

Academic Year/course: 2021/22

## 27240 - Biological Activity of Chemical Compounds

### Syllabus Information

**Academic Year:** 2021/22

**Subject:** 27240 - Actividad biológica de los compuestos químicos

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

**Degree:** 452 - Degree in Chemistry

**ECTS:** 5.0

**Year:** 4

**Semester:** Second semester

**Subject Type:** Optional

**Module:**

### 1. General information

### 2. Learning goals

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

### 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. A wide range of teaching and learning tasks are implemented, such as:

- lectures (4 ECTS).
- Laboratory sessions (1 ECTS)

#### 4.2. Learning tasks

The course will address the following learning tasks:

- Classroom lectures according to the program described in point 4.3
- Laboratory sessions that include some of the techniques previously explained in classroom lectures.

#### 4.3. Syllabus

The course will address the following topics:

- Transport and biotransformations. Transport of xenobiotics across biological membranes: Types and biochemical mechanisms. Enzymes as drug targets. DNA as drug target. Other targets. Biotransformation of xenobiotics. Activation and inactivation. Phase I and Phase II transformations. Response and adaptation of xenobiotics.
- Toxicity of chemical contaminants. Molecular mechanisms of toxicity. Cell effects of xenobiotics. Cell damage. Carcinogenesis.
- Drug development. Pharmacological targets. Preclinical phase. Clinical essays.
- Mechanism of action of drugs. General aspects of pharmacological drugs. Antimicrobials. Antitumoral drugs. Drugs acting on the nervous system.

Practical courses: Evaluation of toxicity through a cell proliferation assay and analysis of nuclear morphology. Mutagenicity

activity (Ames test).

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

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 Facultad de Ciencias web (<https://ciencias.unizar.es/grado-en-quimica-0>).

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

[http://biblos.unizar.es/br/br\\_citas.php?codigo=27240&year=2021](http://biblos.unizar.es/br/br_citas.php?codigo=27240&year=2021)