Information about the subject

Degree: Bachelor of Science Degree in Medicine

Faculty: Faculty of Medicine and Health Sciences

Code: 340302 **Name:** Pathological Anatomy

Credits: 6,00 **ECTS Year:** 2 **Semester:** 2

Module: Diagnostic and therapeutical procedures.

Subject Matter: Diagnostic procedures **Type:** Compulsory

Field of knowledge: Health Science

Department: Pathology

Type of learning: Classroom-based learning

Languages in which it is taught: Spanish

Lecturer/-s:

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342B	Jose Angel Garcia Garcia **(Responsible Lecturer)**	joseangel.garcia@ucv.es
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Module organization

Diagnostic and therapeutical procedures.

Subject Matter	ECTS	Subject	ECTS	Year/semester
Diagnostic procedures	39,00	Basic Immunology	3,00	1/2
		Functional Assessment	6,00	This elective is not offered in the academic year 24/25
		Genetics	3,00	1/1
		Introduction to Medicine	3,00	1/2
		Laboratory of Diagnostic Tests	3,00	5/1
		Medical Microbiology and Parasitology	6,00	3/1
		Pathological Anatomy	6,00	2/2
		Physiological Records and Functional Tests	3,00	2/2
		Radiodiagnostic and Imaging Techniques	6,00	3/1
Therapeutic procedure	27,00	Anaesthesia and Resuscitation	3,00	5/1
		Biotechnology	6,00	This elective is not offered in the academic year 24/25
		General and Special Pharmacology	9,00	3/2

Therapeutic procedure	General Procedures of Intervention	6,00	This elective is not offered in the academic year 24/25
	Rehabilitation and Physical Therapy	3,00	4/2

Recommended knowledge

GENERAL OBJECTIVES
Knowledge of the basic pathological processes and relate them to the etiopathogenesis, clinic, prognosis and treatment of organic diseases in order to acquire a clinicopathological vision. Teach the role that Pathology plays in medical practice for the clinical and therapeutic management of patients (Diagnostic Pathology).Knowledge of a Pathological Anatomy Unit, its possibilities and limitations in relation to the fundamental objective, diagnosis in daily medical practice.

Learning outcomes

At the end of the course, the student must be able to prove that he/she has acquired the following learning outcomes:

R1	Know the techniques used in Molecular Genetics.
R2	Know the concepts around genetic variation.
R3	Distinguish the different chromosomal abnormalities that may occur in humans.
R4	Differentiate the different types of genetic alterations that cause disease.
R5	Perform molecular diagnostic techniques aimed at a specific human genetic disease in the laboratory by simulation.
R6	Perform DNA analysis using electrophoresis and interpret the results.
R7	Identify general inflammatory and neoplastic lesions on injured tissues.
R8	Be able to use clinical information to make reasoned differential diagnoses and diagnoses.
R9	Know the role of Pathological Anatomy in the clinical and therapeutic management of patients, in the quality of care and in scientific research
R10	Knowing how to access medical-scientific means of information to support and document diagnostics and scientific and research work
R11	Know organizational structure and operation of the Pathological Anatomy Service.
R12	Know the types of biopsies and cytologies as well as the basic methods of processing them.
R13	Know the procedure, objectives and necessary requirements of clinical autopsy.
R14	How it is and should include a procedural request and an Anatomo-Pathological report.
R15	Knowledge of the technical difficulties and limitations of the Pathological Anatomy Service.

R16 Know the microscopic observation technique.

Competencies

Depending on the learning outcomes, the competencies to which the subject contributes are (please score from 1 to 4, being 4 the highest score):

BASIC		Weighting			
		1	2	3	4
CB1	Students have demonstrated to possess and understand knowledge in a study area that starts from the base of the general secondary education, and is usually found at a level that, while supported by advanced textbooks, also includes some aspects that involve knowledge from the forefront of their field of study				x
CB2	Students know how to apply their knowledge to their job or vocation in a professional way and possess the competences that are usually demonstrated through the elaboration and defense of arguments and the resolution of problems within their area of ??study				x
CB3	Students have the ability to collect and interpret relevant data (usually within their area of study) to make judgments that include a reflection on relevant social, scientific or ethical topics				x
CB4	Students can pass on information, ideas, problems and solutions to both a specialized and non-specialized audience				x
CB5	Students have developed the learning skills needed to undertake further studies with a high degree of autonomy				x

GENERAL		Weighting			
		1	2	3	4
CG1	Recognizing the essential elements of the medical profession, including ethical principles, legal responsibilities, and patient-centered professional exercise		x		
CG2	Understanding the importance of such principles for the benefit of the patient, society and profession, with special attention to professional secrecy		x		
CG3	Knowing how to apply the principle of social justice to professional practice and understanding the ethical implications of health in a changing global context		x		

