

Academic Year/course: 2021/22

## 26759 - General Anatomy and Human Embryology

### Syllabus Information

**Academic Year:** 2021/22

**Subject:** 26759 - General Anatomy and Human Embryology

**Faculty / School:** 104 - Facultad de Medicina

229 - Facultad de Ciencias de la Salud y del Deporte

**Degree:** 304 - Degree in Medicine

305 - Degree in Medicine

**ECTS:** 6.0

**Year:** 1

**Semester:** First semester

**Subject Type:** Basic Education

**Module:**

## 1. General information

### 1.1. Aims of the course

**The subject and their expected results respond to the following statements and objectives:**

Basically, know the human structures.

Learn about embryonic development, organogenesis and growth, maturation and ageing of the different devices and systems.

Know and recognize methods macroscopic and microscopic morphology, microscopic skin, the blood and the immune system

Handle material and basic laboratory techniques

Observe, identify and describe the anatomy of the processes of formation, development and aging of the human body, as well as the skin, blood and immune system, using macroscopic, microscopic and methods using techniques of image of clinical utility .

Learn about the functions of the process of training, development and aging of the human body, as well as the skin, blood and immune system at different stages of life

### 1.2. Context and importance of this course in the degree

General Anatomy and human embryology class is one of the basic subjects of medical studies. Introduced in basic and structural processes of formation, growth, maturation and ageing of different equipment and systems of the human body, with an emphasis on developing early embryo and supporting tissues

### 1.3. Recommendations to take this course

**Prior** knowledge and skills.

That you have access with an adequate preparation of compulsory secondary education and the Bachelor early embryo and supporting tissues

## 2. Learning goals

### 2.1. Competences

To overcome the course, the student will be more competent to...

#### Basic and General

CB1 - that students have demonstrated to possess and understand knowledge in an area of study that part of the basis of general secondary education, and is often found at a level that, although it is supported by advanced textbooks, includes also some aspects that they involve knowledge from the forefront of their field of study

CB2 - students know how to apply their knowledge to their work or vocation in a professional manner and possess skills that tend to be demonstrated through the elaboration and defence of arguments and solving problems within their field of study

CB3 - That students have the ability to gather and interpret relevant data (typically within their field of study) for making judgements that include a reflection on issues of social, scientific or ethical nature

CB4 - Students can transmit information, ideas, problems and solutions to both specialized as non-specialist audiences

CB5 - That students have developed those learning skills needed to undertake studies with a high degree of autonomy

#### Cross-cutting

- Capacity for analysis and synthesis
- Capacity for organization and planificacionc
- Oral and written communication in the native language
- Computer skills relating to the field of study
- Information management ability
- Problem solving
- Decision making
- Team work
- Skills in interpersonal relationships
- Recognition of the diversity and multiculturalism
- Critical reasoning
- Ethical commitment
- Autonomous learning
- Adaptation to new situations
- Creativity

- Leadership
- Initiative and entrepreneurial spirit
- Motivation for the quality
- Sensitivity toward environmental issues

### **Specific**

Belt CE03 - cellular communication. Excitable membranes. Cell cycle. Cell proliferation and differentiation. Information, expression and gene regulation. Heritage. Embryonic development and organogenesis

CE04 - Know the morphology, structure and function of the skin, blood, apparatus and systems circulatory, digestive, locomotive, excretory, reproductive and respiratory; endocrine system, immune system and central and peripheral nervous system. Growth, maturation and ageing of the different devices and systems. Homeostasis. Adaptation to the environment

CE05 - Handle material and basic laboratory techniques

CE07 - Recognize with macroscopic, microscopic methods and imaging techniques the morphology and structure of tissue, organs and systems

CE09 - basic physical examination

## **2.2. Learning goals**

**The student, to overcome this subject, shall demonstrate the following results...**

**Student to pass this part of matter must demonstrate that it is capable of:**

- Describe, identify, locate, and relate basically, structures, systems, and devices that make up the human body
- Integrate the successive States of the prenatal development of the human being.
- Integrate the structure and function of placenta and its adjoining membranes.
- Identify the processes of fertilization and the leading to the nesting of the Zygote.
- Identify the different embryonic stages including the differentiation of annexes.
- Describe, identify and sequence the basic phenomena of early embryonic development (differentiation, induction, migration) that lead to the emergence of equipment and systems and their evolution, growth and further maturation.
- Describe the basic phenomena that lead to shape the external appearance of the embryo and fetus.
- Recognize scientific criteria mechanisms of development failures and interpret its consequences
- Correlate the macroscopic microscopic optics and the ultrastructural morphology.
- Recognise the structures in development through images of the usual methods of observation of the clinical diagnosis
- Integrate the relationship morphology, structure and function of all periods of development
- Handle tools for studying macro and microscopically, know the meaning and foundations of the basic techniques of Embryological sample preparation - anatomical.
- Mastering basic Embryological and anatomical terminology necessary for the exercise of the medical profession.
- Relate morphological knowledge with the other disciplines of the curriculum.

