

## 30004 - Chemistry

### Syllabus Information

**Academic Year:** 2020/21

**Subject:** 30004 - Chemistry

**Faculty / School:** 110 - Escuela de Ingeniería y Arquitectura

**Degree:** 436 - Bachelor's Degree in Industrial Engineering Technology

**ECTS:** 6.0

**Year:** 1

**Semester:** 436-First semester o Second semester

107-First semester

**Subject Type:** Basic Education

**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 the achievement of the learning objectives. It favors the understanding of the general chemistry principles as well as the development of the active learning of students. A wide range of teaching and learning tasks are implemented, such as lectures in large group sessions, practice sessions, laboratory sessions, tutorials, autonomous work and assessment tasks.

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 course-specific learning materials, including a discussion forum.

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

### 4.2.Learning tasks

This is a 6 ECTS course organized as follows:

- **Theory sessions** (3.5 ECTS: 35 hours). Lectures will be used in most cases, and information will be transmitted orally with TIC support.
- **Practice sessions** (1.5 ECTS: 15 hours). During classrooms of the solution of problems, the participation of students will be promoted.
- **Laboratory sessions** (1 ECTS: 10 hours). Students will acquire skills in laboratory material handling, deduction,

communication, team working and analytical capabilities. The solution of preliminary questions enhances the autonomous work. Special efforts are devoted to the importance of security norms and correct handling of residues, key points in engineering.

### 4.3.Syllabus

The course will address the following topics:

#### Lectures

##### Contents for the first midterm exam (15 hours)

Topic 1.- Periodic system of elements

Topic 2.- Chemical bond and compounds

Topic 3.- Fundamental laws of Chemistry

Topic 4.- Properties of gases and liquids

##### Contents for the second midterm exam (20 hours)

Topic 5.- Chemical thermodynamics

Topic 6.- Chemical kinetics

Topic 7.- Inorganic and organic compounds

##### Contents for the third midterm exam (15 hours)

Topic 8.- Introduction to electrochemistry

Topic 9.- Chemical composition of aqueous solutions

Topic 10.- Study of chemical equilibrium

#### Laboratory sessions:

Session 0: Introduction to chemistry laboratory (1 hour)

Session 1: Gases and preparation of solutions (3 hours)

Session 2: Reaction kinetics. Redox reactions (3 hours)

Session 3: Chemical equilibrium. Standardization of hydrochloric acid (3 hours)

### 4.4.Course planning and calendar

In addition to lectures, practical sessions, and laboratory sessions, it is expected that students invest 10 hours for lab reports, 74 hours for autonomous work and 6 hours for exams (consisting of multiple-choice questions, chemical nomenclature, short answer questions, and problem-solving questions).

Outside of office hours, tutorials can be arranged with the teaching staff by electronic mail.

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course will be provided on the first day of class or please refer to the following links:

<https://eina.unizar.es/>, <https://titulaciones.unizar.es/guias16/index.php%3Fasignatura=3004>, <https://moodle2.unizar.es/add/>.

### 4.5.Bibliography and recommended resources

The bibliography of the subject can be accessed via this link:

[http://biblos.unizar.es/br/br\\_citas.php?codigo=30004&year=2020](http://biblos.unizar.es/br/br_citas.php?codigo=30004&year=2020)