



UCAM
UNIVERSIDAD
CATÓLICA DE MURCIA

Course Guide 2018/2019

Human Anatomy and Embryology

Anatomía Humana y Embriología

Bachelor in Dentistry

Mode: On Campus

Index

Human Anatomy and Embryology	3
Brief Description of the Course.....	3
Prerequisites.....	3
Objectives	3
Competencies and Learning Outcomes	4
Methodology	5
Syllabus.....	5
Relationship to Other Courses in the Study Plan	8
Grading System	8
Bibliography and Reference Sources	9
Related Websites	9
Study Recommendations.....	9
Teaching Materials	9
Tutorials	10

Human Anatomy and Embryology

Module: **Biomedical Sciences.**

Subject: **Human Anatomy and Embryology.**

Level: **Basic.**

No. of Credits: **6 ECTS.**

Academic Session: **1st Course – 1st Semester.**

Course Professors: **María del Mar Ubero Martínez and Andrés Martínez-Almagro Andreo.**

E-mail: mdmubero@ucam.edu · amalmagro@ucam.edu

Office Hours: **Prior request for appointment by e-mail.**

Professor coordinating the Module: **Sonia Sánchez Bautista.**

Brief Description

The subject of Human Anatomy and Embryology begins with the study of anatomical terminology and nomenclature to understand the description of structures and the location and spatial relationship of the human body's organs; it continues with the historical precedents that have led us up to our current anatomy and shows us the bases of the organization of the human body in the different stages of life. It also provides the bases to know and understand the changes in the maturation of the female and male sperm cells, the morphogenetic processes that happen in the human being from fertilization and implantation of the zygote up to birth, as well as the organization and function of the fetal membranes and of the placenta. Later, it specifically goes into the development and differentiation of the organs, apparatuses and systems, and the bases to understand the processes that give place to malformations and their complications are then explained. Finally, the different body apparatuses and systems are studied from a descriptive, topographic, functional and clinical point of view, with special relevance placed on the human body in its state of health and of illness.

Prerequisites

None.

Objectives

1. To familiarize the student with the international anatomical language and nomenclature.
2. To acquire autonomous study habits and reasoned learning.

Human Anatomy and Embryology

3. To know the maturation process of the gametes and the bases of embryogenesis and organogenesis.
4. To know the structure, topography, and function of the different body apparatuses and systems that make up the human being.
5. To spatially relate each anatomical element and topographically identify it on the surface.
6. To know the essentials of the clinical anatomy of the trunk and extremities.

Competencies and Learning Outcomes

Basic competencies

MECES1: Students have demonstrated that they possess and understand the knowledge in an area of study that starts from the basis of general secondary education, and is usually found at a level that, although supported by advanced textbooks, also includes some aspects that imply knowledge coming from the forefront of their field of study.

MECES2: Students know how to apply their knowledge to their work or vocation in a professional manner and they possess the skills that are usually demonstrated through the elaboration and defense of arguments and through problem-solving within their area of study.

MECES3: Students have the ability to gather and interpret relevant data (usually within their area of study) to make judgments that include a reflection on relevant issues of a social, scientific, or ethical nature.

MECES4: Students can transmit information, ideas, problems, and solutions to a specialized and non-specialized public.

MECES5: Students have developed the learning skills necessary to undertake later studies with a high degree of autonomy.

General competencies

G11: To understand the basic biomedical sciences on which Dentistry is based to ensure correct oral and dental care.

G12: To understand and recognize the structure and normal function of the stomatognathic apparatus at the molecular, cellular, tissue, and organ levels in the different stages of life.

Interdisciplinary competencies

CT1: To communicate effectively in their field in oral and written form.

Specific competencies

CBM1: To understand the biomedical sciences on which Dentistry is based to ensure correct oral and dental care. Among these, appropriate subject matter should include:

- Embryology, anatomy, histology and physiology of the human body.
- Genetics, biochemistry, molecular and cellular biology.
- Microbiology and immunology.

Human Anatomy and Embryology

CBM2: To know the morphology and function of the stomatognathic apparatus, including specific appropriate subject matters of embryology, anatomy, histology, and physiology.

Methodology

Methodology	Hours	Hours of Classroom Work	Hours of Non-Classroom Work
Classroom based Classes	24	60 hours (40 %)	
Academic Tutorials	6		
Practicums	15		
Seminars	12		
Classroom Evaluations	3		
Personal Study	63	90 hours (60 %)	
On-line Tutorials	9		
Resolution of Exercises and Practical Cases	9		
Project Completion and Oral Presentations	9		
TOTAL	150	60	90

Syllabus

Theoretical instructional program

THEMATIC UNIT I. GENERAL

Lesson 1. Introduction to anatomy. History of anatomy. Macroscopic and microscopic anatomy. Regional and systemic approximation.

