



Teaching Guide

Teaching Guide				
Identifying Data				2020/21
Subject (*)	Quality in Chemical Laboratories		Code	610509130
Study programme	Mestrado Universitario en Investigación Química e Química Industrial (Plan 2020)			
Descriptors				
Cycle	Period	Year	Type	Credits
Official Master's Degree	1st four-month period	First	Optional	3
Language	Spanish			
Teaching method	Face-to-face			
Prerequisites				
Department	Departamento profesorado másterQuímica			
Coordinador	Jimenez Gonzalez, Carlos	E-mail	carlos.jimenez@udc.es	
Lecturers	Jimenez Gonzalez, Carlos	E-mail	carlos.jimenez@udc.es	
Web	http://www.usc.es/gl/centros/quimica/curso/master.html			
General description	The contents of the subject according to the memory of the master include: advanced notions of quality, general criteria for the accreditation of testing and calibration laboratories according to the UNE-EN-ISO / IEC 17025 standard, metrology: uncertainty and traceability, equipment management, quality assurance of test and calibration results, quality planning, control and management tools and techniques			
Contingency plan	1. Modifications to the contents There will be no changes 2. Methodologies *Teaching methodologies that are maintained All of them *Teaching methodologies that are modified The "magister classes and seminars" activities will maintain the same format and content with the only difference that they will be taught using Teams or the platform that the UDC makes available to the teaching community. 3. Mechanisms for personalized attention to students Email: permanent. Moodle: Daily. According to the need of the students. Teams: Magister class, seminars, tutorials (2-6 h / week). 4. Modifications in the evaluation There will be no changes in either the methodology or the percentages assigned to each of the methodologies. *Evaluation observations: The evaluation will be maintained as indicated in the teaching guide. The only difference will be in the channel used for the tests that will be carried out in Teams or Moodle or a combination of them. 5. Modifications to the bibliography or webgraphy There are no changes in the bibliography.			

Study programme competences

Code	Study programme competences
A1	Define concepts, principles, theories and specialized facts of different areas of chemistry.
A2	Suggest alternatives for solving complex chemical problems related to the different areas of chemistry.
A5	Properly assess risks and environmental and socioeconomic impacts associated with special chemicals
A6	Design processes involving the treatment or disposal of hazardous chemicals



A9	Promote innovation and entrepreneurship in the chemical industry and in research.
B5	Students must possess learning skills to allow them to continue studying in a way that will have to be largely self-directed or autonomous.
B6	Innovate in the different areas of chemistry, demonstrating initiative and entrepreneurship
B8	Evaluate responsibility in the management of information and knowledge in the field of Industrial Chemistry and Chemical Research
B9	Demonstrate ability to analyze, describe, organize, plan and manage projects
B10	Use of scientific terminology in English to explain the experimental results in the context of the chemical profession
B11	Apply correctly the new technologies to gather and organize the information to solve problems in the professional activity.
B12	Being able to work in a team and adapt to multidisciplinary teams.
C1	CT1 - Elaborar, escribir e defender publicamente informes de carácter científico e técnico
C2	CT2 - Traballar en equipo e adaptarse a equipos multidisciplinares.
C3	CT3 - Traballar con autonomía e eficiencia na práctica diaria da investigación ou da actividade profesional.
C4	CT4 - Apreciar o valor da calidade e mellora continua, actuando con rigor, responsabilidade e ética profesional.
C5	CT5 - Demostrar unha actitude de respecto polas opinións, valores, comportamentos e prácticas doutros

Learning outcomes			
Learning outcomes		Study programme competences	
- Adquisición completa dos aspectos relacionados coa xestión de calidade nos laboratorios de ensaio e calibración baixo o cumprimento da Norma UNE-EN-ISO/IEC 17025, tanto desde un punto de vista teórico coma práctico, co obxectivo principal de garantir a competencia técnica e a fiabilidade dos resultados analíticos. Para iso, deben coñecerse, tanto requisitos de xestión coma requisitos técnicos que inciden sobre a mellora da calidade.	AC1	BC5	CC1
	AC6	BC6	CC2
	AC9	BC10	CC4
		BC12	CC5
- Capacitar o alumno para establecer un plan de xestión de equipos, mantemento, verificación e redactar os procedementos de calibración segundo os requisitos da norma UNE-EN-ISO/IEC 17025, co correspondente cálculo de incertidumbres	AC2	BC8	
	AC5	BC9	
- Adquirir a capacidade e habilidades para validar procedementos de ensaio físico-químico e coñecer a incerteza asociada, de acordo cos requisitos que establece a norma UNE-EN- ISO/IEC 17025		BC11	CC3

