Information about the subject

Degree: Bachelor of Science Degree in Medicine

Faculty: Faculty of Medicine and Health Sciences

Code: 342003 **Name:** Basic Immunology

Credits: 3,00 **ECTS Year:** 1 **Semester:** 2

Module: Diagnostic and therapeutical procedures.

Subject Matter: Diagnostic procedures **Type:** Elective

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

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

There are no prerequisites

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 fundamental characteristics of the human genome and current genome sequencing methods.
R3	Know the concepts around genetic variation.
R4	Distinguish the different chromosomal abnormalities that may occur in humans.
R5	Differentiate the different types of genetic alterations that cause disease.
R6	Know the basics for the diagnosis of genetic diseases and is able to discern the right one for each case.
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 basic principles of immune system functioning
R10	Know the biological and molecular bases of the immune system
R11	Being able to understand, evaluate and summarize scientific information on Immunology
R12	Know the basics of the different techniques and methods used in the immunology laboratory.
R13	Select the appropriate analytical technique to evaluate a specific problem in the immune diagnosis.
R14	Know the main pathological alterations related to the immune system: immunodeficiencies, autoimmune pathologies, hypersensitivity reactions, rejection in organ and cell transplants, and tumor processes.

R15	Know the basic practical operation of some of the main techniques of the clinical diagnostic laboratory in immunology (ELISA, immunoblotting, flow cytometry, immunohistochemistry)
R16	Being able to interpret the results of some basic diagnostic techniques from the clinical immunology lab
R17	Being able to use the concepts learned in the subject to understand the medical-scientific literature in immunology
R18	Apply the concepts learned in the subject to the resolution of simple clinical cases
R19	Recognize with the different imaging techniques the morphology and structure of tissues , organs and systems.

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
R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R14, R18, R19	30,00%	Open questions
R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R17, R18, R19	40,00%	Tests
R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13	10,00%	Practices
R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16, R18, R19	5,00%	Participation in class
R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16, R17, R18, R19	15,00%	Practice exam

Observations

Attendance at practices of the subject is compulsory, except causes of force majeure. In this case of non-attendance, the student will not be able to take the corresponding exam. You will not be able to take any subject in module 3 (Human Clinical Training) without having passed the subjects in module 1 (Morphology, structure and function of the human body)
Criteria for granting honors:The honors may be awarded to the best students, who must have obtained a minimum grade of 9. It's possible require, a special test may be established to determine those students deserving of honors, given the limitation of 5% of enrolled students.In second and subsequent calls, only the honors that could be deducted after the first call may be granted.
DEVELOPMENT of the subject in second and subsequent enrollments:There will be a specific group for students who are not first-time students if they exceed the classroom occupancy limit and a teacher in charge of that group.The professor in charge of this group will carry out 6 follow-up and tutoring sessions of 2 hours each. The competitions to acquire the skills and abilities of the subject

will be carried out through all the practices foreseen for the subject. In each session the subject will be developed so that the work of the competences that each student needs to be able to pass the subject will be reinforced.The assessment of content and skills will be done in the exam set in the official calendar for this subject.

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, M7, M8, M9, M11, M12, M13, M14, M15, M16, M17	R1, R2, R3, R5, R6, R9, R10	30,00	1,20
Seminar and group practices M2, M5, M8, M9, M11, M12, M13, M14, M15, M16, M17, M18	R1, R2, R3, R4, R5, R6, R8, R9, R10, R11, R12, R13, R14, R15	2,00	0,08
Practices in small groups M2, M4, M5, M6, M7, M8, M9, M11, M12, M13, M14, M16, M17, M18, M19	R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16, R17	2,00	0,08
Tutoring M2, M5, M7, M9, M11, M12	R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16, R17, R18, R19	1,50	0,06
Evaluation M1, M2, M4, M5, M6, M7, M8, M9, M12, M13	R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16, R17, R18, R19	2,00	0,08
TOTAL		**37,50**	**1,50**

LEARNING ACTIVITIES OF AUTONOMOUS WORK

	LEARNING OUTCOMES	HOURS	ECTS
No attendance M14, M16	R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R13, R14, R16, R17, R18, R19	37,50	1,50
TOTAL		**37,50**	**1,50**

Description of the contents

Description of the necessary contents to acquire the learning outcomes.

Theoretical contents:

Content block	Contents
UNIT 1. Introduction to the Immune System	Nomenclature, general properties and components.
Unit 2. Innate Immunity	Early defense against infections
Unit 3. Capture of the antigen and presentation to the lymphocytes	What lymphocytes see
Unit 4. Antigen recognition in the adaptive immune system	Structure of the receptors for the lymphocyte antigen and development of immune repertoires
Unit 5. T cell mediated immunity	Activation of T lymphocytes by cell-associated antigens
Unit 6. Mechanisms of T-lymphocyte-mediated immunity	Roles of T lymphocytes in defense against host.
Unit 7. Humoral immune responses	Activation of B lymphocytes and production of antibodies.
Unit 8. Effector mechanisms of humoral immunity	Elimination of extracellular microbes and toxins
Unit 9. Immune Tolerance and self-immunity	Discrimination between what is proper and what is strange in the immune system and its failure
Unit 10. Immune responses against tumors and trasplants	Immunity against transformed cells and non-infectious foreign cells
Unit 11. Hypersensitivity	Disorders caused by immune responses
Unit 12. Congenital and acquidred immunodeficiencies	Diseases caused by faulty immune responses

Temporary organization of learning:

Block of content	Number of sessions	Hours
UNIT 1. Introduction to the Immune System	1,00	2,00
Unit 2. Innate Immunity	2,00	4,00
Unit 3. Capture of the antigen and presentation to the lymphocytes	2,00	4,00
Unit 4. Antigen recognition in the adaptive immune system	2,00	4,00
Unit 5. T cell mediated immunity	2,00	4,00
Unit 6. Mechanisms of T-lymphocyte-mediated immunity	1,00	2,00
Unit 7. Humoral immune responses	2,00	4,00
Unit 8. Effector mechanisms of humoral immunity	1,75	3,50
Unit 9. Immune Tolerance and self-immunity	2,00	4,00
Unit 10. Immune responses against tumors and trasplants	1,00	2,00
Unit 11. Hypersensitivity	1,00	2,00
Unit 12. Congenital and acquidred immunodeficiencies	1,00	2,00

References

·Abbas, Abul K, Lichtman, Andrew H and Pillai Shiv. (2020) Inmunología Básica Funciones y trastornos del Sistema inmunitario. 6 edición. Elsevier.

·Abbas, Abul K, Lichtman, Andrew H and Pillai Shiv. (2019) Inmunología Celular y Molecular. 9 edición. Ediciones Elsevier.

·Gorczynski, R., & Stanly, J. (2007). Inmunología basada en la resolución de problemas. Barcelona: Elsevier.

·Owen, J., Punt, J., & Jones, P. (2013). Kuby Inmunología (7 ed.). Mexico: Mc Graw Hill

·Rich, Fleisher, Shearer, Schroeder, Frew & Weyand (2019) Inmunología Clínica 5 Ed. Ediciones Elsevier.

·Vega, GB. (2011). Inmunología y su correlación clínica. México Panamericana.

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:

There will be no modifications to the evaluation instruments.