## **2.3. Importance of learning goals**

In a generic way, the objective is to get students to acquire an adequate basic training in knowledge, skills and values of the student which brings you the morphology and structure of macro and microscopic bodies, equipment and systems of the human body in training and development as key that are the functional meaning in normal conditions and its projection to the clinic as a knowledge base.

## **3. Assessment (1st and 2nd call)**

### 3.1. Assessment tasks (description of tasks, marking system and assessment criteria)

#### The student must demonstrate that it has achieved learning outcomes expected by the following evaluation activities

The evaluation will be carried out through written exams of the theoretical and practical matter and also throughout the course through continuous assessment

The assessment percentages for the calculation of the final grade will be 85% for the exams and 15% will be the continuous assessment

Evaluation through exams:

The written exams will consist of multiple choice questions and short essay questions

Images will be included in the exam to comment on, identify or locate anatomical structures related to theory and practice, with this, the evaluation of the practices will be obtained

At the discretion of the teacher, and depending on the development of the course, the completion of one or two partial exams that include specific blocks of the subject studied will be valued. A score greater than 6/10 in a midterm exam will allow the student to eliminate the corresponding block of the final exam

#### Continuous assessment

You will be evaluated on an ongoing basis, according to the criteria and objectives releases previously, taking advantage of different activities for the acquisition of skills, using:

- Participation and performance in the classroom activities
- The development of articles, reports and practical activity book
- Ratings continued, both theoretical and practical stuff.

Students who do not pass the continuous assessment must be submitted to partial or final examination where appropriate

**The final grade** will be the weighted sum of partial qualifications obtained in all training activities, according to the criteria communicated at the beginning of the course.

It obtained in its theoretical/practical a note less than 5 in any of the tests do not average.

In accordance with article 5 of the RD-1125 / 2003 (BOE 18 September), the results obtained by the student will qualify according to the following numerical 0 to 10 scale, with expression of a decimal, to which can be added the corresponding qualitative rating:

0-4, 9: suspense (SS)

5, 0-6, 9: approved (AP)

7, 0-8, 9: remarkable (NT)

9, 0-10: excellent (SB)

#### Dates of global assessments

**In Zaragoza:** Strip time from 8 to 14 hours

<https://medicina.unizar.es/horarios>

**In Huesca:** Schedules and dates of global assessments are proposed by the Center and will appear at the following link: <https://fccsyd.unizar.es/horarios-y-calendarios-medicina>.

## 4. Methodology, learning tasks, syllabus and resources

### 4.1. Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objectives. Given the nature of the discipline, we combine the theoretical and practical training so that the student will provide a better understanding of what is explained. To this end, the theoretical contents so as to allow the understanding of the conceptual aspects, this should ideally work the habitual use of practical examples to clarify the subject under study will be developed. As for how to impart the theoretical teaching, lesson largest group is used, the discussion addressed during the seminars and tutorial system. Coordinated and parallel to the theoretical-practical teaching will be developed through personal study of biological and models related to the topics covered in lectures and through media images common diagnoses in clinical preparations. The teacher will guide and oversee the development of the class and will discuss the practical cases previously assigned.

### 4.2. Learning tasks

The course includes the following learning tasks:

- **The lectures**, expository, explanatory and/or demonstration of content sessions using the blackboard and/or

audiovisual material with computer support. They give students having prior knowledge of the subject, which should be actively involved and try to complement data or solve the problems that generate the most contentious points of the topic. Mandatory attendance 80%.

- **Presentation and discussion seminars**, problem-solving, case studies, simulations, discussion of scientific articles. Conducting individual or group work on a scientific topic or proposed a practical problem. Reporting. Oral presentations. Sessions dissecting room, microscopy or laboratory, using appropriate instruments, classical methodologies and recent. They will include in-depth discussions of the issues already studied.
- **Practical** sessions in the dissection room or in the laboratory, using appropriate materials and instruments, applying classic and current methodologies. In groups of 5-6 students depending on the number of enrolled.

Mandatory attendance 80%

The practical training program of the course is constituted, in general, for the following activities:

- Observation and analysis of biological preparations and models, so tutored.
- Description and discussion of schemes and images obtained with different observation techniques and instruments provided by the teacher.
- Conduct a satchel containing and reflect what worked for the theoretical/practical student. This notebook also serves tutored work led by the teacher.
- Evaluation of skills acquired, based on the defined objectives in every practice
- The work supervised by the teacher in which must employ a minimum of 1.5 hours each. These works may be carried out in small groups and to carry out the morphological preparations used.
- **Tutorials:** Personal interview with a teacher for the academic and personal guidance of the student. Consultation questions to the teachers. Students will have over the course of 5 hours of tutorials for personal or group consultations with teachers to clarify the difficulties, comments on the work and exam review

Students have at their disposal the **ADD** or a website, where they can find:

- The program of theoretical and practical classes
- The schedule of lectures, seminars and practical
- Teaching materials for each of the topics.
- The recommended bibliography and some links to other websites

" All students will be informed about the risks that may have the realization of the practices of this subject, and if dangerous products are handled and what to do in case of an accident, and must sign a commitment to comply with labor standards and safely carry them out. For more information, see the information for students Unit Occupational Health and Safety. [Http://uprl.unizar.es/estudiantes.html](http://uprl.unizar.es/estudiantes.html)"

In FCCSD,

Given the exceptional situation of the Academic Year 2021-2022, the large group teaching system will be online, that is to say, in a synchronic telematic system, by which teachers and students could be connected through technologies that allow interaction, such as Google Meet.

