

## 26759 - General Anatomy and Human Embryology

### Información del Plan Docente

<b>Academic Year</b>	2017/18
<b>Faculty / School</b>	104 - Facultad de Medicina 229 - Facultad de Ciencias de la Salud y del Deporte
<b>Degree</b>	304 - Degree in Medicine 305 - Degree in Medicine
<b>ECTS</b>	6.0
<b>Year</b>	1
<b>Semester</b>	First semester
<b>Subject Type</b>	Basic Education
<b>Module</b>	---

### **1.General information**

#### **1.1.Introduction**

#### **1.2.Recommendations to take this course**

#### **1.3.Context and importance of this course in the degree**

#### **1.4.Activities and key dates**

### **2.Learning goals**

#### **2.1.Learning goals**

#### **2.2.Importance of learning goals**

### **3.Aims of the course and competences**

#### **3.1.Aims of the course**

#### **3.2.Competences**

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

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

### **5.Methodology, learning tasks, syllabus and resources**

#### **5.1.Methodological overview**

The learning process that is designed for this subject is based on the following:

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**Methodology** : Given the nature of the discipline, we conjugaremos 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 be discussed the practical cases previously assigned.

### 5.2.Learning tasks

**The program that the student is offered to help you achieve the expected results includes the following activities**

**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 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 subject 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 serve 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.

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**Tutorials:** Personal interview with a teacher for 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 accident , and must sign a commitment to comply with labor standards and safety 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) "

### 5.3.Syllabus

#### Matter of General Anatomy and Human Embryology

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

##### Theoretical program

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

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arterial, venous and lymphatic systems. 19.- Genesis of the primitive intestine. Formation of the mouth and nostrils. Facial sketch. 20.- Branquiogenesis 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 metanefros. 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 hearing apparatus. 30.- Development of the vision apparatus. 31.- Development of the central nervous system 32.- Development of the peripheral nervous system and autonomic nervous system. Paraganglios. Neuroendocrine system. Hypophysis. Adrenal gland 33. Skeletogenesis and Arthrogenesis. 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

### 5.4.Course planning and calendar

#### Schedule sessions and presentation of works

#### The program

It takes place on the 1st . semester : from September 18, 2017 to February 6, 2018

Exam period of January to February , 2018

#### Presential

Theoretical classes : 3 hours a week .