Lesson 2. Anatomical position. Planes and axes of the human body. Anatomical terminology. Terms of position and movement. Organization of the human body. Anatomical variants of normality.

THEMATIC UNIT II. EMBRYOLOGY

Human Anatomy and Embryology

Lesson 3. General Embryology. Gametogenesis. First week of development: ovulation, insemination, fertilization, segmentation, implantation and nesting. Uterine changes. Second week of development. Bilaminar germ disc. Amniotic cavity. Primitive and secondary yolk sacs. Villi.

Lesson 4. Third week of development. Trilaminar germ disc. Embryonic organizers. Evolution of the villi. Connecting stalk. Placenta. Study of fetal circulation and postnatal changes. Fourth week of development. Differentiation of germ layers. Neurulation. Appearance of the body shape.

Lesson 5. Embryology of systems. Endodermal derivatives. Respiratory and digestive apparatus. Anterior, middle, and posterior intestine. Derivatives of the paraxial mesoderm: sclerotome, myotome, and dermatome. Intermediate mesoderm: nephrogenesis and gametogenesis. Impact on the caudal portion of the embryo. Lateral mesoderm: circulatory apparatus and body walls. Ectodermal derivatives. Central nervous system. Epidermis and annexes: hairs, nails, and sweat glands. Crystalline. Tooth enamel. Lining of the body's orifices.

THEMATIC UNIT III. MUSCULOSKELETAL SYSTEM

Lesson 6. Bones, joints, and muscles. Overview of the musculoskeletal system. Types of ossification. Bone structure and types. Cartilage: functional anatomy and types. Classification of joints. Neuromuscular systems. Functional anatomy.

Lesson 7. Skeleton of the trunk. Spine: curvatures, regions, and vertebrae. Joints of the spine. Intervertebral disc and spinal biomechanics. Muscles of the posterior region of the trunk. Functional anatomy.

Lesson 8. Thorax: rib cage, joints, and breathing mechanics. Thoracic cage: respiratory muscles. Diaphragm: Functional anatomy.

Lesson 9. Abdomen: muscles and inguinal canal. Muscles of the posterior wall. Muscles of the anterolateral walls. Structure, limits, and content of the inguinal canal. Functional anatomy.

Lesson 10. Joints of the upper extremity. Neuromuscular systems that intervene in each of the joints: shoulder, elbow, wrist, and hand. Functional anatomy.

Lesson 11. Joints of the lower extremity. Neuromuscular systems that intervene in each of the joints: hip, knee, ankle, and foot. Functional anatomy.

THEMATIC UNIT IV. SPLANCHNOLOGY

Lesson 12. Respiratory apparatus. Nostrils. Pharynx. Larynx. Trachea. Bronchi. Lung: lobes, segments, and lung lobules. Functional anatomy. Pleura.

Lesson 13. Cardiocirculatory apparatus. Pericardium. Heart: structure, cavities, valves, and large vessels. Conduction system. Arterial system. Venous system. Portal circulation. The spleen.

Human Anatomy and Embryology

Lesson 14. Digestive apparatus. Mouth. Pharynx. Esophagus. Stomach. Small intestine. Large intestine. Annexes of the digestive apparatus. Functional anatomy.

Lesson 15. Urinary apparatus. Kidney: organization, structure, and functional anatomy. Urinary tract: calyces, renal pelvis, ureter, and urinary bladder. Urethra.

Lesson 16. Male and female genitalia. Male and female perineum. External and internal female genital apparatus. Annexes. External and internal male genital apparatus. Annexes.

Lesson 17. General structure of the nervous system. Central nervous system: spinal cord and encephalic mass. Peripheral nervous system: cranial nerves and spinal nerves. Autonomic nervous system.

Lesson 18. Endocrine system. Glands: pituitary, pineal, thyroid, parathyroid, thymus, adrenal, pancreas, ovary, and testicle. Non-glandular endocrine organs.

THEMATIC UNIT V. TOPOGRAPHICAL AND RADIOLOGICAL ANATOMY

Lesson 19. Topographical anatomy. Anatomical regions. Topographical divisions of the human body. Regions of the head. Regions of the trunk. Regions of the upper and lower limb.

Lesson 20. Overview of X-rays. Image techniques. Simple x-ray. Ultrasound. Computed tomography. Magnetic resonance. Nuclear medicine. Interpretation of images. Clinical applications.