### 4.3. Syllabus

**The course will address the following topics:**

It begins with the presentation of the different organs and systems that make up the human body. To introduce in basic and structural processes of formation, growth, maturation, and aging of the different systems of the human body, with emphasis on early embryo development and supporting tissues

**General Program of Anatomy and Human Embryology. The course will address the following topics:**

- 1.- General Anatomy. Introduction to Anatomy. Definitions, axes, planes, and basic structural elements. Organization by systems and devices.
- 2.- Concept of structures of support, integumentary, splanchnic, endocrine and nerve.
- 3.- Introduction to the locomotor system. Bones. Morphology, classification, and architecture.
- 4.- Joints. Morphology, classification, and dynamics.
- 5.- Muscles. Morphology, classification, and dynamics.
- 6.- Introduction to the circulatory system
- 7.- Introduction to the respiratory system
- 8.- Introduction to the digestive system
- 9.- Introduction to the urinary system
- 10.- Introduction to the reproductive system
- 11.- Introduction to the endocrine system

- 12.- Introduction to the nervous system
- 13.- Introduction to the study of embryology. Germ cells. Fertilization.
- 14.- Germinal period: I and II Development week. Nesting.
- 15.- Germinal period: III Development week. Differentiation of embryonic soma.
- 16.- Formation of fetal membranes. Placenta.
- 17.- Hematogenesis. Vasculogenesis. Cardiogenesis.
- 18.- Development of the arterial, venous and lymphatic systems.
- 19.- Genesis of the primitive intestine. Formation of the mouth and nostrils. Facial sketch.
- 20.- Branchiogenesis and its derived organogenesis.
- 21.- Genesis of the respiratory system. Genesis and development of the coelom. Pericardium pleura
- 22.- Organogenesis derived from the caudal and transitional region of the anterior intestine.
- 23.- Evolution of the posterior intestine. Formation of proctodeo. Evolution of allantois, cloaca, anus and end sections of the large intestine.
- 24.- Evolution of the midgut. Development of the coelom. Peritoneum
- 25. Nephrogenesis. Evolution of the nephrogenic cord. Evolution of metanephros.
- 26.- Development of the urogenital system.
- 27.- Introduction to the development of the nervous system. Neurogenesis Neurohistogenesis. Derivatives of the neural crest. Wraps of S.N.C.
- 28.- sensory placodes. Development of smell, taste, and touch.
- 29.- Development of the hearing apparatus.
- 30.- Development of the vision apparatus.
- 31.- Development of the central nervous system
- 32.- Development of the peripheral nervous system and the autonomic nervous system. Paraganglios. Neuroendocrine system. Hypophysis. Adrenal gland
- 33. Skeletogenesis and Atherogenesis. Skeletal development of trunk, limbs, skull, and face.
- 34.- Myogenesis. Development of neuromuscular groups.
- 35.- Genesis of the integumentary systems. Odontogenesis

### Practical program

- 1.- First stages of development.
- 2.- Development of the circulatory system.
- 3.- Development of the digestive and respiratory apparatus.
- 4.- Development of the urogenital apparatus.
- 5.- Development of the nervous system.
- 6.- Development of the locomotor and integumentary systems.

### Seminars

Current topics will be discussed at the beginning of the course by the teacher

- 1.- Origin and destination of the blastodermal leaves
- 2.- Perinatal changes in systems.
- 3.- Embryology in Images
- 4.- Teratogenesis

## 4.4. Course planning and calendar

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course, will be provided on the first day of class or please refer to the Facultad de Medicina web

### Schedule sessions and presentation of works

#### The program

**Presential** Theoretical classes: 3 hours a week

- Practice sessions: 3 hours a week in the dissecting room
- Practices heads: One session a week
- Seminars: 1 hour per week

**Distance:** Studio and self-posted on the Web the course of ADD from the University of Zaragoza

**Tutorial:** 1 hour week, for guidance, strengthening and educational support in the curriculum. Face and through the Web

Course

**The practical organization** is in each session, half the group distributed in tables 5-6 coordinated by a head table students (the head may be rotating)

**For sessions in the dissection room are required, gown and gloves (legislation)**

#### **4.5. Bibliography and recommended resources**

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=26759>