1. BASIC INFORMATION

Course	Anatomy and Physiology of the human body I
Degree program	Dentistry
School	Faculty of Biomedical and Health Sciences
Year	First year
ECTS	6 ECTS
Credit type	Basic
Language(s)	Spanish / English
Delivery mode	In-site lessons
Semester	First semester
Academic year	2024/2025
Coordinating professor	Dr. D. Javier Vicente Tejedor

2. PRESENTATION

Anatomy and Physiology are the basic tools of learning and knowledge of the structure and function of the human body. These subjects serve as support for any Degree of sanitary nature such as Dentistry. In this first part (Anatomy and Physiology of the human body I) the student will acquire essential knowledge for their professional activity such as tissue types, ossification processes, hemostasis, or nervous system structure, among others.

Knowledge of the body as a **system** is a fundamental part of understanding future subjects in the field of health care. In practice, dental professionals need to know the organism as a whole in order to carry out their work. It is in Anatomy and Physiology I that the foundations for a clear understanding of biology, histology, anatomy and physiology are laid.

3. COMPETENCIES AND LEARNING OUTCOMES

Core/basic competencies (BC):

- CB1: Students have to demonstrate to possess sufficient knowledge and understanding of an area of study. This area begins with the knowledge acquired during the general Secondary education, and will reach a level that, although supported by advanced textbooks, also includes some aspects coming from the vanguard of its field of study.
- CB3: 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 social, scientific or ethical issues.

- CB5: Students develop those learning skills necessary to undertake further studies with a high degree of autonomy.

Cross/transversal curricular competencies (CT):

- CT1: Process that allows the person to be the author of their own development, by choosing the paths, the strategies, the tools and the moments that they consider most effective to learn and independently implement what they have learned. The autonomous student, in short, selects the best strategies to achieve their learning objectives.
- CT6: Oral Communication / Written Communication: Communication is the process by which we transmit and receive data, ideas, opinions and attitudes in order to achieve understanding and action. Oral communication refers to the use of words and gestures and, written, to the use of writing and/or graphic supports.
- CT12: Critical reasoning: Ability to analyze an idea, phenomenon or situation from different perspectives and assume a personal approach, built from rigor and argued objectivity, and not from intuition.

General competencies (CG):

- CG7: To promote autonomous learning of new knowledge and techniques, as well as motivation for quality learning achievement.
- CG11: To understand the basic biomedical sciences on which Dentistry is based in order to ensure a correct oral care.
- CG19: To understand the scientific method and have the critical capacity to assess established knowledge and novel information. To be able to formulate hypotheses, collect and critically evaluate information to solve problems, following the scientific method..

Specific competencies (CG):

- CE1: Know the biomedical sciences on which Dentistry is based to ensure correct oral-dental care. Among these sciences appropriate contents of Embryology, Anatomy, Histology, and Physiology of the human body have to be included.
- CE4: To know the morphology and function of the stomatognathic system, including appropriate contents of specific embryology, anatomy, histology, and physiology.

Learning outcomes:

- LA 1. To differentiate the characteristics of the different types of tissues (epithelial, connective, muscular and nervous tissues).
- LA 2. To distinguish the elements of the musculoskeletal system, including ossification processes, muscular physiology, and the anatomy of the main muscles, bones and joints.
- LA 3. To identify the mechanisms involved in hemostasis and their relationship to the professional world.
- LA 4. To understand the neurophysiology and the functioning of the nervous system.
- LA 5. To be able to apply the knowledge acquired to professional work.

The table below shows the relationship between the competences and the learning outcomes that are pursued:

Competences	Learning outcomes

BC1, CT1, CT6, CT12, GC7	LA 1. To differentiate the characteristics of the different types of tissues (epithelial, connective, muscular and nervous tissues).
BC3, CT1, CT6, CT12, GC7, GC19	LA 2. To distinguish the elements of the musculoskeletal system, including ossification processes, muscular physiology, and the anatomy of the main muscles, bones and joints.
BC3, CT1, CT6, CT12, GC7, GC19	LA 3. To identify the mechanisms involved in hemostasis and their relationship to the professional world.
BC3, CT1, CT6, CT12, GC7, GC19	LA 4. To understand the neurophysiology and the functioning of the nervous system.
BC5, CT6, CT12, CG7, GC11, GC19	LA 5. To be able to apply the knowledge acquired to professional work.