Practical instructional program

- Practicum 1. Bones and joints of: the trunk, upper limb, and lower limb. Models and digital platform.
- Practicum 2. Muscles of the trunk, upper limb, and lower limb. Models and digital platform.
- Practicum 3. Cavities: thoracic, abdominal, and pelvic. Respiratory apparatus. Models and digital platform.
- Practicum 4. Cardiovascular apparatus. Models and digital platform.
- Practicum 5. Digestive apparatus and annexes. Models and digital platform.
- Practicum 6. Urinary and genital apparatuses. Models and digital platform.
- Practicum 7. Peripheral and central nervous system. Models and digital platform.

Seminars

1. Embryogenesis and Organogenesis.
2. Osteoarticular apparatus.
3. Skeletal muscles: trunk and limbs.
4. Apparatuses: digestive, urinary, and genital.
5. Apparatuses: cardiovascular and respiratory.
6. Nervous system.

Relationship to Other Courses of the Study Plan

This subject is based on knowledge about Cell Biology and will facilitate the understanding of Physiology and Histology. It will allow students to apply the knowledge acquired about normality in Anatomical Pathology and will be the basis for morphological recognition in medical-surgical subjects.

Grading System

For the February/September Sessions:

- 1. Theoretical exams (65%):** Exams (or evaluative tests) will be carried out with theoretical-practical questions and resolution of assumptions that include the contents of the material studied.
- 2. Practical exams (30%):** The practicums and/or seminars will be evaluated through different grading systems (practical exercises, completion and exhibition of projects, clinical cases, etc....) that include the practical content worked on.
- 3. Academic tutorials (5%):** The student's participation will be evaluated through different means such as forums, chats, videoconferences, self-evaluations, activities proposed by the professor, and/or debates.

The student shall pass the subject when the weighted average is equal to or greater than 5 points and all the parts that make up the grading system have been passed, with an overall weight equal to or greater than 20%.

If the student has less than 5 in any of the parts with a weight equal to or greater than 20%, the subject will be suspended, and the student must retake the part(s) in the next session within the same academic year. The suspended part(s) in official sessions (February/June) will be saved for successive sessions that are held in the same academic year.

In the event that the subject is not passed in the September session, the passed parts will not count for successive academic years.

The grading system (RD 1.125/2003. of September 5) shall be the following:

0-4.9 Suspended (SS)

5.0-6.9 Passed (AP)

7.0-8.9 Excellent (NT)

9.0-10 Outstanding (SB)

Human Anatomy and Embryology

Honorable mention may be granted to students who have earned a grade equal to or greater than 9.0. This number may not exceed 5% of the total number of students enrolled in a subject in the corresponding academic year, unless the number of students enrolled is less than 20, in which case only a single honorable mention may be granted.

Bibliography and Reference Sources

Basic Bibliography

- Gray. Anatomía básica [*Basic Anatomy*]. Barcelona: Editorial Elsevier-Masson, 2013.
- Schünke M, Schulte E, Schumacher U. Prometheus: texto y atlas de Anatomía. 3ª edición. [*Prometheus: Text and Atlas of Anatomy. 3rd Edition*] Madrid: Editorial Médica Panamericana, 2015.

Additional Bibliography

- Nielsen M, Miller S. Atlas de Anatomía Humana. [*Atlas of Human Anatomy*] Madrid: Editorial Médica Panamericana, 2012.
- Paulsen F, Waschke J. Sobotta: Atlas de Anatomía Humana. 23ª edición. [*Atlas of Human Anatomy. 23rd Edition*] Barcelona: Elsevier España SL, 2012.

Related Websites

Available on the Virtual Campus.

Study Recommendations

Study of the subject is recommended on a daily, continuous, and orderly basis, in order to keep up with the classes and seminars. There are a very high number of terms to memorize, so it is essential to keep up to date with the subject, to carefully follow the guidelines of the professor in class, and complete personal notes with the recommended bibliography.

Teaching Materials

In the Practicum Room, the use of a lab coat, gloves, and instruments for dissection is mandatory.

Tutorials

Brief Description

In academic tutorials, the focus will be to work on Decree No. 359/2009, of October 30th, which establishes and regulates the educational response to the diversity of students in the Autonomous Community of the Region of Murcia.

The activities that are carried out in the Academic Tutorials on this subject are:

- Personal orientation on the contents of the subject and the grading systems.
- Consolidation of knowledge, abilities, skills and attitudes of group work, and oral and written communication.
- Planning and promoting student learning through the provision of bibliographic and documentary sources.
- Advice on how to approach the activities of the practical seminars.

The University also has a Special Body of Tutors that conducts personal tutoring with students enrolled in the degree. The personal tutor accompanies the students throughout the university phase. You can check the following link:

<http://www.ucam.edu/servicios/tutorias/preguntas-frecuentes/que-es-tutoria>