Universidad Zaragoza

**Academic Year/course: 2024/25**

# 27105 - Genetics

## Syllabus Information

**Academic year:** 2024/25
**Subject:** 27105 - Genetics
**Faculty / School:** 100 - Facultad de Ciencias
**Degree:** 446 - Degree in Biotechnology
**ECTS:** 6.0
**Year:** 1
**Semester:** Second semester
**Subject type:** Basic Education
**Module:**

## 1. General information

The main objective of the course is based on the student acquiring the basic knowledge related to the characteristics of hereditary material and inheritance, its genetic variability, as well as the bases of Population Genetics. These approaches and objectives are aligned with the following Sustainable Development Goals (SDGs) of the United Nations 2030 Agenda (https://www.un.org/sustainabledevelopment/es/). In particular, the study of this subject, as well as the acquired learning results are framed within the following Goals: Goal 3 of the SDGs, related to Good Health and well-being, Goal 4 (Quality Education) and Goal 5 (Gender equality). Knowledge of the genetic basis of a wide range of inheritance patterns will enable the student to address a significant number of ongoing and emerging health-related problems.

## 2. Learning results

-To know the nature and transmission of hereditary material.

-To know the genetic variability.

-To know the basis of Population Genetics.

-To adequately develop the work proposed in the laboratory.

-Write and discuss publicly the reports or issues raised in the subject, individually and/or in group, critically analysing the information.

## 3. Syllabus

-**BLOCK I**: Nature and organization of hereditary material in eukaryotes and prokaryotes.

-**BLOCK II**: Transmission of hereditary material: chromosomal theory of inheritance, gene and chromosomal mutations , autosomal and sex-linked Mendelian inheritance, extension of Mendelian analysis , gene interaction or epistasis, microsatellites.

-**BLOCK III**: Ligation and recombination: genome mapping in eukaryotes, genetic maps and physical.

-**BLOCK IV**: Population genetics: alterations of the Hardy-Weinberg equilibrium, systematic and dispersive processes.

## 4. Academic activities

-**Master classes (40 hours)**: Participative classes given to the whole group.

-**Practical classes in the laboratory and in the computer classroom (12 hours)**: Laboratory and computer practices to reinforce the theoretical concepts of the subject.

-**Resolution of problems and cases (8 hours)**: Group resolution of a collection of problems that will be provided in advance. Complementary activity based on seminars, debates or other activities.

-**Autonomous work of the student (85 hours)**.

**-Assessment tests (5 hours)**.

-**Individualized or small group tutoring**.

## 5. Assessment system

1. The specific competencies will be evaluated by means of a **written test** consisting of short questions. The option of an oral test is also open to students who consider this type of evaluation more appropriate. The result of the assessment, by means of the written test, of the acquired theoretical knowledge will represent **60% of the final grade**.

2. The evaluation of the **individual resolution of problems or cases** will account for **15% of** the **final grade**.

3. The active participation and the grade of the test proposed at the end of each **laboratory practice** will account for **10% of the final grade**.

4. The active participation in a **complementary activity** carried out by groups and that allows to evaluate the acquisition of key

terms and definitions of the subject will be valued with **15% of the final grade**.

In order for the evaluations of points 2, 3 and 4 to be taken into account, the student must obtain a minimum grade of 5 in the written test.

In addition to the evaluation modality indicated in the previous points, the student will have the possibility to be evaluated in a global test, which will judge the achievement of the learning results indicated above.

## 6. Sustainable Development Goals

3 - Good Health & Well-Being
4 - Quality Education
5 - Gender Equality