gonzalo Gonzalo, J.	Prácticas de dibujo técnico nº 7. Iniciación al sistema diédrico	Donostiarra		978-84-7063-138-2	2007	
Fernández San Elias, G.	Prácticas de dibujo técnico nº 6. Vistas	Donostiarra		978-84-7063-315-7	2004	

	y visualización de formas				
Gonzalo Gonzalo, J.	Prácticas de dibujo técnico nº 2. Cortes y secciones	Donostiarra	978-84-7063-316-4	2004	
Álvarez Bengoa, V.	Prácticas de dibujo técnico nº 4. Perspectiva: Axonométrica y Caballera	Donostiarra	978-84-7063-124-5	2005	
Gonzalo Gonzalo, J.	Prácticas de dibujo técnico nº 1. Croquización	Donostiarra	978-84-7063-305-8	2005	
Matute Royo, M.	Prácticas de dibujo técnico nº 9. Test de normalización	Donostiarra	978-84-7063-559-5	2017	
Méndez López, C.	Prácticas de dibujo técnico nº 11. Sistema de planos acotados	Donostiarra	978-84-7063-158-0	1998	
Gonzalo Gonzalo, J.	Prácticas de dibujo técnico nº 14. Sistema diédrico directo	Donostiarra	978-84-7063-380-5	2007	
Rodríguez de Abajo, F.J.	Geometría Descriptiva, Tomo I. Sistema Diédrico	Donostiarra	978-84-7063-353-9	2007	
Guillamón Insa, A.	Análisis de formas y representaciones normalizadas	Ediciones UPCT	978-84-1785-344-0	2021	
	https://repositorio.upct.es/bitstream/handle/10317/10460/isbn9788417853440.pdf?sequence=1				
Gonzalo Gonzalo, J.	Prácticas de dibujo técnico nº 3. Acotación	Donostiarra	978-84-7063-317-1	2004	
Rodríguez de Abajo, F.J.	Geometría Descriptiva, Tomo II. Planos Acotados	Donostiarra	978-84-7063-182-5	1993	
Bertran i Guasp, J.	Geometría descriptiva: Sistema Diédrico Directo	Donostiarra	978-84-7063-197-9	2005	
Aenor	AenorMas	Aenor			Base de datos de normativa UNE/ISO
	https://www.biblioteca.uclm.es/es/encuentra-informacion/Recursos/Basesdedatos#				
Álvarez Bengoa, V.	Prácticas de dibujo técnico nº 0. Dibujo lineal	Donostiarra	978-84-7063-129-0	1997	
Collado Sanchez-Capuchino, V.	Sistema de planos acotados: Sus aplicaciones en ingeniería	Tebar Flores	978-84-7360-087-3	1998	