

## 25430 - Cellular and molecular basis of human Pathophysiology

### Syllabus Information

**Academic year:** 2023/24

**Subject:** 25430 - Cellular and molecular basis of human Pathophysiology

**Faculty / School:** 127 - Facultad de Ciencias de la Salud

275 - Escuela Universitaria de Enfermería de Huesca

375 - Escuela Universitaria de Enfermería de Teruel

**Degree:** 559 - Degree in Nursing

560 - Degree in Nursing

561 - Degree in Nursing

**ECTS:** 6.0

**Year:** 1

**Semester:** First semester

**Subject type:** Basic Education

**Module:**

### 1. General information

The general objective of this subject is that students learn the molecular and cellular basis of the functioning of the human body and how changes can alter health. Students will acquire the fundamentals of microbiology necessary for the professional nursing activity that comes into contact with patients with infectious diseases or especially susceptible to them.

This is a subject whose evaluable contents, by themselves, do not yet give direct capabilities to the student for the achievement of the objectives of the 2030 Agenda. However, they are essential to base the subsequent knowledge of the rest of the degree, which is more directly related to the Sustainable Development Goals (SDGs) of the United Nations Agenda 2030 (<https://www.un.org/sustainabledevelopment/es/>).

### 2. Learning results

To know the cellular and molecular basis of the human body

To acquire an integrated understanding of cellular functional mechanisms in a healthy state

To know the implication of genetics in health and disease

To understand how molecular and cellular changes lead to alterations in health

To acquire a comprehensive and dynamic vision of the cellular and molecular mechanisms involved in the development of pathologies To understand both basic and clinical scientific work from a cellular and molecular perspective, integrating the information and applying the knowledge in the understanding of human pathophysiology To acquire the ability to develop questions at the molecular and cellular level

To identify the parasite-host relationship and the factors that influence its virulence

To know the methods of disinfection and sterilization

To acquire the basic knowledge for the identification of the etiological agents of infectious diseases

### 3. Syllabus

#### 1. THEORETICAL PROGRAM

##### THEMATIC BLOCK I. CELLULAR, MOLECULAR BIOLOGY AND HUMAN GENETICS.

UNIT 1. CELL MEMBRANE. TRANSPORT PHENOMENA.

UNIT 2. CELL ADHESION. CELLULAR COMMUNICATION.

UNIT 3. CYTOPLASMA. NUCLEUS.

UNIT 4. NUCLEIC ACIDS AND CHROMOSOMES.

UNIT 5. PROCESSES OF NUCLEIC ACID AND PROTEIN SYNTHESIS.

UNIT 6. REGULATION OF GENE EXPRESSION.

UNIT 7. CELL CYCLE. PROLIFERATION, AGING AND CELL DEATH. MOLECULAR BIOLOGY OF CANCER.

##### THEMATIC BLOCK II. MICROBIOLOGY IN HUMANS.

UNIT 8. BASIC CONCEPTS: INTRODUCTION TO THE STUDY OF MICROORGANISMS.

UNIT 9. DISINFECTION, STERILIZATION AND ASEPSIS.

UNIT 10. MORPHOLOGY AND PHYSIOLOGY OF BACTERIA. MAIN PATHOGENIC BACTERIA FOR HUMAN BEINGS.

UNIT 11. MORPHOLOGY AND PHYSIOLOGY OF VIRUSES. MAIN PATHOGENIC VIRUSES FOR HUMAN BEINGS.

UNIT 12. MORPHOLOGY AND PHYSIOLOGY OF PARASITES. MAIN PATHOGENIC PARASITES FOR HUMAN BEINGS.

UNIT 13. PERFORMANCE AGAINST MICROORGANISMS.

The order in which the contents are taught may be modified according to the circumstances and organizational needs of the center

## **2. PRACTICAL PROGRAM**

The laboratory practices are related to the content of the subject:

- Optical microscope
- Cell types
- Hand washing

The content of the practices may be modified according to the availability of the laboratory and materials.

## **4. Academic activities**

Participative master class: Theoretical sessions in which the contents of the subject will be explained (50h) Practices: Laboratory practices (10h). In small groups.

Tutoring: Direct attention to students. Identification of learning problems. Guidance on the subject.

Study and work (86h)

Evaluation tests (4h)

## **5. Assessment system**

-Multiple choice questions test (80% of the final grade). Mastery of the contents will be an asset. The test will consist of 50 questions, each with 5 answers of which only one will be correct. It will be necessary to obtain at least 32 correct questions to pass the exam. 32 right answers correspond to a grade of 5 out of 10. It will be considered essential to obtain at least a grade of 5 in the theoretical part in order to be able to add the grade of the practices and the group work.

-Continuous evaluation of participation in laboratory practices (10% of the final grade).

The following will be valued: attendance, active participation, good time management, collaboration with classmates, ability to work in a group, understanding of fundamental concepts and the development of tasks or material requested.

Practices are mandatory and must be completed in order to pass the subject. Practices will be graded from 0 to 10.

In the case of not having done them or not having attended more than one practice, it will be necessary to take an exam on the content of the practices in order to pass the subject. The exam will be held on the same day as the theoretical exam and will consist of a written exam on the content of the practical exercises

-Group work (10% of the final grade)

The following will be valued: attendance and active participation, initiative, contribution of ideas and problem solving, good time management, collaboration with peers and ability to work in groups, structure of the work done, understanding of fundamental concepts, quality of documentation, rigor in the treatment of data and concepts, justification of the comments with adequate references, clarity and order in the oral presentation.

The presentation of the work is compulsory and it is necessary to have presented it in order to pass the subject. It will be graded from 0 to 10.