Information about the subject

Degree: Bachelor of Science Degree in Medicine

Faculty: Faculty of Medicine and Health Sciences

Code: 340203 **Name:** Histology

Credits: 6,00 **ECTS Year:** 2 **Semester:** 1

Module: Morphology, structure and function of the human body

Subject Matter: Morphology and microscopic structure of the human body **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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Module organization

Morphology, structure and function of the human body

Subject Matter	ECTS	Subject	ECTS	Year/semester
Morphology and microscopic structure of the human body	6,00	Histology	6,00	2/1
Biology	6,00	Cell Biology	6,00	1/1
Anatomy	27,00	Anatomy II	9,00	2/1
		Anatomy III	6,00	2/2
		Embryology and Anatomy I	12,00	1/2
Biochemistry	9,00	Biochemistry and Molecular Biology	9,00	1/2
Physics	6,00	Biophysics	6,00	1/2
Physiology	12,00	Human Physiology I	6,00	2/1
		Human Physiology II	6,00	2/2

Recommended knowledge

GENERAL OBJECTIVES

Identify the microscopic structure of the tissues and organs of the human body and their cellular and molecular composition.Know the use and management of the optical microscope, the procedures for histological study and acquire the appropriate methodology and skills for the microscopic observation of tissues.Learn to identify the cells and molecules of the tissues and organs of the human body in order to understand their functioning, their adaptive changes and the alterations that lead to their anatomo-pathological lesions.Understand the contribution of cells and molecules to the structure and functioning of the tissues and organs of the human body, to their development, differentiation, maintenance, renewal, regeneration and aging.To understand the molecular and genetic mechanisms that regulate the functioning of the tissues and organs of the human body, and the clinical interest of their cellular, molecular and genetic biomarkers in the identification, study and monitoring of the disease and its treatment.To know the cellular and molecular processes that precede the structural and functional pathology of the organs of the human body, in order to understand the importance of tissue and organ injuries in the genesis of the clinical manifestations of the disease.

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 and understand the intra and pericellular, intercellular and extracellular molecular and subcellular structures of different cell varieties in the context of the 4 basic tissues of the human body.

R2 Know and understand the distribution, molecular and cellular composition, and structural and functional organization of the 4 basic tissues of the human body.

R3 Know and understand the microscopic structure, the composition and organization of the cells, tissues and organs of the human body in the functional context of its differentiation, maintenance and renewal, its adaptive, defensive and regenerative responses, and its aging.

R4 Knowing and understanding the physiological and pathological implications of the structure, cell composition and functioning of human body tissues and organs

R5 Know and understand the objectives of medical research in relation to knowledge about the structure and functioning of the tissues and organs of the human body in health.

R6 Recognize and identify extracellular cells and structures of basic tissues of the human body, using methods of digital microscopy and histochemical staining.

R7 Recognize and identify the extracellular cells and structures of organs representative of the anatomical-functional systems of the human body, with methods of digital microscopy and histochemical staining.

R8 Apply the knowledge acquired to solve practical problems on the identification of cells, tissues and organs of the human body in a functional context during its differentiation, maintenance and renewal, during its adaptive, defensive and regenerative responses, and during aging.

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
CG6	Developing professional practice with respect for other health professionals, acquiring teamwork skills	x			
CG7	Understanding and recognizing the normal structure and function of the human body, at the molecular, cellular, tissue, organic and systems levels, at the different stages of life and in both sexes				x
CG11	Understanding and recognizing the effects of growth, development and aging on the individual and their social environment			x	

CG30	Basic knowledge of the National Health System and health legislation		x		

TRANSVERSAL		Weighting			
		1	2	3	4
CT1	Analytical and synthesis capacity				x
CT2	Planification and organization capacity		x		
CT6	Manage information capacity		x		
CT8	Making decisions			x	
CT14	Critical reasoning			x	
CT16	Individual learning				x
CT18	Creativity		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		
CT32	Being able to establish and maintain relationships with other professionals and institutions	x			

Assessment system for the acquisition of competencies and grading system

Assessed learning outcomes	Granted percentage	Assessment method
R1, R2, R3, R4, R6, R8	70,00%	Tests
R5	10,00%	Work
R1, R2, R3, R4, R5, R6, R7, R8	5,00%	Participation in class
R7	15,00%	Practice exam

Observations

To achieve the approved level, it will be a necessary condition to have achieved a minimum score of 5, 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.

