

Información del Plan Docente

Academic Year	2017/18
Faculty / School	100 - Facultad de Ciencias
Degree	452 - Degree in Chemistry
ECTS	12.0
Year	3
Semester	Annual
Subject Type	Compulsory
Module	---

1.General information**1.1.Introduction****1.2.Recommendations to take this course****1.3.Context and importance of this course in the degree****1.4.Activities and key dates****2.Learning goals****2.1.Learning goals****2.2.Importance of learning goals****3.Aims of the course and competences****3.1.Aims of the course****3.2.Competences****4.Assessment (1st and 2nd call)****4.1.Assessment tasks (description of tasks, marking system and assessment criteria)****5.Methodology, learning tasks, syllabus and resources****5.1.Methodological overview**

The methodology followed in this course is oriented towards achievement of the learning objectives. It favors the understanding of the different techniques and methods in Analytical Chemistry. A wide range of teaching and learning tasks are implemented, such as theory sessions, laboratory sessions, assignments, and tutorials.

Students are expected to participate actively in the class throughout the semester.

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Classroom materials will be available via Moodle. These include a repository of the lecture notes used in class, the course syllabus, as well as other course-specific learning materials.

Further information regarding the course will be provided on the first day of class.

5.2. Learning tasks

The course includes 12 ECTS organized according to:

- Theory sessions (2.4 ECTS): 60 hours.
- Seminars and Problems sessions (0.8 ECTS): 20 hours
- Laboratory sessions (1.6 ECTS): 40 hours.
- Assignments (7.2 ECTS): 180 hours (including 20 hours of mentored work)

Laboratory sessions: 12 sessions of 3-hour and 4 sessions of 1-hour will take place approximately during November-December and March-May . Students are provided with the practical exercises' instructions to be done as well as a theoretical introduction to the session's contents.

5.3. Syllabus

Lesson 1: Introduction to Instrumental Analysis

Lesson 2: Basic Concepts of Chromatography

Lesson 3: Gas Chromatography

Lesson 4: High Performance Liquid Chromatography

Lesson 5: Mass Spectrometry as detection technique in Chromatography. HPLC-MS and GC-MS

Lesson 6: Introduction to spectrometric techniques

Lesson 7: Introduction to Atomic Spectrometry.

Lesson 8: Atomic Absorption Spectrometry

Lesson 9: Atomic Emission Spectrometry: Flame, Arc and Spark, Plasma

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Lesson 10: Inductively Coupled Plasma-Mass Spectrometry

Lesson 11: Molecular Absorption Spectrometry: UV-VIS and Infrared

Lesson 12: Molecular Luminiscence : Fluorescence and Chemiluminiscence

5.4.Course planning and calendar

For further details concerning the timetable, classroom and further information regarding this course please refer to the "<http://ciencias.unizar.es/web/horarios.do>":

5.5.Bibliography and recommended resources

BB	See information and resources incorporated in the ADD
BB	Skoog, Douglas A.. Principios de análisis instrumental / Douglas A. Skoog, F. James Holler, Stanley R. Crouch ; traductor, María Bruna Josefina Anzures ; revisión técnica Francisco Rojo Callejas, Juan Alejo Pérez Legorreta . - 6ª ed. México, D. F. : Cengage Learning, cop. 2008