Contents	
Topic	Sub-topic
Tema 1. Introducción á calidade.	
Tema 2. Certificación e acreditación	
Tema 3. Metroloxía: Incerteza e trazabilidade	
Tema 4. Xestión de equipos	
Tema 5. Metodoloxías analíticas e calidade	
Tema 6. Ferramentas e técnicas para a planificación, control e xestión da calidade	

Planning				
Methodologies / tests	Competencies	Ordinary class hours	Student?s personal work hours	Total hours
Seminar	A2 A9 B6 B8 B9 B10 B11 B12 C1 C3	6	17.5	23.5
Mixed objective/subjective test	B5	1.5	10	11.5
Case study	A5 A6 C4 C5	0	1	1
Oral presentation	B5	1	0	1
Guest lecture / keynote speech	A2 B10	12	24	36
Personalized attention		2	0	2

(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.



Methodologies	
Methodologies	Description
Seminar	Resolución de problemas e casos prácticos, individuais, ou en grupo
Mixed objective/subjective test	O exame final incluírá tanto elementos de tipo teórico como de tipo práctico (resolución de casos) asociados ás actividades desenvolvidas nas clases expositivas e nos seminarios
Case study	Realización de traballos e informes escritos
Oral presentation	Exposición oral
Guest lecture / keynote speech	Clases expositivas

Personalized attention	
Methodologies	Description
Seminar	As tutorías están programadas polo profesor e coordinadas polo Centro. En xeral, cada alumno dispondrá de dúas horas por semestre. As actividades de control como exercicios dirixidos, aclaración de dúbidas sobre a teoría ou dos problemas, exercicios, lecturas ou outras tarefas propostas; ea presentación, presentación, discusión ou comentario feito traballo individual ou en pequenos grupos. En moitos casos, o profesor pode esixir que os estudantes entreguen os exercicios antes da celebración das clases. Estas entregas virán incluído no calendario de actividades a seren desenvolvidas polos alumnos ao longo do curso na Guía docente da disciplina correspondente. Participación nestas clases é obrigatoria.

Assessment			
Methodologies	Competencies	Description	Qualification
Seminar	A2 A9 B6 B8 B9 B10 B11 B12 C1 C3	Resolución de problemas e casos prácticos, individuais, ou en grupo. Inclúese equi tambén avaliación continua mediante preguntas e cuestións e traballo presencial durante o curso.	20
Mixed objective/subjective test	B5	O exame final incluírá tanto elementos de tipo teórico como de tipo práctico (resolución de casos) asociados ás actividades desenvolvidas nas clases expositivas e nos seminarios.	60
Case study	A5 A6 C4 C5	Realización de traballos e informes escritos	10
Oral presentation	B5	Exposición oral	10

Assessment comments
O exame final incluírá tanto elementos de tipo teórico como de tipo práctico (resolución de casos) asociados ás actividades desenvolvidas nas clases expositivas e nos seminarios.
O criterio para a avaliación como "non presentado" é que o/a alumno/a non se presente ao exame final.
Esixírase unha asistencia superior ao 80% do total das clases de carácter obrigatorio (expositivas, seminarios e tutorías).

Sources of information	
Basic	- R. Compañó; , A. Ríos (2002). Garantía de la calidad en los laboratorios analíticos. Madrid, Síntesis - D.H. Besterfield (2009). Control de calidad. México, Pearson-Prentice Hall - J.R. Evans, W. M. Lindsay (2005). Administración y control de la calidad. México, Thomson
Complementary	

Recommendations
Subjects that it is recommended to have taken before
Subjects that are recommended to be taken simultaneously
Management Systems in the Chemical Industry/610509132



Subjects that continue the syllabus

Master Thesis/610509139

Other comments

Os requisitos previos (recomendados) son ter realizado cursos básicos de Estatística Aplicada e Quimiometría ou outros equivalentes e a materia Sistemas de Xestión de Procesos. Para aprobar a materia necesítase ante todo comprendela e manexar os conceptos correctamente. O simple esforzo memorístico non resulta nin axeitado nin suficiente.

(*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.