

## 27200 - General Chemistry

### Syllabus Information

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**Academic Year:** 2020/21

**Subject:** 27200 - General Chemistry

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

**Degree:** 452 - Degree in Chemistry

**ECTS:** 15.0

**Year:** 1

**Semester:** Annual

**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 achievement of the learning objectives. It favors the understanding of the different chemical processes that occur in the environment. A wide range of teaching and learning tasks are implemented, such as theory sessions, problem solving sessions, and tutorials.

Students are expected to participate actively in the class throughout the academic year.

Classroom materials will be available via Moodle. These include a repository of the lecture notes used in class, the course syllabus, problems notebook, Nomenclature of inorganic compounds notebook with many examples, Nomenclature of organic compounds notebook with many examples, as well as other course-specific learning materials, e.g., didactic videos.

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

#### 4.2.Learning tasks

The course includes **15** ECTS organized according to:

- Lectures (**9** ECTS): **90** hours. Three hours of theory per week.
- Problem solving sessions: (**6** ECTS): **60** hours. Groups with half of students of each group of theory. Two hours of problem solving sessions per week.

#### 4.3.Syllabus

The course will address the following topics:

- Topic 1- Introduction to current chemistry
- Topic 2- Atoms and atomic theory
- Topic 3- Types of chemical compounds and their formulas
- Topic 4- Chemical reactions and stoichiometry
- Topic 5- Chemical Thermodynamics
- Topic 6- Chemical kinetics
- Topic 7- Electronic structure of the atom
- Topic 8- Periodic Table and some atomic properties
- Topic 9- Chemical Bonding I: Basic concepts
- Topic 10- Chemical Bonding II: Bonding theories
- Topic 11- Solids and intermolecular forces. Composition-bonding-structure-properties relationships
- Topic 12- Gases
- Topic 13- Liquids
- Topic 14- Solutions
- Topic 15- Principles of chemical equilibria
- Topic 16- Acid-Base equilibria
- Topic 17-Complex Formation equilibria
- Topic 18- Solubility
- Topic 19- Redox equilibria
- Topic 20-Electrochemistry
- Topic 21-Physical and chemical properties of the elements
- Topic 22- Production of the elements
- Topic 23- Stereochemistry of the organic compounds
- Topic 24-Introduction to the reactivity of the organic compounds
- Topic 25-Nuclear Chemistry

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

For further details concerning the timetable, classroom and further information regarding this course please refer to the "Facultad de Ciencias" website (<https://ciencias.unizar.es/grado-en-quimica-0>).

Dates for the periodical problems tests and Nomenclature exams will be notified in class and via Moodle. As a guide, Nomenclature exams will take place before Christmas holiday (inorganic compounds) and Mid March (organic compounds); exams problems will take place mid November, mid January, mid April and mid May. Supplementary material: molecular models.

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

[http://biblos.unizar.es/br/br\\_citas.php?codigo=27200&year=2019](http://biblos.unizar.es/br/br_citas.php?codigo=27200&year=2019)