4. CONTENT

UNIT 1. INTRODUCTION. ORGANIZATION OF THE HUMAN BODY

1.1 Definition of Physiology and Anatomy

1.2 Levels of structural organization

1.3 Characteristics of the living human organism

1.4 Anatomical terminology

UNIT 2. ORGANIZATIONAL TISSUE LEVEL: TISSUES

2.1 Types of tissues and their origin

2.2 Epithelial tissue

2.3 Connective tissue

2.4 Membranes

UNIT 3. CARTILAGINOUS TISSUE, BONE TISSUE AND JOINTS

3.1 Cartilaginous tissue

3.2 Skeletal system: Bone tissue

3.3 Axial and appendicular skeleton

3.4 Joints

UNIT 4. THE SKIN AND ASSOCIATED STRUCTURES

4.1 Skin structure

4.2 Skin annexes: hair and skin glands

4.3 Skin functions

UNIT 5. THE BLOOD

5.1 Physical characteristics of the blood

5.2 Blood functions

5.3 Blood components

5.4 Synthesis of blood cells: hematopoiesis

5.5 Red blood cells or erythrocytes

5.6 Platelets
5.7 Hemostasis

UNIT 6. NERVOUS TISSUE AND NEUROPHYSIOLOGY
6.1 Histology of the nervous system
6.2 Excitability and membrane potential
6.3 Action potential. Nerve impulse
6.4 Graded potentials: Synapse

UNIT 7 MUSCLE TISSUE
7.1 Types of muscle tissue
7.2 Functions of muscle tissue
7.3 Properties of muscle tissue
7.4 General Structure and classification of striated muscle.
7.5 Skeletal muscle histology
7.6 Physiology of muscle contraction: skeletal muscle
7.7 Anatomy of the muscular system

TEMA 8. CENTRAL NERVOUS SYSTEM
8.1 Generalities
8.2 Spinal cord and spinal nerves
8.3 The encephalon and the cranial nerves

UNIT 9. AUTONOMIC NERVOUS SYSTEM
9.1 Generalities
9.2 Structure of the ANS
9.3 Functions of the ANS
9.4 Physiological effects of the ANS

5. TEACHING-LEARNING METHODOLOGIES

The types of teaching-learning methodologies used are indicated below:

- Lectures.
- Reinforcement activities.
- Laboratory practical activities and practical exercises.
- Flipped classrooms.
- Laboratory practical work.
- Integrated activities.
- Online tests for each thematic unit.

- Case- and problem-based learning for integrated teaching of anatomy, histology and physiology of different systems.
- Autonomous work activities.
- Digital block.

6. LEARNING ACTIVITIES

Listed below are the types of learning activities and the number of hours the student will spend on each one:

Learning activities	Number of hours
Lectures	52 h
Practical activities	7,5 h
Analysis of case studies	8 h
Laboratory practical work	7 h
Tutorials	5 h
Autonomous work	68 h
Assessments	2,5 h
TOTAL	**6 ECTS, 150 h**

7. ASSESSMENT

Listed below are the assessment systems used and the weight each one carries towards the final course grade:

Campus-based mode:

Assessment system	Weight
Theoretical knowledge examination	70%
Active methodologies	30%
Reinforcement Activities	Extra points

When you access the course on the *Campus Virtual*, you'll find a description of the assessment activities you have to complete, as well as the delivery deadline and assessment procedure for each one.

7.1. Ordinary call

To pass the course in the first exam period, you must obtain a final course grade of at least 5 out of 10 (weighted average).

7.2. Extraordinary call

To pass the course in the second exam period, you must obtain a final grade of at least 5 out of 10 (weighted average).

8. SCHEDULE

This table shows the delivery deadline for each assessable activity in the course:

Date	Contents	Learning activities/Assessables			
Week 1	1 and 2	Act 8. Lectures.	Act 1 and 2. Evaluated questionnaires and autonomous learning	Act 5. Digital Block.	Act 6. Office hours
Week 2	2	Act 8. Lectures.	Act 1 and 2. Evaluated questionnaires and autonomous learning	Act 5. Digital Block.	Act 6. Office hours
Weeks 3 y 4	3 and 4	Act 8. Lectures.	Act 1 and 2. Evaluated questionnaires and autonomous learning .	Act 3. Laboratory practical. The skin.	Act 6. Office hours
Weeks 5 y 6	5 and 6	Act 8. Lectures.	Act 1 and 2. Evaluated questionnaires and autonomous learning	Act 5. Digital Block.	Act 6. Office hours
Weeks 7 y 8	6	Act 8. Lectures.	Act 1 and 2. Evaluated questionnaires and autonomous learning	Act 4. Integrated activity with Biochemistry	Act 6. Office hours
Week 9	6 and practical activity.	Act 8. Lectures.	Act 1 and 2. Evaluated questionnaires and autonomous learning .	Act 4 MEMPOT activity.	Act 6. Office hours

Week 10	7	Act 8. Lectures.	Act 1 and 2. Evaluated questionnaires and autonomous learning .	Act 5. Digital Block.	Act 6. Office hours
Weeks 11y 12	7 and 8	Act 8. Lectures.	Act 1 and 2. Evaluated questionnaires and autonomous learning .	Act 5. Digital Block.	Act 6. Office hours
Week 13	8 and 9	Act 8. Lectures.	Act 1 and 2. Evaluated questionnaires and autonomous learning .	Act 5. Digital Block.	Act 6. Office hours
Week 14	Practical activity 2	Act 8. Lectures.	Act 1 and 2. Evaluated questionnaires and autonomous learning	Act 4. Integrated activity. Carpal tunnel syndrome	Practice 2
Week 16			**Activity 7. EXAM**		

This schedule may be subject to changes for logistical reasons relating to the activities. The student will be notified of any change as and when appropriate.

