

## 27137 - Pharmacology

### Syllabus Information

**Academic year:** 2024/25

**Subject:** 27137 - Pharmacology

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

**Degree:** 446 - Degree in Biotechnology

**ECTS:** 6.0

**Year:** 4

**Semester:** First semester

**Subject type:** Optional

**Module:**

### 1. General information

**Objective:** that the student understands the scientific basis of the effects of drugs and their behaviour in human beings delving mainly in the knowledge of their transit in the organism, their mechanism of action, their pharmacological action and even their therapeutic usefulness in different diseases.

### 2. Learning results

**The student, in order to pass this subject, must demonstrate the following results....**

1. Is capable of understanding, with the acquired pharmacokinetic knowledge, the process of transformation of drugs
2. Is able to analyse the types of interaction of drugs with their target molecules and the pharmacological actions derived from them
3. Knows the mechanisms of action, adverse reactions and therapeutic applications of the drugs used in the most common pathologies

This will allow the student to know the main characteristics of the different pharmacological groups, so that they can serve as a basis and source of knowledge from the biotechnological point of view in the synthesis, modification and/or development of new and existing drugs.

The student will also be able to search for the appropriate sources of information on drugs and to update their knowledge, given the constant evolution of the discipline.

### 3. Syllabus

#### General Principles

- Pharmacokinetics
- Pharmacodynamics
- Adverse reactions
- Omic Sciences
- Pharmacogenomics
- Drug-nutrient interaction. Nutrigenomics
- Drug development
- Clinical trials
- Socioeconomic aspects of the drug

#### Pharmacology of Devices and Systems

- Vegetative Nervous System Pharmacology
- Central Nervous System Pharmacology
- Pharmacology and Immune Response
- Antineoplastic drugs
- Drugs and Haemostasis
- Antianemia Drugs
- Pharmacology of the Endocrine System
- Drugs of Abuse

#### Practices

##### Module I

- Workshop I: pharmaceutical forms

- Workshop II: Drug administration routes
- Pharmacodynamics
- Problem-based learning

## Module II

- Field Practice
- Pharmacology Teaching Congress

## 4. Academic activities

- . **Theoretical classes in large groups:** 3h/week all semester
- . **Practical classes in small groups:** 10 h/week for two weeks each group
- . **Personal study:** 87h
- . **Assessment tests.** 2 hours

Attendance to the practices is mandatory.

The student will be informed about the possible risks during the practices and will sign a commitment to comply with the safety rules (<http://uprl.unizar.es/estudiantes.html>)

The dates of the global exams can be consulted at <https://ciencias.unizar.es/grado-en-biotecnologia>.

The places, times and dates of theory classes and practical sessions will be made public on the Moodle platform of the University of Zaragoza <https://moodle2.unizar.es/add/>

## 5. Assessment system

### Ordinary Global Test

**Theoretical contents:** 30 multiple-choice questions, with 4 answers, only one of which is valid. Wrong answers will not subtract points. The grade from 0 to 10, considering that a grade of 5 is required to pass the test, will be obtained if 70% of the questions are correct. It represents **80%** of the final grade.

**Practical contents:** At the end of each practices module, the knowledge acquired will be evaluated by means of a multiple choice written test and/or rubric, as well as the skills, if applicable. It represents **20%** of the final grade

### Extraordinary Global Test

The evaluation of the theory and practical contents will be carried out with the criteria and weighting described in the ordinary global test

The student who does not pass the practical test of each module, will take a practical exam in the Global test of each call, which will consist of four short developmental questions

### Weighting

Written examination:	80%
Practices Module I	10%
Practices Module II:	10%

- In order to calculate the final grade, it is essential to pass the theoretical exam.

## 6. Sustainable Development Goals

- 3 - Good Health & Well-Being
- 4 - Quality Education
- 12 - Responsible Production and Consumption