

370505 - ANATOS - Visual System Anatomy

Coordinating unit: 370 - FOOT - Terrassa School of Optics and Optometry
Teaching unit: 731 - OO - Department of Optics and Optometry
Academic year: 2019
Degree: BACHELOR'S DEGREE IN OPTICS AND OPTOMETRY (Syllabus 2009). (Teaching unit Compulsory)
ECTS credits: 6 Teaching languages: Catalan, Spanish

Teaching staff

Coordinator: SARA LLUCH MARGARIT (<http://futur.upc.edu/SaraLluchMargarit>)

Others: SARA LLUCH MARGARIT (<http://futur.upc.edu/SaraLluchMargarit>)
ANNA BOZZANO

Degree competences to which the subject contributes

Specific:

1. Anatomy, histology, physiology, biochemistry and neurophysiology of the visual system and the process of vision
2. Technical english applied to optics and optometry
3. Apply the techniques of detection of ocular and systemic diseases with visual affectation, from the etiology, signs, symptoms and epidemiology.
4. Applying an specific anamnesis to extract relevant information.
5. Evaluate the status and evolution of postoperative ocular parameters of the patient.
6. Ability to write and interpret a report
7. Detecting the need to derive the patient with the corresponding report to the appropriate professional and be able to collaborate keeping the follow-up of the patient
8. Detecting adverse reactions caused by systemic and topical medication.
9. Determine the optical parameters of contact lenses in relation to the functionality of the visual system.
10. Determined by scanning objective procedures if eye conditions are appropriate or contraindicate the use of contact lenses of any material.
11. Do properly binocular and accommodative tests.
12. Do properly refractive vision exams
13. Follow up of eye diseases with involvement. (Follow up of patients with diseases affecting visual)
14. Interpret the registers obtained with different techniques. Determine the status of ocular structures.
15. Interpret refractive test results to determine the suitable optical prescription.
16. To interpret the results and determine if necessary a treatment.
17. Measure of ocular parameters presurgical of the patient

370505 - ANATOS - Visual System Anatomy

18. Obtain oculosmetrics data to determine the type and parameters of contact lenses recommended for correcting lower order aberrations natural eye (ametropias) and higher order (induced), in order to provide patients a higher quality of the visual system.
19. Producing accurately diagnoses and remission reports.
20. Know establish an optimal therapeutic relationship, know communicate with the patient
21. Knowing how to do clinical examinations and interpret the results
22. Know interpret functional and health test results of the visual system.
23. Being able to design and create the optimal work environment to prevent the development of visual problems
24. Being able to take, treat, represent and interpret experimental data. "Use basic laboratory equipment and techniques"
25. Being able to perform literature searches.
26. Use appropriate techniques to adapt to each case and establish guidelines for tracking users of contact lenses in order to preserve the integrity and optimal adaptation of the ocular structures.
27. Value the nervous control of the visual system.

Generical:

28. Acquire communication techniques appropriate to ensure the success of teamwork
29. Apply the principles of emotional intelligence to develop a teamwork
30. Capacity to assume different roles within the team, leadership, coordination with other members
31. Define the general objectives and to carry out a specific group
32. Develop empathy with people
33. Develop methods to encourage teamwork participation of its members, critical thinking, mutual respect, the ability to negotiate to achieve common goals
34. Judgments (ratings) reports and surveys
35. Display information orally and in writing of reasonably and coherent.
36. Extract the main points of a text or any source of information (oral or written)
37. Flexibility to integrate into dynamic environments, multidisciplinary and multicultural.
38. Encourage methodical work, rigorous, consistent and innovative
39. Interpret and use non-verbal language
40. Reflect and be able to make a critic of the knowledge and developed skills and the level of achievement.
41. Synthesize and organize information to convey it effectively orally and / or written
42. Locate new information and the interpretation of it in its context.
43. Working with evidence, methodology and rigour.

370505 - ANATOS - Visual System Anatomy

- 44. Value the methods used to achieve the objectives.
- 45. Value and incorporate technological necessary improvements for the proper development of the profession
- 46. Assessing the acquisition of the course objectives.

Teaching methodology

The course consists of 3 hours a week of lectures in the classroom (large group) and 6 sessions of 2 h each in laboratory (small group).

To attend the labs it must be delivered a previous questionnaire.

For the utilization of the subject, you have to follow the directions and deadlines that are described through the digital campus ATENEA.

Learning objectives of the subject

After completing the course in visual system anatomy, the student must be able to:

- Identify, describe the structure and position the various annexes that constitute the organ of vision.
- Identify, describe the structure and locate the different robes and intraocular structures that constitute the organ of vision.
- List and define the structures of the nervous system related to the process of vision.
- Be aware of the importance of the acquired concepts to understand that any abnormality in the structure at the histology anatomy of the organ of vision can influence its operation.
- Learn about the cellular structure, development and organogenesis.
- Determine the developing visual system.
- Identify methods of macroscopic and microscopic morphology and structure of tissues, organs and body systems.
- To describe the macroscopic and microscopic structures that make up the visual system and ocular annex.
- Understand and manipulate materials and basic laboratory techniques.
- Recognize the eye as optical system.
- Understand the properties and functions of the different elements of the visual system.
- Know sensory and oculomotor mechanisms of binocular vision.
- Understand the function of the retina as a receiver of radiant energy

Study load

Total learning time: 144h	Hours large group:	0h	0.00%
	Hours medium group:	48h	33.33%
	Hours small group:	12h	8.33%
	Guided activities:	0h	0.00%
	Self study:	84h	58.33%

370505 - ANATOS - Visual System Anatomy

Content

<p>1. INTRODUCTION TO THE SUBJECT</p>	<p>Learning time: 7h 30m Practical classes: 3h Self study : 4h 30m</p>
<p>Description: This content works: The basic concepts related to the organization of the visual system.</p> <ul style="list-style-type: none"> 1.1 Basic anatomical terminology 1.2 Status of the eye and annexes 1.3 Lines and Parametria orientation of the eye and annexes 1.4 Annexes, tunics and intraocular 	
<p>2. ANNEXES OF THE EYEBALL</p>	<p>Learning time: 72h 30m Practical classes: 23h Laboratory classes: 6h Self study : 43h 30m</p>
<p>Description: This content is worked: anatomical and histological structure of the various annexes of the human organ of vision</p> <p>Related activities: It carried out training sessions 1-3, corresponding to 2 lab evaluated individually for each small group session. In addition, there will be three sessions of group means evaluated individually after each session.</p>	
<p>3. EYEBALL</p>	<p>Learning time: 70h Practical classes: 22h Laboratory classes: 6h Self study : 42h</p>
<p>Description: This content is worked: anatomical and histological structure of the robes and intraocular structures of the organ of human vision</p> <ul style="list-style-type: none"> 3.1 Outer coat 3.2 Middle coat 3.3 Lens, chambers and humors 3.4 Internal coat 3.5 Optical pathway 3.6 Eye innervation 3.7 Eye irrigation <p>Related activities: It carried out training sessions 4-6, corresponding to 3 lab evaluated individually for each small group session.</p>	



370505 - ANATOS - Visual System Anatomy

370505 - ANATOS - Visual System Anatomy

Planning of activities

<h3>1. LABORATORY OF APPENDICES</h3>	<p>Hours: 6h Self study: 0h 30m Laboratory classes: 5h 30m</p>
<p>Description: Practice 1-3 to be made in the laboratory, in pairs, with a duration of 2 hours. The laboratory should carry out the experimental part, and as autonomus learning is planned that students do after reading the script and identify targets. The practices will be at the Laboratory of Anatomy.</p> <p>Support materials: All materials for the realization of practical Written by detailed questionnaire and series of images Histological preparations of the different tissues that form the annexes anatomical models biomicroscopy</p> <p>Descriptions of the assignments due and their relation to the assessment: Realization of six assessment test that will form the 20% of final note of the subget</p> <p>Specific objectives: At the end of practice the student or student should be able to: See the various annexes of the eyeball Differentiate the tissues that form the annexes of the eyeball Distinguish anatomical structures that make up the ocular annexes</p>	
<h3>2. EYEBALL LABORATORY</h3>	<p>Hours: 6h Laboratory classes: 5h 30m Self study: 0h 30m</p>
<p>Description: Practice 4-6 to be made in the laboratory, in pairs, with a duration of 2 hours. The laboratory should carry out the experimental part, and as autonomus learning is planned that students do after reading the script and identify targets. The practice will be at the Laboratory of Anatomy</p> <p>Support materials: All materials for the realization of practical Written by detailed questionnaire and series of images Beef eye for dissecting Histological preparations of the different tissues that form the robes, and intraocular structures of the organ of vision anatomical models</p> <p>Descriptions of the assignments due and their relation to the assessment: Making a small assessment test will form part of 10% of the assessment of small group work</p> <p>Specific objectives: At the end of the activity, the student or student should be able to: Dissect the eyeball Beef See the different robes and intraocular structures that form the eyeball Distinguish anatomical structures that make up the eyeball Differentiate the tissues that form the three tunics of the eyeball</p>	

370505 - ANATOS - Visual System Anatomy

3. INDIVIDUAL ASSESSMENT TESTS	Hours: 3h Laboratory classes: 3h
<p>Description: Single laboratory test Resolution of issues and images analyzed during the practical sessions</p> <p>Support materials: Script and images posted on ATENEA</p> <p>Descriptions of the assignments due and their relation to the assessment: Represents 20% of the final grade for the course.</p> <p>Specific objectives: After the test, the student or student should be able to: Demonstrate the ability to apply knowledge acquired during the anatomical and histological sessions Demonstrate the ability to synthesize, writing and presentation</p>	
4. FINAL ASSESSMENT TEST	Hours: 3h Theory classes: 3h
<p>Description: Individual test in the classroom Two exams related to the contents of the thematic blocks that contain all the general learning objectives of the course</p> <p>Support materials: Educational material uploaded to ATENEA</p> <p>Descriptions of the assignments due and their relation to the assessment: The resolution of the test accounts for 80% (40% + 40%) of the final grade for the course.</p> <p>Specific objectives: After the test, students will be able to demonstrate: - Identify, describe the structure and locate the various annexes that constitute the organ of vision - Identify, describe the structure and locate the different robes and intraocular structures that constitute the organ of vision - List and define the structures of the central nervous system related to the process of vision - Be aware of the importance of the concepts learned to understand that any anomaly in both the anatomy and histology of the organ of vision can influence their performance</p>	

Qualification system

There will be two written tests: E2 and E1 (80%)

E1 written test (40%)

E2 written test (40%)

There will be six practical tests: L1 to L6 (20%)

Final Score = $0.4 \cdot E1 + 0.4 \cdot E2 + 0.2 \cdot L$

370505 - ANATOS - Visual System Anatomy

Regulations for carrying out activities

- It is mandatory to attend all the activities evaluation.
- If any of the evaluated activities is not done, it will be not scored (0).

Bibliography

Basic:

- Forrester, John V. [et al.]. The eye: basic sciences in practice. 3rd ed. London: Saunders Elsevier, 2016. ISBN 9780702028410.
- Netter, Frank H. Atlas de anatomía humana. Barcelona: Panamericana, 2015. ISBN 8445801872.
- Oyster, Clyde W. The human eye: structure and function. Sunderland, Massachusetts: Sinauer Associates, 1999. ISBN 0878936459.
- Pipe, D. M. Ocular anatomy and histology. 3d ed. London: The Association of British Dispensing Opticians, 2008. ISBN 0900099224.
- Remington, Lee Ann. Clinical anatomy of the visual system. 2nd ed. St. Louis: Elsevier, 2005. ISBN 0750674903.
- Rodríguez, Santiago [et al.]. Anatomía de los órganos del lenguaje, visión y audición. 2a ed. Madrid: Médica Panamericana, 2004. ISBN 8479038683.
- Rouvière, Henri. Anatomía humana: descriptiva, topográfica y funcional, vol. 4, Sistema nervioso central, vías y centros nerviosos. 11a ed. Barcelona: Masson, 2005. ISBN 8445813137.
- Schünke, Michael. Prometheus: texto y atlas de anatomía, vol. 3, Cabeza y neuroanatomía. Buenos Aires: Médica Panamericana, 2015. ISBN 8479039809.
- Sobotta, Johannes. Atlas de anatomía humana, vol. 1, Cabeza, cuello y miembro superior. 23a ed. Madrid: Médica Panamericana, 2012. ISBN 8479035331.
- Young, Barbara [et al.]. Wheater's histología funcional: texto y atlas en color. 4a ed. Madrid: Elsevier, 2003. ISBN 8481744999.
- Zeki, Semir. "The visual image in mind and brain". Scientific American. Vol. 267, núm. 3, p. 68-76.
- Wilson-Pauwels, Linda [et al.]. Nervios craneales: en la salud y en la enfermedad. 2a ed. Buenos Aires: Médica Panamericana, 2003. ISBN 9500624389.
- Rubin, M; Safdieh, J.E. Netter neuroanatomía esencial. Madrid [etc.]: Elsevier Masson, 2008. ISBN 9788445818718.
- Ansari, M.W.; Nadeem, A. Atlas of ocular anatomy. [Basel]: Springer, 2016. ISBN 9783319427805.