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
M3	Virtual simulations
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
M12	Tests to understand the level of knowledge acquirance and skills
M13	Written work
M14	Online activity on e-learning
M15	Personal study
M18	Work in team

IN-CLASS LEARNING ACTIVITIES

	LEARNING OUTCOMES	HOURS	ECTS
Theory class M1, M2, M3, M4	R1, R2, R3, R6, R7, R8	36,00	1,44
Seminar and group practices M1, M2, M3, M4	R1, R2, R3, R6, R7, R8	9,00	0,36
Practices in small groups M1, M2, M3, M4	R1, R2, R3, R6, R7, R8	4,50	0,18
Tutoring M2	R1, R2, R3, R6, R7, R8	1,50	0,06
Evaluation M2	R1, R2, R3, R6, R7, R8	1,50	0,06
TOTAL		**52,50**	**2,10**

LEARNING ACTIVITIES OF AUTONOMOUS WORK

	LEARNING OUTCOMES	HOURS	ECTS
No attendance M2, M3	R1, R2, R3, R5, R6, R7	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 I: GENERAL HUMAN HISTOLOGY	Unit 1. Concept and historical evolution of Histology. Tissue and organ concept. Classification of tissues. Origin and body distribution of tissues. Unit 2. Epithelial tissue. Concept, varieties and distribution. General characteristics. Lining and glandular epithelia. Unit 3. Connective tissue. Generalities and adipose tissue. Cell concept and composition. Extracellular matrix. Unit 4. Cartilaginous tissue and Bone. Hyaline cartilaginous tissue. Fibrous cartilaginous tissue. Elastic cartilaginous tissue. Direct or membranous ossification. Indirect or chondral ossification. Diaphyseal ossification. Epiphyseal ossification. Unit 5. Blood and Bone Marrow. Structure and function of the erythrocyte, platelets, granulocytes, monocytes and lymphocytes. Hematopoiesis: Erythropoiesis, megakaryopoiesis, plaquetogenesis, granulopoiesis and monopoiesis and Lymphopoiesis T and B (Histology MO in topic 11). Unit 6. Muscle tissue. Smooth muscle. Cardiac muscle. Skeletal muscle. Unit 7. Nervous Tissue: CNS and SNP. Neuron. Glial cells of the CNS. Ependymal cells. Glial cells of the SNP.

BLOCK II: SPECIAL HUMAN HISTOLOGY

Unit 8. Skin and nails.
Epidermis and dermis. Hair follicles. Sebaceous glands. Sweat glands. Nail.

Unit 9. Breast.
Adolescence, Adult and Menopause. Immunophenotypes and Biomarkers.

Unit 10. Heart, Arteries, Veins and Microvascularization.
Endocardium, Myocardium, Epicardium. Arteries and Veins. Arteriovenous anastomosis. Cup holder systems. Lymphatic vascular system.

Unit 11. Lymphoid system I.
Bone Marrow (see topic 6), Thymus and Lymph Nodes.

Unit 12. Lymphoid system II.
Spleen, MALT and Appendix.

Unit 13. Head and neck I.
Oral cavity, Nose, Paranasal Sinuses, Salivary glands, Larynx and Pharynx (see topic 15).

Unit 14. Head and neck II.
Eye, Ear and Temporal Bone.
Sclerocorneal, uveal and retinal layers. External, middle and internal ear.

Unit 15. Respiratory System and Serous Membranes.
Nostrils. Paranasal sinuses Nasopharynx. Larynx. Windpipe. Main bronchi. Socket.

Unit 16. Alimentary Tract I.
Esophagus, Stomach, Small Intestine, Colon, Appendix and Anal Canal.

Unit 17. Alimentary Tract II.
Liver, Bile Ducts and Pancreas.

Topic 18. Genitourinary System I.
Kidney and Renal Pelvis. Ureter and Bladder.

Unit 19. Genitourinary System II.
Testis and Ductal Excretory System. Penis and distal urethra. Prostate.

Unit 20. Female Genital System.
Vulva, Vagina, Uterus, Fallopian tubes. Ovary. Placenta.

Topic 21. Endocrine System I.
Hypothalamic pituitary axis. Pituitary and Pineal Gland.

Topic 22. Endocrine System II.
Thyroid, Parathyroid and Adrenal Glands. Diffuse Endocrine System and Paraganglia.

BLOCK III: SEMINARS 2021/202

1. Nails
2. Vermiform Appendix
3. Salivary glands
4. Serous Membranes
5. Anal Channel
6. Penis and Distal Urethra
7. Placenta
8. Diffuse Neuroendocrine System
9. Paraganglia
10. Sellar and Pituitary Region

Temporary organization of learning:

Block of content	Number of sessions	Hours
BLOCK I: GENERAL HUMAN HISTOLOGY	8,00	16,00
BLOCK II: SPECIAL HUMAN HISTOLOGY	13,00	26,00
BLOCK III: SEMINARS 2021/202	5,25	10,50

References

Histology for Pathologists.
4th/5th Ed; SE Mills (2012/2020).

Ross. Histologia: Texto y atlas: Correlacion con biologia molecular y celular.
8ª ed. Wojciech Pawlina (2020).

Don MacCallum's Michigan Histology.
2nd edition, 2017. Donald K. MacCallum, Michael Hortsch & Stephen C. Kempf.
https://histology.medicine.umich.edu/full-slide-list
(Histology at the University of Michigan: The Department of Cell & Developmental Biology at the University of Michigan Medical School)

WebPath® 2021 (The Internet Pathology Laboratory for Medical Education Hosted By The University of Utah Eccles Health Sciences Library).
https://webpath.med.utah.edu/HISTHTML/NORMAL/NORMAL.html

Histology at the University of Michigan (Medical School).
The Department of Cell & Developmental Biology at the University of Michigan Medical School provides digital microscopy resources for the study of cells. A full list of slides
https://histology.sites.uofmhosting.net/

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:

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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: