

26800 - Anatomy and Histology

Información del Plan Docente

Academic Year	2016/17
Academic center	100 - Facultad de Ciencias
Degree	297 - Degree in Optics and Optometry
ECTS	9.0
Course	1
Period	Annual
Subject Type	Basic Education
Module	---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

The "Anatomy and Histology of the Sight Sense" aims the study of the main morphological features related to anatomy, composition and structure of the human visual system. It is a basic subject for the knowledge of the macroscopic and microscopic structure of the human body, with special mention of the visual system: eyeball and accessory visual structures (adnexa). It provides advanced knowledge on the morphology of the different tissues, systems and organs that constitute the human body. Mastering their terminology is essential to other biomedical subjects in Optical-Optometry Degree.

This is a highly descriptive discipline, but contemplates form and function, in which a teaching methods combination is

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imposed.

In the teaching of Anatomy and Histology Ocular it has been implemented a blended learning methodological system (B-learning) Non-contact activities performing both online and in-person learning experiences when teaching students.

5.2. Learning activities

Classroom activities:

- Participatory Lectures (brainstorming, one minute paper, questions, doubts resolution, etc).
- Practical activities in the dissecting room/living microscopy. The whole group is divided into 10 teams. Students will assume different roles.
- Tutoring.

Non-contact activities:

In the teaching digital ring of the University of Zaragoza (ADD) (this page can be accessed) are left different materials that allow the following autonomous work:

- Periodical Auto-assessments.
- Participate in the discussion forum (cooperative group activity).
- Participate in team sessions (different cooperative learning activities: e.g. Problem-based learning, etc).
- Be informed at all times of the activities of the group.
- Participate by giving ideas.
- Reporting (field practice), papers, oral presentations, etc.

5.3. Program

HISTOLGY

1. Morphology concept. Cell
2. Embryology: formation of the germinal layers
3. Fabrics. Classification

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4. Epithelial tissue
5. Connective tissue
6. Adipose tissue
7. Cartilaginous tissue
8. Bone tissue
9. Muscle tissue.
10. Nervous tissue I
11. Nervous tissue II.
12. Blood. Immune system

EMBRIOLOGY

13. Organogenesis.
14. Embryology of the head I. Development of Central Nervous System
15. Embryology of the head II. Development of the head as a whole
16. Craniofacial development
17. Development of sense organs
18. Development of sight sense

GENERAL ANATOMY

19. Introduction to Anatomy, planes and axes
20. Circulatory system I. Heart
21. Circulatory system II

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- 22. Respiratory
- 23. Digestive Tract
- 24. Locomotor system I. Neck, trunk
- 25. Locomotor system II. Upper and lower extremities
- 26. Endocrine system
- 27. Urinary system
- 28. Male genital system
- 29. Female genital system
- 30. Integument system

ANATOMY OF THE SIGHT SENSE

- 31. Skull Base
- 32. Calvaria
- 33. Viscerocranium
- 34. Eye socket
- 35. Introduction to the sight sense
- 36. Anatomy of the eyeball: cameras
- 37. Inner neural layer. Retina I
- 38. Inner neural layer. Retina II
- 39. Middle vascular layer (uvea): choroid.
- 40. Middle vascular layer (uvea): ciliary body.

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41. Middle vascular layer (uvea): iris.
42. Outer fibrous layer: sclera, cornea.
43. Outer fibrous layer: sclera, cornea. Angle of anterior chamber.
44. Refractive media: crystalline
45. Refractive media: aqueous humor, vitreous
46. External view of the eyeball. Eyebrow
47. Eyelids and conjunctiva
48. Lacrimal apparatus
49. Extrinsic muscles
50. Optic nerve
51. Sensory Innervation
52. Autonomic Innervation of vision apparatus and related organs
53. Arterial vascularization of the orbital cavity
54. Venous drainage of the orbital cavity
55. Content of the orbital cavity
56. Surface Anatomy of the sense of sight
57. Anatomy of the Central Nervous System. Spinal cord. Metameric reflex activity
58. Anatomy of the CNS. Spinal cord. Ascending and descending pathways
59. Anatomy of the CNS. Brainstem. Motor and sensory nuclei
60. Anatomy of the CNS. Brainstem. Reticular formation
61. Anatomy of the CNS. Cerebellum

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62. Anatomy of the CNS. Diencephalon. Thalamus and subthalamus

63. Anatomy of the CNS. Diencephalon. Hypothalamus, pituitary, epithalamus, epiphysis

64. Anatomy of the CNS. Cerebrum.

65. Anatomy of the CNS. Meninges, cerebrospinal fluid (CSF), arterial cerebral circulation and cerebral venous drainage

66. Visual pathways I

67. Visual pathways II

Practical sessions

- Use of the optical microscope
- Recognition of different histological tissue by light microscopy
- Recognition of the most important organs of the human body models and components of the sense of sight during embryonic development
- Recognition of the most important parts of the human body models and atlases
- Dissection of the heart
- Skeleton of the skull
- Skeleton of the eye socket
- Recognition of the components of the eyeball in atlas and models
- Recognition of the eye socket content
- Dissection of the eyeball
- Dissection of the orbit
- Recognition models and atlas of the main components of the SNC
- Recognition of the main components of the SNC in cadavers

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- Recognition models of the components of the visual pathway
- Recognition of the different parts of the visual pathway in cadavers

5.4.Planning and scheduling

Check on the subject website in the Digital Teaching Ring at the following address <https://add2.unizar.es>

5.5.Bibliography and recommended resources

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BB	Fawcett, Don W.. Tratado de histología / Don W. Fawcett . [1a. ed., 2a. reimp., traducido de la 12a. ed. en inglés] Madrid [etc.] : Interamericana, D. L. 1995
BB	Gartner, Leslie P.. Atlas en color de histología / Leslie P. Gartner, James L. Hiatt ; [traducción, Jorge Horacio Negrete] . 5ª ed. Buenos Aires ; Madrid ; México [etc.] : Editorial Médica Panamericana, cop. 2011
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BB	Tortora, Gerard J.. Principios de anatomía y fisiología / Gerard J. Tortora, Bryan Derrickson . 11ª ed., 4ª reimp. Buenos Aires [etc.] : Editorial Médica Panamericana, 2010
BC	Adler, Francis H.. : Adler fisiología del ojo : aplicación clínica / editado por Paul L. Kaufman, Albert Alm . 10ª ed. Madrid [etc.] : Elsevier, cop. 2004
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| BC | Drake, Richard L.. Gray Anatomía para estudiantes / Richard L. Drake, Wayne Vogl, Adam W. M. Mitchell . 2ª ed. Madrid [etc.] : Elsevier, cop. 2010 |
| BC | Hubel, David Hunter. Ojo, cerebro y visión / David H. Hubel ; traducido por M. Vidal Sanz, S. Martínez-Conde y Mª P. Villegas Pérez . 2ª ed. Murcia : Servicio de Publicaciones, Universidad de Murcia, 2000 |
| BC | Netter, Frank H.. Atlas de anatomía humana / Frank H. Netter . 5ª ed. Ámsterdam ; Barcelona ; Madrid [etc.] : Elsevier Masson , 2011 |
| BC | Rodríguez García, Santiago (Médico). Anatomía de los órganos del lenguaje, visión y audición / Santiago Rodríguez, José Mª Smith-Agreda ; autores, Natividad García Atarés ... [et. al.] ; colaboradores, Isabel Diego Barbado [et al.] . 2a. ed. Madrid [etc.] : Editorial Medica Panamericana, D. L. 2003 |
| BC | Ross, Michael H.. Histología : texto y atlas color con biología celular y molecular / Michael H. Ross, Wojciech Pawlina ; [traducción efectuada por Jorge Horacio Negrete] . 5ª. ed., 4ª reimp. Buenos Aires [etc.] : Editorial Médica panamericana, 2010 |
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LISTADO DE URLs:

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<http://www.mailxmail.com/curso/vida/ojohumanoorigendesarrolloembrionario>
<http://www.med.uiuc.edu/histo/large/atlas/index.htm>
http://www.med.uva.es/~biocel/Practicas/PHistologia/Histologia_Humana.html
<http://www.udel.edu/Biology/Wags/histopage/histopage.htm>
<http://www.uni-mainz.de/FB/Medizin/Anatomie/workshop/EM/EMAtlas.html>
<http://www.usc.edu/hsc/dental/ghisto/>
<http://www.webmedicaargentina.com.ar/MATERIAS/histologia.htm>
<http://www3.usal.es/~histologia/>
<http://w3.cnice.mec.es/eos/MaterialesEducativos/mem2001/biologia/index.html> Atlas de anatomía ocular -

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<http://sisbib.unmsm.edu.pe/BibVirtual/Libros/medicina/Atlas-Ocular/histología.htm>