Practical classes: 3 hours a week in the dissecting room

Practices heads : One session a week

Seminars: 1 hour per week

**Distnace** : 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 is required , gown and gloves ( legislation)**

### **5.5. Bibliography and recommended resources**

- England, Marjorie A.. Gran atlas de la vida antes de nacer / Marjorie A. England ; [traducción J. Nebot Cegarra] . - Nueva ed. [en lengua española de la 2a ed. en inglés] Barcelona : Oceano-Centrum, cop. 2000
- Moore, Keith L. : Embriología clínica / Keith L. Moore, T.V.N. Persaud, Mark G. Torchia . - 9ª ed. Ámsterdam ; Barcelona ; Madrid [etc.] : Elsevier, D.L. 2012
- Feneis, Heinz. Nomenclatura anatómica ilustrada / Heinz Feneis ; con la colaboración de Wolfgang Dauber ; dibujos Gerhard Spitzer . 3a ed. Barcelona [etc.] : Masson, 1994
- Delmas, Andre. La anatomía humana / André Delmas . Barcelona : Paidotribo, D.L. 1986
- Kapandji, Ibrahim Adalbert. Fisiología articular : esquemas comentados de mecánica humana. 2, 1. Cadera, 2. Rodilla, 3. Tobillo, 4. Pie, 5. Bóveda Plantar, 6. Marcha / A.I. Kapandji ; prefacio de Thierry Judet t; versión española de María Torres Lacomba . 6ª ed. Madrid [etc.] : Editorial Médica Panamericana, 2010
- Kapandji, Ibrahim Adalbert : Fisiología articular : dibujos comentados de mecánica humana. Vol. 3, 1. Raquis. 2. Cintura pélvica. 3. Raquis Lumbar. 4. Raquis torácico y tórax. 5. Raquis cervical. 6. Cabeza / A.I. Kapandji ; prefacio de Gérard Saillant; versión española de María Torres Lacomba . - 6ª ed., 1a. reimp. Madrid [etc.] : Editorial Médica Panamericana, 2008
- Kapandji, Ibrahim Adalbert : Fisiología articular : esquemas comentados de mecánica humana. Vol. 1, 1. Hombro. 2. Codo. 3. Pronosupinación. 4. Muñeca. 5. Mano / A.I. Kapandji ; versión española de María Torres Lacomba . - 6ª ed., 2ª reimp. Madrid : Editorial Médica Panamericana, 2009
- Schünke, Michael. Prometheus : texto y atlas de anatomía. Anatomía general y aparato locomotor / Michael Schünke, Erick Schulte, Udo Schumacher ; ilustrado por Markus Voll, Karl Wesker . 2ª ed. mejorada y ampliada Madrid [etc.] : Editorial Médica Panamericana, D.L. 201
- Schünke, Michael. Prometheus : texto y atlas de anatomía. órganos internos / Michael Schünke, Erick Schulte, Udo Schumacher ; ilustrado por Markus Voll, Karl Wesker . 2ª ed. mejorada y ampliada Madrid [etc.] : Editorial Médica Panamericana, D.L. 201
- Schünke, Michael. Prometheus : texto y atlas de anatomía. Cabeza, cuello y neuroanatomía / Michael Schünke, Erick Schulte, Udo Schumacher ; ilustrado por Markus Voll, Karl Wesker . 2ª ed. mejorada y ampliada Madrid [etc.] : Editorial Médica Panamericana, D.L. 201
- Thibodeau, Gary A.. Anatomía y fisiología / Gary A. Thibodeau, Kevin T. Patton ; [revisión Ma. Jesús Fernández Aceñero] . 6 ed., [reimp.] Amsterdam ; Barcelona; etc. : Elsevier ; D.L. 2010.
- Netter, Frank H. : Atlas de anatomía humana [6ª ed.] / Frank H. Netter ; [traducción y revisión científica, Víctor Götzens García ; ilustrador médico, Carlos A. G. Machado] . - 6ª ed. Ámsterdam ; Barcelona ; Madrid [etc.] : Elsevier Masson , cop. 2015
- Rohen, Johannes W. : Atlas de anatomía humana : estudio fotográfico del cuerpo humano / Johannes W. Rohen, Chihiro Yokochi, Elke Lütjen- Drecoll ; traducción y adaptación de la edición española, J. Nebot Cegarra . - 7ª ed. Barcelona [etc.] : Elsevier, D.L. 2011
- Smith-Agreda, José María. Reconstrucciones humanas por planos de disección . 2a ed. Barcelona : Espaxs, 1991
- Atlas de los sistemas neuromusculares : con funciones musculares estáticas y dinámicas / Víctor Manuel Smith-Fernández ... [et al.] . 2ª ed. Barcelona : Espaxs, cop. 2003
- Atlas de anatomía humana Sobotta. Vol. 1, Cabeza, cuello , miembro superior / Directores: R. Putz y R. Pabst, con la colaboración de Renate Putz. 22ª ed. Madrid [etc.] : Editorial Médica Panamericana, 2006
- Atlas de anatomía humana Sobotta [recurso electrónico] / editado por R. Putz y R. Pabst ; redacción en español Isabel Fernández ; animación 3D, Petra Fercher . 21a ed. Madrid : Médica Panamericana, cop. 2002
- Atlas de anatomía humana por técnicas de imagen / Jamie Weir... [et al.] . - 4ª ed. Amsterdam ; Barcelona ; Madrid [etc.] : Elsevier, D.L. 2011
- Master atlas de anatomía / [revisión científica, José Antonio Pereira Rodríguez] Madrid : Marbán, cop. 2010.
- Melloni's secretos de anatomía / June L. Melloni ... [et al.] . Madrid : Marbán, cop. 2010
- Prometheus : atlas de anatomía : fichas de autoevaluación / dirigido por Anne M. Gilroy ; ilustraciones por Markus Voll, Karl Wesker. Madrid [etc.] : Editorial Médica Panamericana, D.L. 2010.
- Platzer, Werner. Atlas de anatomía en 3 tomos. T. 1, Aparato locomotor / Werner Platzer ; traducción, José Carreres Quevedo y Alicia Carreres Rodríguez . - 7a. ed. completamente rev., 1ª reimp. Barcelona : Omega, 2003
- Fritsch, Helga. Atlas de anatomía en 3 tomos. T. 2, Organos internos / Helga Fritsch, Wolfgang Kuhnel ; basado en Helmut Leonhardt ; traducción, José Carreres Quevedo y Alicia Carreres Rodríguez . - 7a. ed. completamente rev. Barcelona : Omega, D.L. 2002

