

**COURSE DATA****DATA SUBJECT****Code:** 42936**Name:** Laboratory of food analysis**Cycle:** Master's Degree / Doctorate**ECTS Credits:** 3**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

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SUMMARY

Subject of laboratory in which apply techniques and methodologies learned in the subjects of the matter I to the particular case of food analysis, with particular attention to the use of official methods of analysis and/or methods proven in this area, as well as the selection of the most appropriate analytical problem method specifically.

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 relacionados 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 realizar 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. Control of food quality by official or proven warranty methods of analysis: evaluation of physical and chemical parameters.

- Conventional spectrophotometric determination of K-indices in olive oils.
- Identification of impurities and determination of methanol in high alcoholic beverages by gas chromatography.

2. Development of analytical methodologies for the evaluation of pollutants (Food Safety)

- Determination of mycotoxins in wines by liquid chromatography - fluorescence detection.
- Evaluation of pesticide residues in fruits and vegetables by gas chromatography mass spectrometry.

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Seminar	6,00
Laboratory	24,00
Total hours	30,00

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	6,00
Independent study and work	21,00
Preparation of lessons	6,00
Preparation for assessment activities	6,00
Resolution of case studies	6,00
Total hours	45,00

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 methodology 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

FIRST CALL

1. -Continuous evaluation of the student in classes and seminars (previous preparation, participatory assistance, manipulation of material and equipment, organization of work, understanding and use of the practical script, calculation, teamwork, etc.)

Preparation of the practice before starting the laboratory session by completing questionnaires. During the sessions, focused on solving practical cases, the attendance and participation of the students will be evaluated individually (either by answering orally or in writing to the questions raised by the teacher, or by asking questions whose answer is relevant to the rest of the group). Among others, these questions will include the design of work protocols, the selection of variables and the tools for data processing (verifica skills CE2, CE3, CE5 and CE6). The practical sessions will be carried out in working groups (verifica skills CG1).



Skills to evaluate: Specific: CE1, CE2, CE3, CE4, CE5 and CE6

WEIGHT 40 %

2.- An assessment of non-classroom-based activities (memories and/or reports of practices delivered)

The reports performed by the students will include the main conclusions extracted from the laboratory work (working protocols, variable selection and data treatment; verifica competences CE2, CE5, CE6 and CE7) and it will be done by couples to improve the group working (consensus decision making: verifica competences CG1 and CE7)

WEIGHT 30 %

3. -Written examinations (Based on the results of learning the content and on the specific objectives of each subject)

The exam will consist in the resolution of questions and practical examples related to the studied techniques (verifica competences: CE2, CE4, CE5 and CE6).

WEIGHT 30 %

The minimum grade obtained in each of evaluated parts must be equal to or greater than 4.5 in order to average between them.

The minimum overall grade to pass the course is 5.0.

SECOND CALL

The evaluation will be carried out in the same way as in the first call.

REFERENCES



- Diario Oficial de la Unión Europea, Reglamento 1881/2006, de 19 de Diciembre de 2006, de la Comisión, por el que se fija el contenido máximo de determinados contaminantes en los productos alimenticios, 2006.
- http://www.cdt-alimentacion.net/metodos_oficiales.php (Métodos oficiales de análisis de algunos alimentos en España)
- <http://www.aesa.msc.es/aesa/web/AesaPageServer?idpage=58>. (Monográficos sobre seguridad alimentaria y legislación de alimentos).
- <http://www.mapya.es> (Normas de calidad de alimentos del Ministerio de Agricultura, Pesca y Alimentación) <http://www.panreac.es> (Manuales descargables de los métodos oficiales de análisis de algunos alimentos)
- Matissek, R., Schnepel, F.M., Steiner, G. Análisis de los alimentos: Fundamentos, métodos, aplicaciones, Acribia, Zaragoza, 1999.
- Métodos oficiales de análisis de alimentos, Mundi-Prensa. Madrid, 1994. Ministerio de Agricultura, Pesca y Alimentación, Métodos Oficiales de Análisis en la Unión Europea. Madrid, 1998.
- Ministerio de Agricultura, Pesca y Alimentación. Métodos Oficiales de Análisis, Madrid, 1993-94.
- Nollet, L.M. Hanbook of Food Analysis. Vol. 1, 2 y 3, Marcel Dekker, Nueva Cork, 2004.
- Pearson, D. Técnicas de laboratorio para análisis de alimentos, Acribia, 1993. Unión Europea, Libro Blanco sobre Seguridad Alimentaria, 2000.