COURSE DATA

DATA SUBJECT

Code: 42937
Name: Laboratory of industrial analysis
Cycle: Master's Degree / Doctorate
ECTS Credits: 2
Academic year: 2025-26

STUDY (S)

Degree	Center	Acad. year	Period
2109 - Master's Degree in Experimental Techniques in Chemistry	Facultat de Química	1	Annual

SUBJECT-MATTER

Degree	Subject-matter	Character
2109 - Master's Degree in Experimental Techniques in Chemistry	Integrated laboratory of experimental techniques in chemistry	COMPULSORY

COORDINATION

VERGARA BARBERAN MARIA

SUMMARY

Laboratory subject in which they are applied the techniques and methodologies learned in the subjects of matter I to the particular case of the industrial analysis, devoting special attention to the use of official methods of analysis and/or assurance methods contrasted in this area, as well as to the selection and implementation of the method most appropriate to a particular analytical problem.

Regarding the Sustainable Development Goals (SDGs), it is expected that students will be able to know in this subject how to apply the knowledge learned to guarantee an inclusive, equitable, and quality education and promote learning opportunities for everyone (SDG 4), to acquire a special sensitivity for sustainable management of water (SDG 6), raw materials and energy sources (SDG 7), as well as for an environmentally friendly and sustainable development (SDGs 11 , 12, 13, 14 and 15), in addition to being able to design, select and/or develop efficient products, chemical processes, and analytical methodologies (SDG 7) that minimize their impact on the environment (SDGs 14 and 15), using alternative raw materials and reducing wastes (SDG 11).

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

There are no specified enrollment restrictions with other subjects of the curriculum.

OTHER REQUIREMENTS

Prior knowledge of chemistry and experimental work in the laboratory of chemistry taught in the degrees indicated in the recommended income profile for the student of the master's degree are required.

COMPETENCES / LEARNING OUTCOMES

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Be able to access the information required (databases, scientific articles, etc.) and to interpret and use it sensibly.

Realizar estudios realacionados con el análisis y/o la caracterización de sustancias químicas tales como: control de calidad, diseño de protocolos de trabajo para laboratorios, diseño e implementación de procesos de acreditación y validación, diseño y desarrollo de proyectos I+D+I, emisión de informes, certificaciones y/o dictámenes, etc.

Realizar las labores propias de su profesión, tanto en empresas privadas como en organismos públicos, llevando a cabo estudios basados en el uso de técnicas experimentales, en distintos ámbitos tales como: medioambiental, agroalimentario, sanitario (farmacéutico y clínico), cosmético y en general de la industria del sector químico y afines.

Saber aplicar los conocimientos adquiridos y ser capaces de resolver problemas en entornos nuevos o poco conocidos dentro de contextos más amplios (o multidisciplinares) relacionados con su área de estudio.

Seleccionar la instrumentación química comercializada apropiada para el estudio a arealizar y de aplicar sus conocimientos para utilizarla de manera correcta.

Ser capaces de emplear las herramientas básicas para el tratamiento de datos experimentales en el laboratorio.

Ser capaces de planificar y gestionar los recursos disponibles de un laboratorio químico, teniendo en cuenta los principios básicos de la calidad, prevención de riesgos, seguridad y sostenibilidad.

Ser capaces de seleccionar y optimizar las variables instrumentales para obtener los mejores parámetros analíticos en las técnicas experimentales estudiadas.

To acquire basic skills to develop laboratory work in biomedical research.

To prepare a clear and concise memory of the results of your work and the conclusions obtained.

DESCRIPTION OF CONTENTS

1. Experimental techniques for the analysis of macro and microconstituents in the agri-food industry

- Quality control in the agri-food industry by studying examples of determination of macro and microconstituents in commercial fertilizers and raw materials, according to the regulation issued by the European Parliament and Council.

2. Analytical techniques for raw materials in petrochemical industry

- Quality control of a raw material in the petrochemical industry, study of official standards.
- Manufacture and quality control of a biodiesel.
- Application of UNE standards.
- Development of a methodology to evaluate the biodiesel synthesis yield.

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Seminar	4,00
Laboratory	16,00
Total hours	**20,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	8,00
Independent study and work	12,00
Preparation of lessons	6,00
Preparation for assessment activities	4,00
Resolution of case studies	0,00
Total hours	**30,00**

TEACHING METHODOLOGY

Presential Activities

Laboratory classes will begin with seminars in which Professor will perform a brief introduction of the objective, fundamentals and experimental practices methodology to perform.

The teacher will held in the laboratory the necessary explanations on operation of the instruments to be used in each practice prior to their use by students and will supervise its use during practices, to enhance knowledge on the techniques used (CE4)

Students will carry out the practice following the corresponding manual of practices (CG1, CG4).

Classroom activities performed in the laboratory, presentations and exhibitions of works will be part of the ongoing evaluation of the student (formative activities AF2 of verifica and teaching methodology MD1 of verifica)

Written examinations of the subject will be carried out on the date specified in the programming of the assessment tests (formative activities AF4 of verifica and teaching methdology MD1 of verifica).

The competences to acquire from the presential activities will be:

- Generals: CB7, CG1 and CG3
- Specific: CE2, CE3, CE4, CE5 y CE6

Non-presential activities

Students will conduct the non-presential activities requested by the teacher (memoirs, reports of practices, etc.) and they will deliver them on the specified date.

The competences to acquire from the presential activities will be:

- Specific: CE7

EVALUATION

La información está en un formato que no se puede convertir

REFERENCES

- Camara C. et al., Toma y Tratamiento de muestras. Ed. Síntesis, 2002. Hibbert D.B. Quality Assurance in the Analytical Chemistry Laboratory, Oxfort University Press, 2007 Vian Ortuño A., Introducción a la Química Industrial, Reverte, 1994. Maurí A., M. Llobat y R. Herráez, Laboratorio de Análisis Instrumental, Universitat de València-Reverté, Valencia, 2010 Rouessac F., Rouessac A., Chemical Analysis. Modern Instrumentation methods and techniques, 2ª ed, Wiley, 2007 Amoros J.L. et al. Manual para el control de calidad de materias primas arcillosas, Instituto de Tecnología Cerámica, Castellón, 1998 Kent J.A. ed., Riegels Handbook of Industrial Chemistry, 9ª ed, Chapman and Hall, 1992.