CG4	Developing professional practice with respect to patient autonomy, beliefs and culture		x		
CG5	Recognizing the limitations themselves and the need to maintain and update their professional competence, giving special importance to the autonomous learning of new knowledge and techniques and to the motivation for quality				x
CG6	Developing professional practice with respect for other health professionals, acquiring teamwork skills				x
CG12	Understanding the basis of action, indications and efficacy of therapeutic interventions, based on available scientific evidence			x	
CG15	Having the ability to make an initial diagnostic judgment and establish a reasoned diagnostic strategy				x
CG18	Indicating the most appropriate therapeutics of the most prevalent and chronic acute processes, as well as terminally ill patients	x			
CG21	Listening to carefully, obtain and synthesize relevant information about the problems afflicting the patient and understand the content of this information		x		
CG22	Writing medical histories and other medical records in an understandable way to outsiders			x	
CG23	Communicating effectively and clearly, both orally and in writing, with patients, family members, media workers and other professionals				x
CG30	Basic knowledge of the National Health System and health legislation			x	
CG32	Knowing how to use information and communication technologies in clinical, therapeutic, preventive and research activities			x	
CG33	Maintaining and using records with patient information for further analysis, preserving data confidentiality			x	

SPECIFIC		Weighting			
		1	2	3	4
CE61	Assessing the risk-benefit ratio of diagnostic and therapeutic procedures	x			
CE62	Knowing the indications of biochemical, haematological, immunological, microbiological, anatomopathological and imaging tests			x	

CE63	Knowing the characteristics of tissues in different situations of injury, adaptation and cell death. Inflammation. Cell growth disturbances. Pathological anatomy of the different devices and systems. Biochemical, cytogenetic and molecular biology markers applied to clinical diagnosis			x	
CE64	Knowing the basics of microbiology and parasitology	x			
CE65	Knowing the main techniques of microbiological and parasitological diagnosis and interpret the results	x			
CE66	Knowing the basics of the interaction of radiation with the human organism. Radiological image. Basic radiological semiology of the different devices and systems	x			
CE67	Learning about other diagnostic imaging techniques	x			
CE68	Assessing the indications and contraindications of radiological studies	x			
CE69	Having the ability to apply radiological protection criteria in diagnostic and therapeutic procedures with ionizing radiation	x			
CE72	Knowing the main indications of electrophysiological techniques (ECG, EEG, EMG, and others)	x			
CE73	Knowing the pathophysiology of wounds (including burns, frostbites and other types of wounds). Healing. Surgical hemorrhage and thromboembolic prophylaxis	x			
CE77	Knowing how to obtain and process a biological sample for study using the different diagnostic procedures	x			
CE78	Knowing how to interpret the results of the laboratory's diagnostic tests	x			

TRANSVERSAL		Weighting			
		1	2	3	4
CT1	Analytical and synthesis capacity				x
CT2	Planification and organization capacity	x			
CT6	Manage information capacity		x		

CT7	Solving problems				x
CT8	Making decisions				x
CT9	Team work		x		
CT10	Interdisciplinary team work			x	
CT12	Interpersonal relationship skills				x
CT14	Critical reasoning				x
CT16	Individual learning				x
CT18	Creativity	x			
CT19	Leadership		x		
CT24	Ability to take responsibility				x
CT25	Autocriticism capacity			x	
CT26	Knowing how to value personal action and know your own skills and limitations				x

Assessment system for the acquisition of competencies and grading system

Assessed learning outcomes	Granted percentage	Assessment method
	0,00%	Open questions
R1, R2, R3, R4, R5, R9, R11, R12, R13, R14, R15	70,00%	Tests
R10	5,00%	Practices
R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16	5,00%	Participation in class
R6, R7, R8, R16	20,00%	Practice exam

Observations

To achieve the approved level, it will be a necessary condition to have achieved a minimum score of 5 out of 10, both in the multiple choice test (multiple choice tests), and in the practical test. Attendance at practices is mandatory to be able to take the practical exam. The "Practices" section is related to the presentation of a Cynical Case.

MENTION OF DISTINCTION:
In accordance with the regulations governing the assessment and grading of subjects in force at UCV, the distinction of "Matrícula de Honor" (Honours with Distinction) may be awarded to students who have achieved a grade of 9.0 or higher. The number of "Matrículas de Honor" (Honours with Distinction) may not exceed five percent of the students enrolled in the group for the corresponding academic year, unless the number of enrolled students is fewer than 20, in which case a single "Matrícula de Honor" (Honours with Distinction) may be awarded. Exceptionally, these distinctions may be assigned globally across different groups of the same subject. Nevertheless, the total number of distinctions awarded will be the same as if they were assigned by group, but they may be distributed among all students based on a common criterion, regardless of the group to which they belong. The criteria for awarding "Matrícula de Honor" (Honours with Distinction) will be determined according to the guidelines stipulated by the professor responsible for the course, as detailed in the "Observations" section of the evaluation system in the course guide.