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- Kahle, Werner. Atlas de anatomía con correlación clínica. T. 3, Sistema nervioso y órganos de los sentidos / Werner Kahle, continuado por Michael Frotscher . - 9ª ed. corr. y ampl. Madrid [etc.] : Editorial Médica Panamericana, D.L. 200
- Sadler, T. W.. Embriología médica / T. W. Sadler ; ilustraciones e imágenes (micrografías electrónicas y ecografías) Jill Leland ... [et al.] ; [traducción, Elisabet Carreras i Goicoechea, Marta Vigo Anglada] . - 11ª ed. Philadelphia [etc.] : Wolters Kluwer : Lippincott Williams& Wilkins, cop. 2010
- England, Marjorie A.. Gran atlas de la vida antes de nacer / Marjorie A. England ; [traducción J. Nebot Cegarra] . - Nueva ed. [en lengua española de la 2a ed. en inglés] Barcelona : Oceano-Centrum, cop. 2000
- Kamina, Pierre. Anatomía general / Pierre Kamina ; prólogo del prof. André Gouazé ; introducción a la edición española A.J. Puerta Fonollá . - 1ª ed., 1ª reimp. Madrid ; Paris : Editorial Médica Panamericana : Maloine, D.L. 2002
- Moore, Keith L.. Embriología clínica [9ª ed.] / Keith L. Moore, T.V.N. Persaud, Mark G. Torchia . 9ª ed. Ámsterdam ; Barcelona ; Madrid [etc.] : Elsevier, D.L. 2012
- Atlas de anatomía humana Sobotta. [Tomo 1], Anatomía general y aparato locomotor. 23ª ed. / editada por F. Paulsen y J. Waschke Ámsterdam ; Barcelona ; Madrid [etc.] : Elsevier, D.L. 2011
- Atlas de anatomía humana Sobotta. [Tomo 2], Órganos internos. 23ª ed. / editada por F. Paulsen y J. Waschke Ámsterdam ; Barcelona ; Madrid [etc.] : Elsevier, D.L. 2011
- Atlas de anatomía humana Sobotta. [Tomo 3], Cabeza, cuello y neuroanatomía. 23ª ed. / editada por F. Paulsen y J. Waschke Ámsterdam ; Barcelona ; Madrid [etc.] : Elsevier, D.L. 2011
- Gilroy, Anne M.. Prometheus : Atlas de anatomía / Anne M. Gilroy, Brian R. MacPherson, Lawrence M. Ross ; basado en la obra de Michael Schünke, Erik Schulte, Udo Schumacher ; ilustraciones, Markus Voll, Karl Wesker . Madrid [etc] : Editorial Médica Panamericana, D.L.2008.
- Olson, Todd R.. ADAM : atlas de anatomía humana / Todd R. Olson ; con la colaboración de Wojciech Pawlina ; [traducción y revisión científica Víctor Götzens García] . Barcelona : Masson, D. L. 1997
- Gilbert, Scott F.. Biología del desarrollo / Scott F. Gilbert ; con un capítulo sobre el desarrollo de plantas por Susan R. Singer. . 7ª ed. Buenos Aires [etc.] : Editorial Médica Panamericana, 2005
- Sadler, T. W.. Embriología médica / T. W. Sadler ; ilustraciones, Jill Leland ; imágenes, Susan L. Sadler-Redmon ; microfotografías, Kathy Tosney ; ecografías, Nancy Chescheir, Hytham Imseis ; [traducción, Juan Roberto Palacios Martínez ; revisión técnica, María Dolores González Vidal] . - 12ª ed. Hospitalet de Llobregat : Wolters Kluwer : Lippincott Williams& Wilkins, D.L. 2012
- Carlson, Bruce M.. Embriología humana y biología del desarrollo [5ª ed.] / Bruce M. Carlson ; colaborador, Piranit Nik Kantaputra . - 5ª ed. Ámsterdam ; Barcelona ; Madrid [etc.] : Elsevier, cop. 2014
- Carlson, Bruce M.. Embriología humana y biología del desarrollo [5ª ed.] / Bruce M. Carlson ; colaborador, Piranit Nik Kantaputra . - 5ª ed. Ámsterdam ; Barcelona ; Madrid [etc.] : Elsevier, cop. 2014
- Gilroy, Anne M.. Prometheus : Atlas de anatomía [2ª ed.] / autores, Anne M. Gilroy, Brian R. MacPherson, Lawrence M. Ross ; basado en la obra de Michael Schünke, Erik Schulte, Udo Schumacher ; ilustraciones, Markus Voll, Karl Wesker. - 2ª ed. Buenos Aires ; Madrid [etc] : Editorial Médica Panamericana, 2013
- Schünke, Michael. Prometheus : texto y atlas de anatomía. Tomo 1, Anatomía general y aparato locomotor / Michael Schünke, Erick Schulte, Udo Schumacher ; ilustrado por Markus Voll, Karl Wesker . - 2ª ed. mejorada y ampliada Buenos Aires ; Madrid [etc.] : Editorial Médica Panamericana, D.L. 2010
- Schünke, Michael. Prometheus : texto y atlas de anatomía. Tomo 2, Cuello y órganos internos / Michael Schünke, Erick Schulte, Udo Schumacher ; con la colaboración de Jürgen Rude ; ilustrado por Markus Voll, Karl Wesker. . - 1ª ed., 2ª reimp. Buenos Aires ; Madrid [etc.] : Editorial Médica Panamericana, 2008
- Schünke, Michael. Prometheus : texto y atlas de anatomía. Tomo 3, Cabeza, cuello y neuroanatomía / Michael Schünke, Erick Schulte, Udo Schumacher ; ilustrado por Markus Voll, Karl Wesker . - 2ª ed. mejorada y ampliada Buenos Aires ; Madrid [etc.] : Editorial Médica Panamericana, D.L. 2010
- Drake, Richard L.. Anatomía para estudiantes / Richard L. Drake, A. Wayne Vogl, Adam W. M. Mitchell ; ilustraciones, Richard Tibbitts y Paul Richardson ; fotografías, Ansell Horn ; [revisión científica, Ángel Peña Melián... (et al.)]. - 3ª ed. Ámsterdam : Barcelona ; Madrid [etc.] : Elsevier, D.L. 2015