9. BIBLIOGRAPHY

Our reference book is:

- TORTORA JW. "Principios de Anatomía y Fisiología". 15ª ed. Ed. Medica Panamericana, 2018

Next, recommended bibliography is indicated if you want to complement the previous one:

- BERGMAN, RA. "Histología". Ed. McGraw-Hill Interamericana. 1998
- BERKOVITZ BKB, HOLLAND GR, MOXHAM BJ. Revisión científica Antonio Bascones Martínez. "Atlas en color y texto de anatomía oral, histología y embriología". Ed. Mosby/Doyma Libros, 1995
- BERNE RM, LEVY MN. "Fisiología" 6ª ed. Ed. Elsevier España. 2009
- BLOOM Y FAWCETT “Tratado de Histología” Duodécima edición, Madrid, Ed. Interamericana McGraw- Hill, 1995.
- DRAKE RL. "Gray anatomía para estudiantes" 3ªed. Ed. Elsevier. 2015

- GAL IGLESIAS B (y cols) "Bases de la fisiología" 2ª ed. Ed. Tébar, D.L. 2007
- GANONG W.F. " Fisiología médica" Ed. McGraw- Hill. 24ª ed. 2013
- GARTNER L.P. Y HIATT J. “Histología texto y atlas” L. Mexico, Ed. McGraw- Hill Interamericana. 6ª ed. 2015
- GUYTON AC. "Tratado de fisiología médica Arthur G. Guyton, John E. Hall". 13ª Ed. Ed. McGraw-Hill Interamericana. 2016.
- MARIEB EN. “Anatomía y fisiología humana” 9ª ed. Ed. Pearson education. 2008
- MOORE KL, Dalley II AF. “Fundamentos de Anatomía. Con orientación clínica” 5ª ed. Ed. Medica Panamericana, 2007
- MULRONEY S.E. “Netter Cuaderno de Fisiología para Colorear”. Ed ELSEVIER.
- JUNQUEIRA LC, CARNEIRO J. "Histología básica". 12ªed. Ed. Panamericana. 2015
- RHOADES RA. "Fisiología médica" Ed. Masson-Little, Brown, D.L. 1996 4ªed. 2012
- ROSS M, PAWLINA W. “Histología: Texto y atlas color con biología celular y molecular”. 6ªed. Ed. Panamericana. 2013
- SILVERTHORN DU. "Fisiología humana: un enfoque integrado". 6ªed. Ed. Panamericana. 2014
- THIBODEAU GA. "Estructura y función del cuerpo humano" Harcourt Brace, 14ª ed. Ed. Elsevier España, 2012
- SOBOTTA "Atlas de anatomía humana: / editado por R. Putz y R. Pabst; con la colaboración de Renate Putz". 22ª ed. Ed. Medica Panamericana, 2009
- STEVENS A, Y J. LOWE. “Histología humana”. 4ª ed. Ed. Elsiever 2015

Internet resources

- Research papers.
- http://www.ncbi.nlm.nih.gov/PubMed (U.S. National Library of Medicine).
- http://www.scirus.com/srsapp/ (science-specific search engine).
- http://www.fecyt.es/fecyt/home.do (Fundación Española para la Ciencia y la Tecnología).
- http://www.nature.com/scitable (Educational website from the publishing group *Nature*).
- http://ghr.nlm.nih.gov/glossary=contig (Scientific glossary from NIH).
- www.anatomylearning.com/es/ (3-D anatomy atlas).
- CrashCourse in Youtube de www.patreon.com/crashcourse (online videos about Anatomy and Physiology)
- Kahoot.it.
- http://www.khanacademy.org (online tutorials about Anatomy and Physiology).

histology.medicine.umich.edu (virtual microcope from Michigan University).

10. EDUCATIONAL GUIDANCE AND DIVERSITY UNIT

From the Educational Guidance and Diversity Unit we offer support to our students throughout their university life to help them reach their academic achievements. Other main actions are the students inclusions with specific educational needs, universal accessibility on the different campuses of the university and equal opportunities.

From this unit we offer to our students:

1. Accompaniment and follow-up by means of counselling and personalized plans for students who need to improve their academic performance.
2. In terms of attention to diversity, non-significant curricular adjustments are made in terms of methodology and assessment for those students with specific educational needs, pursuing an equal opportunities for all students.
3. We offer students different extracurricular resources to develop different competences that will encourage their personal and professional development.
4. Vocational guidance through the provision of tools and counselling to students with vocational doubts or who believe they have made a mistake in their choice of degree.

Students in need of educational support can write to us at:
orientacioneducativa@universidadeuropea.es

11. ONLINE SURVEYS

Your opinion matters!

The Universidad Europea encourages you to participate in several surveys which help identify the strengths and areas we need to improve regarding professors, degree programs and the teaching-learning process.

The surveys will be made available in the “surveys” section in virtual campus or via e-mail.

Your assessment is necessary for us to improve.

Thank you very much for your participation.