Learning activities

The following methodologies will be used so that the students can achieve the learning outcomes of the subject:

M1	Masterclass
M2	Problems resolution and practical cases
M4	Content presentations by teacher
M5	Knowledges and skills explanation
M6	Laboratory practices
M7	Oral presentation by student
M8	Group activities supervised by professor
M9	Knowledge acquirance through student interaction and activity
M11	Personalised attention by professor
M12	Tests to understand the level of knowledge acquirance and skills
M13	Written work
M14	Online activity on e-learning
M15	Personal study
M16	Information research
M17	Discussion and solving issues in group

M18 Work in team

M19 Group work for searching, discussion and information research

M21 Supervision of clinical histories

IN-CLASS LEARNING ACTIVITIES

	LEARNING OUTCOMES	HOURS	ECTS
Theory class M1, M2, M4, M5	R6, R7, R8, R10, R11, R12, R13, R14, R15, R16	36,00	1,44
Seminar and group practices M2, M4, M5	R7, R12, R16	9,00	0,36
Practices in small groups M2, M4, M5	R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16	4,50	0,18
Tutoring M2	R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16	1,50	0,06
Evaluation M2	R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16	1,50	0,06
TOTAL		**52,50**	**2,10**

LEARNING ACTIVITIES OF AUTONOMOUS WORK

	LEARNING OUTCOMES	HOURS	ECTS
No attendance M2, M5	R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16	97,50	3,90
TOTAL		**97,50**	**3,90**

Description of the contents

Description of the necessary contents to acquire the learning outcomes.

Theoretical contents:

Content block	Contents

BLOCK 1. GENERAL PATHOLOGY

Unit 1. Pathology: Concept and historical evolution. Pathology as a morphological substrate of the disease. Diagnostic procedures and Hospital Committees. Map of processes in the activity of the Pathological Anatomy Service.

Unit 2. Injury, adaptation and cell death.
Mechanisms and evolution of cell injury. Types of injury. Necrosis and apoptosis. Cellular response to aggression; Cellular adaptation: hypertrophy, hyperplasia, atrophy and metaplasia. Structural models of glandular atrophy and hyperplasia.

Unit 3. Inflammation and repair.
Acute and chronic inflammation. Acute inflammation. Mediators of inflammation. Cytokines Natural evolution of inflammation. Morphological patterns of inflammation. Chronic inflamation. Repair, regeneration and healing. Mother cells. The cell cycle and its regulation. Growth and Transcription Factors. Intercellular matrix. Healing and repair of wounds. Healing pathology.

Unit 4. Hemodynamic Disorders, Thromboembolic Disease and Shock.
Aetiopathogenesis of arteriosclerosis. Aneurysms., Vasculitis, diabetic vasculopathy. Thromboembolic disease, ischemia and infarction. Structural models. Bleeding disorders. Shock, pathogenesis of septic shoch. Phases of shock.

Unit 5. Immunity disorders and genetic diseases.
Hypersensitivity reactions. Autoimmune diseases. Transplant rejection. Immunodeficiency syndromes.

Unit 6. Genetic Diseases and Congenital Anomalies.
Mendelian disorders; disorders associated with defects in structural proteins. Receptor proteins, enzymatic defects and cell growth regulatory proteins. Chromosomal disorders of the autosomes and sex chromosomes. Molecular diagnosis. Perinatal infections. Inborn errors of metabolism. Sudden Infant Death Syndrome. Tumors and pseudotumor lesions in infants and children.

Unit 7. Neoplasms. General nomenclature. Concept of benignity and malignancy. Undifferentiation and anaplasia. Dysplasia concept. General classification of neoplasms. Molecular bases and etiopathogenesis of cancer. Activating and inhibiting genes. Natural history of cancer. Cancer and Immunity. Carcinogenic agents. Clinical aspects of cancer. Paraneoplastic syndromes. Cancer staging.

BLOCK 2. SPECIAL PATHOLOGY.

1. Special Diagnostic Techniques in Surgical Pathology. Clinical Autopsy.
Inmunohistochemistry Methods. Molecular Pathology Methods. Clinical Autopsy.

2. HEAD AND NECK PATHOLOGY:
Salivary glands. Paranasal sinuses and nasopharynx. Oral cavity. Hearing. Larynx and Trachea.

