

## 29904 - Chemistry

### Syllabus Information

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**Academic Year:** 2019/20

**Subject:** 29904 - Chemistry

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

**Degree:** 435 - Bachelor's Degree in Chemical Engineering

**ECTS:** 6.0

**Year:** 1

**Semester:** 435-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)

**Students have to show they have achieved the results of the learning process through the following activities of evaluation:**

1. Laboratory sessions. The fulfillment of scheduled tasks will be evaluated. A written exam and/or the presentation of the corresponding session reports will also be required (10% of the final mark).
2. Work in group (2-3 students) and oral presentation (10%).
3. First partial exam from lesson 1 (Introduction) to lesson 6 (Enthalpy, free energy and chemical equilibrium) (40%). If the score is below 5 then the student should be re-examined of the mentioned lessons.
4. Second partial exam (40%), coincident with final exam (80%). This call will be adapted to evaluate 100% of the matter (including laboratory practices).

Activities	Weighing
Lab sessions	10%
Work in group	10%
First partial exam	40%
Second partial exam	40%

Total	100%
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To overpass the second partial exam, the score has to be 4 or higher, as long as the other components of the evaluation (practices, work in group and first partial exam) produce a score of 5 or higher. In the final exam, students will have the opportunity of re-examination of lab work (even to try to enhance the corresponding score). However, there will be not a possibility of enhancing the score related to the work in group. In any event, the student will receive the highest weighed score result of including or not the scores of deliverables and work in group.

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

### 4.1. Methodological overview

The learning process is based on:

- Lectures and participative theory sessions.
- Sessions to solve questions and exercises.
- Programmed works and presentations in small groups of students.
- Group programmed tutorials for complementary activities (including exercises).
- Individual tutorials.
- Continuous assessment along the semester with feedback for the students.
- Chemistry laboratory sessions.

### 4.2. Learning tasks

**Theory lectures and sessions and practice sessions in the classroom.** The Reprography Service of EINA makes available to students a book with exercises (not solved but with answers). This book includes all the theory topics of the course.

**In addition, the activities in the classroom will be complemented with the following laboratory sessions:**

1. Introduction. Identification and handling of common lab material.
2. Kinetics of the reaction between peroxodisulfate and iodide ions.
3. Electrolysis of aqueous solution of potassium iodide.
4. Limiting reactant of a chemical reaction.
5. Acid-base and complex formation equilibria.

Students will have available in the Reprography Service of EINA a book with the guides to prepare and carry out the lab sessions.

### 4.3. Syllabus

The course will address the following topics:

- Topic 1. Introduction (1h)
- Topic 2. Introduction to the nomenclature of chemical compounds (2h)
- Topic 3. Chemical reactions. Types and stoichiometry (3 h)
- Topic 4. Units and mass balances (5 h)
- Topic 5. Chemical thermodynamics (3 h)
- Topic 6. Entropy, free energy and chemical equilibrium (5 h)
- Topic 7. Phase change equilibrium (4 h)
- Topic 8. Physical properties of solutions (5 h)
- Topic 9. Acid-base equilibria (3 h)
- Topic 10. Solubility and complex formation equilibria (3 h)
- Topic 11. Electrochemistry (6 h)

- Topic 12. Kinetics of chemical reactions (5 h)

Durations are an estimate.

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

Theory lectures and sessions, practice sessions and lab sessions are given following the schedule established by EINA before the beginning of the current academic course. Every teacher will inform the students about his/her individual tutorial schedule. Other activities will be planned as a function of the number of students early enough.

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

[http://biblos.unizar.es/br/br\\_citas.php?codigo=29904&year=2019](http://biblos.unizar.es/br/br_citas.php?codigo=29904&year=2019)