VNIVERSITAT DE VALÈNCIA

Course Guide
34311 Clinical exploration methods

COURSE DATA

Data Subject	
Code	34311
Name	Clinical exploration methods
Cycle	Grade
ECTS Credits	4.5
Academic year	2018 - 2019

Study (s)

Degree	Center	Acad. year	Period
1207 - Degree in Optics and Optometry	Faculty of Physics	4	First term

Subject-matter

Degree	Subject-matter	Character
1207 - Degree in Optics and Optometry	15 - Ocular pathology and pharmacology	Obligatory

Coordination

Name	Department
GARCIA MARTINEZ, PASCUALA	280 - Optics and Optometry and Vision Sciences
LUQUE COBIJA, M JOSEFA	280 - Optics and Optometry and Vision Sciences

SUMMARY

Methods of clinical examination is a compulsory subject is currently taught the first semester of fourth year of undergraduate studies of Optometry. Intended as an introduction to advanced techniques for invasive clinical diagnosis based on knowledge introduced in the Optics and Visual Perception matters, emphasizing the principles of design of devices and the requirements for proper use

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

To take this course students must have completed the subjects Mathematics, Physics, Physiological Optics, Optics, Optometry and Visual Perception, and Ocular Pharmacology and Pathology courses.

OUTCOMES

1207 - Degree in Optics and Optometry

- To have and to understand the fundamentals of Optometry for its correct clinical and healthcare application.
- Knowing how to apply the knowledge acquired to professional activity, knowing how to solve problems and develop and defend arguments.
- Being able to gather and interpret relevant data to make judgments.
- Being able to transmit information, ideas, problems and solutions to both a specialized and non-specialized audience.
- Development of learning skills necessary to undertake further studies with a high degree of autonomy.
- To know the applicable legislation in professional practice, with special attention to matters of gender equality between men and women, human rights, solidarity, sustainability, protection of the environment and promotion of the culture of peace.
- To know the properties and functions of the different elements that make up the visual system.
- To know the symptoms of visual diseases and to recognize the signs associated with them. To recognize the alterations that modify normal functioning and trigger pathological processes that affect vision.
- To know and to apply the procedures and indications of the different methods of clinical examination and complementary diagnostic techniques.
- To know some of the most common psychophysical techniques in clinical practice.
- To apply standard psychophysical techniques to characterize anomalous visual systems.
- To know the fundamentals of the latest generation instruments for the diagnosis of ocular pathologies.
- Acquire basic skills to handle specialized instruments.
- To know how to interpret the results of the measurements taken.

LEARNING OUTCOMES

Being able to decide which instrument is more adequate for the measurement of a particular parameter.

Knowing the basis and limitations of the advanced optical instruments for inspection of eye fundus and ocular media.

Being able to instruct the patients adequately about how to perform a particular psychophysical test.

Being aware of the problems that encounter patients with specific characteristics –aged subjects, children, patients with cognitive problems – and being able to apply the necessary strategies to make diagnostic tests easier for them.

Being able to conduct a psychophysical test under the adequate conditions.

Being aware of the limitations of each measurement technique used.

Knowing the possible factors that could distort a measurement, being able to control them and, when possible, correct their effects.

Being able to evaluate the reliability of a measurement obtained with a standard device.

Being able to interpret the results yielded by a set of basic diagnostic devices.

DESCRIPTION OF CONTENTS

1. Introduction

2. Mathematical preliminary

3. Propagation of a light beam. Wave theory

4. Two-dimensional imaging

Two-dimensional imaging.

5. Wavefront analysis, aberrometers and corneal topographs

Barrido confocal ophtalmocscope.

6. Basic design principles of psychophysical tests for diagnosis.

7. Tests of color vision

8. Incremental threshold perimetry I: Fundamentals

9. Campimetry II: Analysis of results

10. Tests for evaluating contrast sensitivity with gratings

11. Tests for the assessment of contrast sensitivity with complex stimuli

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	30,00	100
Tutorials	7,50	100
Laboratory practices	7,50	100
Development of individual work	22,50	0
Preparation of evaluation activities	10,00	0
Preparing lectures	15,00	0
Preparation of practical classes and problem	15,00	0
Resolution of case studies	4,00	0
TOTAL	**111,50**	

TEACHING METHODOLOGY

The course will consist of four types of classes with differentiated methodology:

