

## 27206 - Analytical Chemistry I

### Syllabus Information

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**Academic Year:** 2020/21

**Subject:** 27206 - Analytical Chemistry I

**Faculty / School:** 100 - Facultad de Ciencias

**Degree:** 452 - Degree in Chemistry

**ECTS:** 9.0

**Year:** 2

**Semester:** Annual

**Subject Type:** Compulsory

**Module:** ---

### 1.General information

#### 1.1.Aims of the course

#### 1.2.Context and importance of this course in the degree

#### 1.3.Recommendations to take this course

### 2.Learning goals

#### 2.1.Competences

#### 2.2.Learning goals

#### 2.3.Importance of learning goals

### 3.Assessment (1st and 2nd call)

#### 3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

### 4.Methodology, learning tasks, syllabus and resources

#### 4.1.Methodological overview

The methodology followed in this course is oriented towards achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as theory sessions, problem-based learning sessions and tutorials.

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

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

#### 4.2.Learning tasks

The 9 ECTS course includes the following learning tasks:

- Theory sessions (6 ECTS): 60 hours of Lectures.
- Problem sessions and seminars (3 ECTS): 30 hours of Problem-based learning (the group is divided into two subgroups) and 20 hours of mentoring work (in small groups).

#### 4.3.Syllabus

The course will address the following topics:

Section I: Aim, methodology and purpose of Analytical Chemistry.

- Topic 1. Introduction to Analytical Chemistry.
- Topic 2. The analytical process.
- Topic 3. Quality assurance in the analytical process.
- Topic 4. Equilibrium chemistry in Analytical Chemistry.

Section II: General operations in the analytical process.

- Topic 5. Sampling.
- Topic 6. Sample preparation.
- Topic 7. Sample dissolution.
- Topic 8. Calibration.
- Topic 9. Evaluation of analytical data.

Section III. Chemical methods of analysis.

- Topic 10. Gravimetric methods.
- Topic 11. Overview of titrimetric methods.
- Topic 12. Acid-base titrations.
- Topic 13. Precipitation titrations.
- Topic 14. Redox titrations.
- Topic 15. Complexation titrations.

Section IV- Electroanalytical methods.

- Topic 16. Overview of electroanalysis.
- Topic 17. Potentiometric methods.
- Topic 18. Voltammetric methods.
- Topic 19. Other electroanalytical methods

#### **4.4.Course planning and calendar**

For further details concerning the timetable, classroom and further information regarding this course please refer to the Science Faculty website (<https://ciencias.unizar.es/calendario-y-horarios>) and in the learning platform Moodle within the Química Analítica I course.

#### **4.5.Bibliography and recommended resources**

[http://biblos.unizar.es/br/br\\_citas.php?codigo=27206&year=2019](http://biblos.unizar.es/br/br_citas.php?codigo=27206&year=2019)