UNIVERSIDAD DE CASTILLA - LA MANCHA

GUÍA DOCENTE

1. General information

Course: QUALITY ENGINEERING
Type: CORE COURSE
Degree: 2336 - MASTER DEGREE PROGRAM IN CHEMICAL ENGINEERING
Center: 1 - FACULTY OF SCIENCE AND CHEMICAL TECHNOLOGY
Year: 1
Main language: Spanish
Use of additional languages:
Web site:

Code: 310748
ECTS credits: 6
Academic year: 2021-22
Group(s): 20
Duration: C2
Second language: English
English Friendly: Y
Bilingual: N

Lecturer: **JUSTO LOBATO BAJO** - Group(s): **20**

Building/Office	Department	Phone number	Email	Office hours
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Lecturer: **MARÍA CLARA YAGÜE GÓMEZ** - Group(s): **20**

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2. Pre-Requisites

Not established

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

Not established

4. Degree competences achieved in this course

Course competences

Code	Description
CB07	To be able to apply acquired knowledge and problem-solving skills in new or unknown environments within broader (or multidisciplinary) contexts related to their area of study
CB10	To possess the learning skills to continue studying in a largely self-directed or autonomous manner.
E04	To have the ability to solve problems that are unknown, incompletely defined, and have competing specifications, considering the possible solution methods, including the most innovative ones, selecting the most appropriate one, and being able to correct the implementation, evaluating the different design solutions.
E05	To direct and supervise all types of installations, processes, systems and services of the different industrial areas related to chemical engineering.
E08	To direct and manage the organization of work and human resources applying criteria of industrial safety, quality management, prevention of occupational risks, sustainability, and environmental management.
E11	To direct and carry out verification, control of facilities, processes and products, as well as certifications, audits, verifications, tests and reports.
G01	To have adequate knowledge to apply the scientific method and the principles of engineering and economics, to formulate and solve complex problems in processes, equipment, facilities and services, in which matter undergoes changes in its composition, state or energy content, characteristic of the chemical industry and other related sectors including the pharmaceutical, biotechnological, materials, energy, food or environmental sectors.
G04	To conduct appropriate research, undertake design and direct the development of engineering solutions, in new or unfamiliar environments, relating creativity, originality, innovation and technology transfer.
G06	To have the capacity of analysis and synthesis for the continuous progress of products, processes, systems and services using criteria of safety, economic viability, quality and environmental management.
G07	To integrate knowledge and deal with the complexity of making judgments and decisions, based on incomplete or limited information, including reflections on the social and ethical responsibilities of professional practice
G08	To lead and define multidisciplinary teams capable of solving technical changes and management needs in national and international contexts
G09	To communicate and discuss proposals and conclusions in multilingual forums, specialized and non-specialized, in a clear and unambiguous way
G10	To adapt to changes, being able to apply new and advanced technologies and other relevant developments, with initiative and entrepreneurial spirit
G11	To possess the skills of autonomous learning in order to maintain and improve the competences of chemical engineering that allow the continuous development of the profession
MC1	To have acquired advanced knowledge and demonstrated an understanding of the theoretical and practical aspects and of the working methodology in the field of Chemical Engineering with a depth that reaches the forefront of knowledge
MC2	To be able, through arguments or procedures developed and supported by themselves, to apply their knowledge, understanding and problem-solving skills in complex or professional and specialized work environments that require the use of creative or innovative ideas
MC3	To have the ability to collect and interpret data and information on which to base their conclusions including, where necessary and relevant, reflection on social, scientific or ethical issues in the field of chemical engineering
MC4	To be able to deal with complex situations or those that require the development of new solutions in the academic, work or professional field of study of Chemical Engineering

MC5	To know how to communicate to all types of audiences (specialized or not) in a clear and precise way, knowledge, methodologies, ideas, problems and solutions in the field of the study of Chemical Engineering
MC6	To be able to identify their own training needs in the field of study of Chemical Engineering and work or professional environment and to organize their own learning with a high degree of autonomy in all kinds of contexts (structured or unstructured).

5. Objectives or Learning Outcomes

Course learning outcomes

Description

To acquire skills for problem solving, used in the so-called improvement groups or quality circles

To apply advanced statistical concepts to quality management.

To know the procedures of accreditation, standardization, homologation, certification and verification of facilities and processes

To acquire knowledge of specific quality techniques: sampling, rejection, sorting plans and criteria for validation of process and product design

To acquire knowledge about quality management systems and improvement tools

Additional outcomes

6. Units / Contents

Unit 1:

Unit 2:

Unit 3:

Unit 4:

Unit 5:

Unit 6:

Unit 7:

Unit 8:

Unit 9:

Unit 10:

Unit 11:

Unit 12:

Unit 13:

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]	Combination of methods	CB07 CB10 E04 E05 E08 E11 G01 G04 G06 G07 G08 G09 G10 G11 MC1 MC2 MC3 MC4 MC5 MC6	1.4	35	Y	N	
Writing of reports or projects [OFF-SITE]	Group Work	CB07 CB10 E04 E05 E08 E11 G01 G04 G06 G07 G08 G09 G10 G11 MC1 MC2 MC3 MC4 MC5 MC6	3.6	90	Y	N	
Problem solving and/or case studies [ON-SITE]	Case Studies	CB07 CB10 E04 E05 E08 E11 G01 G04 G06 G07 G08 G09 G10 G11 MC1 MC2 MC3 MC4 MC5 MC6	0.6	15	Y	N	
Group tutoring sessions [ON-SITE]	Guided or supervised work	CB07 CB10 E04 E05 E08 E11 G01 G04 G06 G07 G08 G09 G10 G11 MC1 MC2 MC3 MC4 MC5 MC6	0.2	5	Y	N	
Final test [ON-SITE]	Assessment tests	CB07 CB10 E04 E05 E08 E11 G01 G04 G06 G07 G08 G09 G10 G11 MC1 MC2 MC3 MC4 MC5 MC6	0.2	5	Y	Y	
		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
Assessment of problem solving and/or case studies	20.00%	20.00%	
Final test	80.00%	80.00%	
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).

9. Assignments, course calendar and important dates

Not related to the syllabus/contents	
Hours	**hours**

10. Bibliography and Sources

Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
Box, E.P., Hunter, W. Hunter, J.S.	Statistics for Experimenters : An Introduction to Design, Data Analysis, and Model Building	John Wiley and sons		97804710931	1978	
Calvo, F	Estadística Aplicada	Desuto	Bilbao		1994	
Deming W.E.	Calidad, productividad y competitividad: la salida de la crisis	Díaz de Santos	Madrid	9788487189227	1989	Este libro examina dos de las cuestiones centrales con que se enfrenta la industria -cómo incrementar la productividad sin sacrificar la calidad, y cómo capturar mercados a la competencia-. Se trata de un libro práctico con abundantes ejemplos.
George E. P. Box, J. Stuart Hunter, William G. Hunter	Statistics for Experimenters: Design, Innovation, and Discovery, 2nd Edition	Wiley		978-0-471-71813-0	2005	
Joseph M. Juran, Frank M. Gryna	Quality Control Handbook	Mc Graw Hill	New York		1988	
	Manuales específicos de aplicación modelo EFQM					
	Normativa Aplicable publicada por AENOR o ISO: ISO ¿9000, ISO-9001, ISO-9004, QS-9000, BS 5750.	AENOR				