(i) Theoretical-practical classes

(ii) Guided Problem solving

(iii) Tutorials

(iv) Laboratory sessions

In the type (i) sessions, the basic theoretical contents of the subject, as well as chosen practical

examples, will be presented. To improve the presentation / assimilation ratio, graphics tools, including graphs, drawings, videos and animations, combined with discussions / presentations on the slides and the traditional slate may be used. Demonstrations of relevant issues,

aplets, simulations, etc, will be used to illustrate some of the concepts. The students will be encouraged and guided to expand the contents discussed in each class through the recommended reading, as well as the possibility of furthering their knowledge in future courses. Type (ii) sessions comprise three types of activities: 1) solving collections of selected problems, 2) literature discussion sessions, previously assigned to different groups of students, and 3) conducting simulations, under the guidance of the teacher . The tutorials (type (iii)) involve the discussion of scientific papers of particular relevance to the contents of the course. This bibliography will be previously assigned to different study groups and the conclusions will be presented in to the class.

Finally, in laboratory practical classes (iv), students should work with different diagnostic devices, both the optical system as the visual neurons, in groups, and solve the specific tasks assigned to each device.

EVALUATION

The students may choose any of the two evaluation procedures described below. For Mode 2 to apply, the students must notify the teachers that they wish to be evaluated by this procedure before the exam. In both modes, assistance to laboratory sessions is compulsory.

Mode 1: Continuous evaluation.

A maximum of 100 points may be obtained, as the sum of marks obtained in the following categories: a) the student's autonomous work (30/100), consisting in exercises, tutored tasks and different short tests, b) the laboratory work (20/100), c) the final exam (50/100 points). Each category has a Optics Methods (OM) and a Psychophysics Methods (PM) section, with the following weights: student's work, OM=15, PM=15, lab work, OM=PM=10, exam, OM=25, PM=25. If in any of these three blocks, or in their OM or PM sections, the students get less than 30% of the maximum marks, the final qualification shall be "Fail".

This mode shall only apply if the student has completed all the assignments in the "autonomous work" block within the stablished deadlines.

Mode 2: Exam.

A máximum of 100 points may be obtained by summing the marks obtained for the exam (up to 80 points) and for the laboratory work (an exam worth up to 20 points), each with a OM and a PM section, with equal weights. If in any of these two blocks, or in any of the sections, the students get less than 30% of the maximum marks, the final qualification shall be “Fail”.

To pass the course, a minimum of 50 points with either of the evaluation modes is needed.

REFERENCES

Basic

- Referencia b1: M.Corbett ,D. O'Brart, E. Rosen, R. Stevenson, Corneal Topography: Principles and Applications, , BMJ Books; (1999)
  Referencia b2: J.W. Goodman, Introduction to Fourier Optics (McGraw-Hill, 1996).

  Referencia b3: Schwartz J. S., Visual perception : a clinical orientation, MacGraw-Hill, 1999.
  Referencia b4: Norton T. T., Corliss D. A., Bailey J. E. Fundamentals of Visual Psychophysics, Elsevier, 2000.
  Referencia b5: Assembly of Behavioral and Social Sciences, National Research Council. Procedures for Testing Color Vision. Report of Working Group 41. Academy Press, 1981.
  Referencia b6: Birch, J. Diagnosis of Defective Colour Vision, Butterworth-Heineman, 2001.
  Referencia b7: Shapley R. y Man-Kit Lam D., eds., Contrast Sensitivity, The MIT Press, 1993.
  Referencia b8: Anderson R. y Patella V.M., Automated Static Perimetry, Mosby, 1999
  Referencia b9: Rowe F., Visual Fields Via The Visual Pathway, Blackwells, 2006.
  Referencia b10: CronlyDillon J. R. (Ed.) Vision and Visual Dysfunction, MacMillan Press, 1991.
- De Fez Saiz, D., Viqueira Pérez, V. Fundamentos de percepción visual. Alicante: Servicio de Publicaciones de la Universidad de Alicante, 2014. ISBN 978-84-9717-299-8
  Disponible en formato electrónico en http://rua.ua.es/dspace/handle/10045/52126

Additional

- Referencia c1: Artículos seleccionados de distintas revistas especializadas: Vision Research, Opthalmic and Physiological Optics, Optometry and Vision Science, Investigative Ophthalmology and Vision Science, etc