UNIVERSIDAD DE CASTILLA - LA MANCHA
GUÍA DOCENTE

1. General information

Course: ENGINEERING GRAPHICS
Type: BASIC
Degree: 344 - CHEMICAL ENGINEERING
Center: 1 - FACULTY OF SCIENCE AND CHEMICAL TECHNOLOGY
Year: 1
Main language: Spanish
Use of additional languages:
Web site:

Code: 57706
ECTS credits: 6
Academic year: 2023-24
Group(s): 21
Duration: C2
Second language: English
English Friendly: Y
Bilingual: N

Lecturer: ROCIO PORRAS SORIANO - Group(s): 21

Building/Office	Department	Phone number	Email	Office hours
Ed. Politécnico. 2-A42	MECÁNICA ADA. E ING. PROYECTOS	3296	rocio.porras@uclm.es	Monday to friday: 11.30-12. Monday 16:00-18:00 and wednesday 16:00-17:30

Lecturer: ANGEL REDONDO GARCIA - Group(s): 21

Building/Office	Department	Phone number	Email	Office hours
E. de Ingenieros Agrónomos	MECÁNICA ADA. E ING. PROYECTOS	3761	angel.redondo@uclm.es	

2. Pre-Requisites

- Basic knowledge of geometric layouts and spatial vision.

- Basic knowledge of computers for the use of CAD Software

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

The Graphic Expression subject manages to develop and increase the spatial capacity of the students, improves the capacity for analysis and synthesis, favors the graphic representation of a concept and, finally, establishes a technical language of communication, v

Provides spatial vision for the design of engineering works and knowledge of graphic representation techniques, both by traditional methods of descriptive geometry, and through computer-aided design applications

4. Degree competences achieved in this course

Course competences

Code	Description
E03	Basic knowledge about the use and programming of computers, operating systems, databases and computer programs with application in engineering.
E05	Capacity for spatial vision and knowledge of graphic representation techniques, both by traditional methods of metric geometry and descriptive geometry, and by computer-aided design applications.
G01	Ability to write, sign and develop projects in the field of chemical engineering that are intended, according to the knowledge acquired as established in section 5 of order CIN / 351/2009 of February 9, construction, reform, repair, conservation, demolition, manufacture, installation, assembly or operation of: structures, mechanical equipment, energy installations, electrical and electronic installations, industrial facilities and processes and manufacturing and automation processes.
G03	Knowledge in basic and technological subjects, which enables them to learn new methods and theories, and give them versatility to adapt to new situations.
G04	Ability to solve problems with initiative, decision making, creativity, critical reasoning and to communicate and transmit knowledge, skills and abilities in the field of Chemical Engineering.
G05	Knowledge for the realization of measurements, calculations, valuations, appraisals, surveys, studies, reports, work plans and other analogous works.
G06	Ability to handle specifications, regulations and mandatory standards.
G17	Capacity for critical thinking and decision making
G18	Synthesis capacity
G19	Capacity for teamwork
G21	Ability to learn and work autonomously
G23	Creativity and initiative

5. Objectives or Learning Outcomes

Course learning outcomes

Description
To know and apply the existing regulations in the representation systems and in the presentation of projects.
To develop procedural habits for a continuous work system ¿ both individual and group.
To master the basic scientific terminology as well as the handling of units and their conversions.
To be able to develop the mastery of graphic language and facilitate its communication skills using drawing tools ¿ including CAD techniques ¿ for the representation of geometric entities and the study of shapes.
To acquire understanding and mastery of graphic elements and techniques for the design of industrial equipment.

6. Units / Contents

Unit 1: Introduction to graphic expression
Unit 2: descriptive geometry
Unit 3: Representation systems and normalization
Unit 4: Graphic design in Chemical Engineering

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]		E03 E05 G01 G03 G04 G05 G06 G17 G18 G19 G21 G23	0.89	22.25	N	-	
Class Attendance (practical) [ON-SITE]	Project/Problem Based Learning (PBL)	E03 E05 G01 G03 G04 G05 G06 G17 G18 G19 G21 G23	0.5	12.5	N	-	
Computer room practice [ON-SITE]	Project/Problem Based Learning (PBL)	E03 E05 G01 G03 G04 G05 G06 G17 G18 G19 G21 G23	0.76	19	Y	Y	
Workshops or seminars [ON-SITE]	Group tutoring sessions	E03 E05 G01 G03 G04 G05 G06 G17 G18 G19 G21 G23	0.3	7.5	Y	Y	
Writing of reports or projects [OFF-SITE]	Self-study	E03 E05 G01 G03 G04 G05 G06 G17 G18 G19 G21 G23	3.3	82.5	Y	Y	
Mid-term test [ON-SITE]	Assessment tests	E03 E05 G01 G03 G04 G05 G06 G17 G18 G19 G21 G23	0.25	6.25	Y	N	
		Total:	**6**	**150**			
		Total credits of in-class work: 2.7					**Total class time hours: 67.5**
		Total credits of out of class work: 3.3					**Total hours of out of class work: 82.5**