3. DERMATOPATHOLOGY.
Inflammatory conditions Cysts, Proliferations and Neoplasms.

4. CARDIOVASCULAR PATHOLOGY.
Heart. Pericardium. Blood vessels.

5. BREAST PATHOLOGY.
Inflammatory Conditions and Neoplasms.

6. THORACIC PATHOLOGY: Lung and Pleura:
Obstructive Pulmonary Diseases. Restrictive and Interstitial Diseases. Infectious diseases. Neoplastic Conditions.

7. THORACIC PATHOLOGY: Thymus and Mediastinum:
Benign and malignant diseases of the thymus and mediastinum.

8. GASTROINTESTINAL PATHOLOGY.
Esophagus. Stomach. Small intestine. Vermiform appendix. Large intestine.

9. HEPATOBILIOPANCREATIC PATHOLOGY.
Liver. Gallbladder. Pancreas.

10. URINARY PATHOLOGY.
Bladder, Urethra and Ureter. Kidney.

11. MALE GENITOURINARY PATHOLOGY.
Prostate and seminal vesicle; Testicle and Testicular Annexes; Penis and scrotum.

12. PATHOLOGY of the FEMALE REPRODUCTIVE

SYSTEM.
Vulva. Vagina. Uterus: cervix and body. Ovary and Fallopian Tubes.

13. PATHOLOGY OF SOFT PARTS AND BONE.
Soft parts. Bone and Joints.

14. HEMATOPATHOLOGY.
Lymph nodes Spleen. Bone marrow.

15. ENDOCRINE PATHOLOGY.
Thyroid gland Parathyroid glands. Hypophysis. Adrenals

16. PATHOLOGY OF THE CENTRAL NERVOUS SYSTEM.
Central Nervous System. Eye And Ocular Attachments.

Temporary organization of learning:

Block of content	Number of sessions	Hours
BLOCK 1. GENERAL PATHOLOGY	8,00	16,00
BLOCK 2. SPECIAL PATHOLOGY.	18,25	36,50

References

Histology for Pathologists; 5th Ed; 2020.
ISBN: 9781496398963.

Robbins Basic Pathology, 10th Ed; 2018.
ISBN: 9780323353175.

Rosai and Ackerman's Surgical Pathology; 11th Ed; 2018.
ISBN: 9780323442084.

Differential Diagnosis in Surgical Pathology; 3th Ed; 2015.
ISBN: 9781455770137.

EXAMENES MIR.

CASOS CLINICOS:
The New England journal of medicine: https://www.nejm.org/multimedia/images-in-clinical-medicine.
JAMA: https://jamanetwork.com/collections/44038/clinical-challenge
Department of Pathology at the University of Pittsburgh School of Medicine: https://path.upmc.edu/cases/.

Addendum to the Course Guide of the Subject

Due to the exceptional situation caused by the health crisis of the COVID-19 and taking into account the security measures related to the development of the educational activity in the Higher Education Institution teaching area, the following changes have been made in the guide of the subject to ensure that Students achieve their learning outcomes of the Subject.

Situation 1: Teaching without limited capacity (when the number of enrolled students is lower than the allowed capacity in classroom, according to the security measures taken).

In this case, no changes are made in the guide of the subject.

Situation 2: Teaching with limited capacity (when the number of enrolled students is higher than the allowed capacity in classroom, according to the security measures taken).

In this case, the following changes are made:

1. Educational Activities of Onsite Work:

All the foreseen activities to be developed in the classroom as indicated in this field of the guide of the subject will be made through a simultaneous teaching method combining onsite teaching in the classroom and synchronous online teaching. Students will be able to attend classes onsite or to attend them online through the telematic tools provided by the university (videoconferences). In any case, students who attend classes onsite and who attend them by videoconference will rotate periodically.

In the particular case of this subject, these videoconferences will be made through:

[X] Microsoft Teams

[ ] Kaltura

Situation 3: Confinement due to a new State of Alarm.

In this case, the following changes are made:

1. Educational Activities of Onsite Work:

All the foreseen activities to be developed in the classroom as indicated in this field of the guide of the subject, as well as the group and personalized tutoring, will be done with the telematic tools provided by the University, through:

X	Microsoft Teams
	Kaltura

Explanation about the practical sessions:

2. System for Assessing the Acquisition of the competences and Assessment System

ONSITE WORK

Regarding the Assessment Tools:

[X] The Assessment Tools will not be modified. If onsite assessment is not possible, it will be done online through the UCVnet Campus.

[ ] The following changes will be made to adapt the subject's assessment to the online teaching.

Course guide		Adaptation	
Assessment tool	Allocated percentage	Description of the suggested changes	Platform to be used

The other Assessment Tools will not be modified with regards to what is indicated in the Course Guide.

Comments to the Assessment System: