# COURSE DATA

## DATA SUBJECT

**Code:** 34466
**Name:** General phatological anatomy
**Cycle:** Undergraduate Studies
**ECTS Credits:** 4.5
**Academic year:** 2025-26

## STUDY (S)

| Degree | Center | Acad. year | Period |
|---|---|---|---|
| 1204 - Degree in Medicine | Facultat de Medicina i Odontologia | 3 | First quarter |

## SUBJECT-MATTER

| Degree | Subject-matter | Character |
|---|---|---|
| 1204 - Degree in Medicine | Diagnostic and therapeutic procedures | COMPULSORY |

## COORDINATION

MONTEAGUDO CASTRO JOSE CARLOS

# SUMMARY

The General Pathological Anatomy subject is a discipline, part of the third year of the Medicine Degree, which tries to explain the signs and symptoms seen in patients by using morphological techniques and molecular and immunological tools.

To make that possible, it uses a set of techniques, methods and theoretical and practical knowledge that explain the origin, development and consequences of the disease from a morphological point of view. Morphology has to be understood as a continuous spectrum from the macroscopic anatomical pathology, which includes clinical autopsies and macroscopic examination of biopsies, the microscopic study with histopathology, cytology and ultra-structural pathology, and the molecular pathology. With this approach, it is possible to deep into the molecular basis of the structure in which the vital activity is settled._

# PREVIOUS KNOWLEDGE

## RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

There are no specified enrollment restrictions with other subjects of the curriculum.

### OTHER REQUIREMENTS

It is highly recommended a good knowledge of anatomy, histology and cellular and molecular biology for an optimal achievement.

## COMPETENCES / LEARNING OUTCOMES

### -

Acknowledge diversity and multiculturality.

Acquire properclinical experience in hospitals, health care centres and other health institutions, under supervision, as well as basic knowledge of clinical management focused on the patient and the correct use of tests, medicines and other resources available in the health care system.

Be able to formulate hypothesis, gather information and evaluate it critically in order to solve problems by following the scientific method.

Capacity for communicating with professional circles from other domains.

Conocer las características de los tejidos en las diferentes situaciones de lesión, adaptación y muerte celular. Inflamación. Alteraciones del crecimiento celular.

Consideration of ethics as a fundamental value in the professional practise.

Criticism and self-criticism skills.

Establish a good interpersonal communication which may allow professionals show empathy and talk to the patients efficiently,as well as to their relatives, the media and other professionals.

Establish the diagnosis, prognosis and treatment, applying principles based on the bestinformation available and on conditions of clinical safety.

In the professional practise, take a point of view which is critical, creative, constructive and research-oriented.

Is aware of the indications in biochemical tests, as well as haematological, immunological, microbiological, anatomical and pathological, and image tests.

Keep and use medical records which contain information about the patient for later analysis, preserving the confidentiality of personal data.

Know how to use IT in clinical, therapeutic and preventive activities, and those of research.

Know how to use the sources of clinical and biomedical information available, and value them critically in order to obtain, organise, interpret and communicate scientific and sanitary information.

Knows of the physiopathology of wounds (including burns, frostbite and other types of wound). Wound healing.

Knows the pathological anatomy of various body organs and systems.

Proper organisation and planning of the workload and timing in professional activities.

Team-working skills and engaging with other people in the same line of work or different.

Understand and recognise the effects, mechanisms and manifestations of diseases over the structure and function of the human body.

Understand and recognise the effects of growth, development and aging which affect individuals and their social environment.

Understands the use of biochemical markers, as well as cytogenetic and of molecular biology which may be applied in clinical diagnosis.

Understand the importance and the limitations of scientific thinking in the study, prevention and management of diseases.

Working capacity to function in an international context.

## DESCRIPTION OF CONTENTS

### 1. THEORETICAL LESSONS

1. Concept and method of Pathological Anatomy. Lesion as morphological expression of the disease: current concept and historical evolution. The technique and its value in the morphological study of the disease.
2. Basic cell injuries: microscopic pathology, ultrastructural and molecular of the membrane and organelles, cytoskeleton and nucleus.
3. Reversible and irreversible cell injuries. Cell death: basic and differential pathological features of the different types of necrosis and apoptosis.
4. Pathology of the pigments: pathological features of the exogenous, melanin, lipopigments, hemochromatosis and cholestasis.
5. Pathology of calcium and uric acid: dystrophic and metastatic calcification. Morphopathology of the lithiasis. Pathological features of gout: macroscopic, microscopic and histochemical structure of tophus.
6. Circulatory disorders I: Hyperemia (active and passive). Aedema. Thrombosis: mechanisms, types and evolution. Embolism: concept and types.
7. Circulatory disorders II: macroscopic and microscopic pathological features of ischemia and infarction: acute and chronic ischemia. Infarction: concept and types. Pathological basis of shock.
8. Study of the inflammatory focus: concept and cellular basis of inflammation. Evolution and nosology of the inflammatory focus: vascular and cellular phases.
9. Anatomical and pathological forms of acute and chronic inflammation. Granuloma: morphological and featuring and types. Diffuse chronic inflammations.
10. Adaptative growth: histopathologic basis of healing and tissue regeneration. Morphopatology of hypertrophy and hyperplasia. Concept and histopathological types of dysplasia.

## 2. THEORETICAL LESSONS (continuation)

11. Neoplasia I: Pathological basis of classification and general nomenclature.
Differential pathological features of benign and malignant tumours. The role of pathological anatomy in staging system (TNM).
12. Neoplasia II: morphopatological basis of neoplastic initiation, promotion and progression. Tumour invasion and metastasis: concept and dissemination pathways
13. Neoplasia III: carcinogenesis: chemical, physical and biological.
14. Neoplasia IV: chromosomopathies and other genetic markers of cancer.
15. Neoplasia V: general anatomical and pathological features of benign and malignant epithelial neoplasms: in situ and infiltrating: nomenclature and general morphology.
16. Neoplasia VI: Mesenchymal tumours: nomenclature and classification (WHO). Histological grade in sarcomas. Basic features of osteosarcoma, chondrosarcoma, giant cell tumour, liposarcoma, leiomyosarcoma and angiosarcoma.
17. Neoplasia VII: Introduction to neoplastic hematopathology: leukemias, lymphomas, myelodysplastic syndrome and myeloproliferative syndromes.

## 3. LABORATORY PRACTICAL

PRACTICE 1.- Necrosis and apoptosis
PRACTICE 2.- Metabolic pathology
PRACTICE 3.- Hemodynamic disorders
PRACTICE 4.- Inflammation
PRACTICE 5.- Benign neoplasm
PRACTICE 6.- Malignant epithelial neoplasm
PRACTICE 7.- Non-epithelial malignant neoplasm

## 4. SEMINARS

1. Pathological anatomy techniques II: exfoliative cytology and FNAP (2 hours)
2. Pathological anatomy techniques III: biopsy and special techniques: immunohistochemistry, electron microscopy, molecular pathology (2 hours)
3. Diabetes mellitus and atherosclerosis (2 hours)
4. Infectious pathology: tuberculosis and fungal and viral diseases (2 hours) 5. Bone and soft tissue tumours (2 hours)
6. Pathological anatomy techniques I: clinical autopsy (1 hour)
7. Protein degenerations: hyaline, fibrinoid and amyloid. Morphopathology, types and meaning (1 hour)
8. Lipid storage diseases: macroscopic, microscopic and molecular pathological features of the different

types (1 hour)
9. Melanocytic neoplasms: classification and morphopathological basis (1 hour)
10. Hodgkin¿s lymphoma (1 hour).
11. Inflammation and cancer (1 hour).
12. Aging pathology (1 hour).

## WORKLOAD

### PRESENCIAL ACTIVITIES

| Activity | Hours |
|---|---|
| Theory | 19,00 |
| Seminars | 16,00 |
| Laboratory | 11,00 |
| In-class tutorials | 4,00 |
| Clinical practice | 6,00 |
| **Total hours** | **56,00** |

### NON PRESENCIAL ACTIVITIES

| Activity | Hours |
|---|---|
| Attendance at other activities | 0,00 |
| Individual or group project | 5,00 |
| Independent study and work | 24,25 |
| Preparation of lessons | 22,00 |
| Preparation for assessment activities | 5,00 |
| Resolution of case studies | 0,00 |
| Preparation of supplementary reports | 0,00 |
| Preparation of the internship report and evaluation of the internship | 0,00 |
| **Total hours** | **56,25** |

## TEACHING METHODOLOGY

In the **theoretical lessons** (17 thematic units), the teacher will expose, through master class, the most important concepts and contents in a structured way, to provide the knowledge and skills that the students must acquire. The students¿ participation will be encouraged. The teaching materials used by the professor will be available, if he considers it appropriate, through the electronic resource Aula Virtual.

Classroom practices: **seminars**. In small groups, the teacher will set specialized topics in depth, case studies, bibliography handling and current topics. The interactive and cooperative learning will be specially boosted.

**Laboratory practices** in small groups. They are focused on the consolidation of the theoretical knowledge by the microscope observation (1 microscope per student) of the most representative lesions and

diseases. The professors will present every microscopic preparation, will supervise directly the activity and will discuss each case interactively with the students .

**Clinical Practices**: students¿ clinical practices in sanitary services in the different university hospitals, in order to learn the whole process from the reception of the biopsy and cytological samples to the emission of a diagnosis, and which includes, among others, the cutting and the selection of representative areas, paraffin embedding, microtome sectioning and routine and special staining, immunohistochemistry and molecular techniques, ending with the microscopic examination, and all of these parts being supervised by the professor.

**Tutorials** in reduced groups where the students work in group about different topics coordinated by the professor and a posterior presentation, both written and oral, followed by a debate about the topic. It is a cooperative learning with a co-responsibility strategy.

The gender perspective, the respect for diversity, and the sustainable development goals (SDGs) will be incorporated into teaching, whenever possible.

## EVALUATION

**Theoretical assessment:** 50% of the final mark. Maximum value of 5 points: it will be made by a written test* of 50 multiple-choice questions* about the contents of the theoretical program. The content of the test will be the same for all groups.

**Practical assessment:** 50% of the final mark. It will be made by the continuous assessment of the participation on the different activities and the fulfillment of the tests that assess the acquisition of the knowledge related to the general and specific competences of the subject: maximum value of 5 points distributed as follows:

- **Seminars:** maximum value of 3 points: written test of 30 multiple-choice questions*. The content of the test will be the same for all groups.

- **Microscopic practices**: maximum value of 1 point. It will be assessed by a written test in the same room in which 10 selected slides, from those discussed during the course, will be projected. The students should recognize them. Each correct answer will be scored 0.1 point. More information will be given during the first practice assessment.

- **Supervised tutorial practices:** maximum value of 0.6 points.

- **Clinical practices:** maximum value of 0.4 points. At the end of each practice, the student will answer written questions about the information received (maximum value: 0.2 points per practice).

*The written tests of multiple-choice answers through the theoretical teaching and seminars will have 4 options of which only one is correct. Each correct answer will receive 0.1 points and 0.033 points will be

subtracted by each wrong answer. The questions not answered will not suffer penalty. The instructions for the exam will be explained in detail before starting the test.

**Important**: A minimum of 2.5 points, both in the theoretical as well as in the practical assessment, is required to pass the subject.

Attendance at practical activities is mandatory. The student is considered to meet this requirement if he or she has attended a minimum of 80% of these activities and has adequately justified the impossibility of attending the remaining sessions due to the occurrence of a cause of force majeure. It will be essential to comply with this requirement to pass the subject.

Students are reminded of the importance of carrying out evaluation surveys on all the teaching staff of the degree subjects.

## REFERENCES


- Kumar V, Abbas AK, Aster JC. Robbins y Cotran. Patología estructural y funcional. 10ª ed. Editorial Elsevier-Saunders, 2021.
- Buja LM, Krueger, GRF. Netter - Anatomía Patológica. 1ª Edición. Ed. Masson, 2006.
- Rubin R, Strayer DS. Rubin-Patología Estructural. Fundamentos Clínico-patológicos en Medicina. 6ª Ed. Wolters Kluver/Lippincott Williams & Wilkins, 2012.
- Klatt EC, Kumar V. Robbins y Cotran¿Repaso de Anatomía Patológica. Preguntas y respuestas. 4ª Edición Ed. Elservier-Saunders, 2016.
- Klatt EC. Robbins y Cotran¿Atlas de Anatomía Patológica. 3ª Edición. Ed. Elsevier-Saunders, 2016.
- Kumar V, Abbas A, Aster JC. Robbins. Patología humana. Ed. Elsevier, 10ª edición, 2018.
- Kumar V, Abbas A, Aster JC y Deyrut AT. Robbins. Patología esencial. Ed. Elsevier, 2021.
- RECURSOS e-Salut:
    - ClinicalKey Student Medicina, Odontologia y Enfermería [https://uv-es.libguides.com/RecursosSalut] .
    - Acces Medicina [https://uv-es.libguides.com/Access_Medicina] .
    - Médica Panamericana [https://uv-es.libguides.com/Medica_Panamericana] .