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
Mid-term tests	55.00%	55.00%	It is a mid-term test. The grade must be equal to or higher than 4 points to be included in the grade point average. The recovery is considered as a similar test on the date of the ordinary or extraordinary exam, as appropriate.
Practicum and practical activities reports assessment	45.00%	45.00%	These are two practice blocks, BP1 (15%) and BP2 (30%). The marks must be higher than 4 to make average. Practices are made up by handing in the failed ones on the date of the ordinary or extraordinary exam, as appropriate. At the beginning of the course, in the Virtual Campus, the characteristics of the practices, their number and their exact timing will be established.
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 course grade is calculated as follows:
      NOTE =NP1*55% + BP1*10%+BP2*35%
      The option to recover by parts is given,
      Parts are not saved for other years.

Non-continuous evaluation:
The course grade is calculated as follows:
NOTE =NP1*45% + BP1*10%+BP2*45%
The option to recover in parts is given.
Parts are not saved for other years.
By default, students are in a continuous assessment system.

Specifications for the resit/retake exam:
The notes of the partial approved for the Extraordinary call are saved. The course grade is calculated as follows:
NOTE =NP1*55% + BP1*10%+BP2*35%
The option to recover in parts is given
Parts are not saved for other years.

Specifications for the second resit / retake exam:
The same as for ordinary and extraordinary.

9. Assignments, course calendar and important dates

Not related to the syllabus/contents	
Hours	hours

Unit 1 (de 4): Introduction to graphic expression

Activities	Hours
Class Attendance (theory) [PRESENCIAL][]	2

Group 21:

Initial date: 28-01-2020	**End date:** 28-01-2020

Unit 2 (de 4): descriptive geometry

Activities	Hours
Class Attendance (theory) [PRESENCIAL][]	8
Class Attendance (practical) [PRESENCIAL][Project/Problem Based Learning (PBL)]	5
Computer room practice [PRESENCIAL][Project/Problem Based Learning (PBL)]	2
Workshops or seminars [PRESENCIAL][Group tutoring sessions]	3
Writing of reports or projects [AUTÓNOMA][Self-study]	30
Mid-term test [PRESENCIAL][Assessment tests]	3

Unit 3 (de 4): Representation systems and normalization

Activities	Hours
Class Attendance (theory) [PRESENCIAL][]	12.25
Class Attendance (practical) [PRESENCIAL][Project/Problem Based Learning (PBL)]	4
Computer room practice [PRESENCIAL][Project/Problem Based Learning (PBL)]	3
Workshops or seminars [PRESENCIAL][Group tutoring sessions]	2
Writing of reports or projects [AUTÓNOMA][Self-study]	25
Mid-term test [PRESENCIAL][Assessment tests]	3

Unit 4 (de 4): Graphic design in Chemical Engineering

Activities	Hours
Class Attendance (practical) [PRESENCIAL][Project/Problem Based Learning (PBL)]	3.5
Computer room practice [PRESENCIAL][Project/Problem Based Learning (PBL)]	14
Workshops or seminars [PRESENCIAL][Group tutoring sessions]	2.5
Writing of reports or projects [AUTÓNOMA][Self-study]	27.5
Mid-term test [PRESENCIAL][Assessment tests]	.25

Global activity

Activities	hours
Class Attendance (practical) [PRESENCIAL][Project/Problem Based Learning (PBL)]	12.5
Class Attendance (theory) [PRESENCIAL][]	22.25
Mid-term test [PRESENCIAL][Assessment tests]	6.25
Writing of reports or projects [AUTÓNOMA][Self-study]	82.5
Computer room practice [PRESENCIAL][Project/Problem Based Learning (PBL)]	19
Workshops or seminars [PRESENCIAL][Group tutoring sessions]	7.5
Total horas:	150

10. Bibliography and Sources

Author(s)	Title/Link	Publishing house	City	ISBN	Year	Description
Félez Mindán, Jesús	Dibujo industrial	Síntesis		84-7738-331-6	2002	
Félez Mindán, Jesús	Ingeniería gráfica y diseño	Síntesis		978-84-975649-9-1	2008	
Ignacio González Aranda y Angel Redondo García	Apuntes de sistemas de representación					
Villar del Fresno, Ricardo	Normalización del dibujo industrial	Sere		84-404-5065-6	1989	
Asociación Española de Normalización y Certificación	Normas UNE sobre dibujo técnico	AENOR		84-8143-052-8	1997	