

OTTICA FISIOPATOLOGICA (OAU126)

1. lingua insegnamento/language

Italian.

2. contenuti/course contents

Coordinator: Prof. ANTONIO VILLANO

Year Course: 1st

Semester: 2nd

UFC: 5

CFU/UFC: 5

Modules and lecturers:

- OTTICA FISIOPATOLOGICA 1 (OAU20A) - 1 CFU - SSD MED/30 - Prof. Antonio Villano
- OTTICA FISIOPATOLOGICA 2 (OAU22A) - 1 CFU - SSD MED/30 - Prof. Antonio Baldascino
- OTTICA FISIOPATOLOGICA 3 (OAU23A) - 1 CFU - SSD MED/30 - Prof. Andrea Giudiceandrea
- SCIENZE TECNICHE ORTOTTICHE (ORTOTTICA) 2 (OAU19A) - 2 CFU - SSD MED/50 - Prof. Matteo Giarletti

3. testi di riferimento/BIBLIOGRAPHY

Gian Paolo Paliaga, Vizi di Refrazione IV edizione, Minerva Medica, 2008 (recommended)

Aldo Caporossi, Oftalmologia, Piccin, Capitolo 2, pag. 5-17 (recommended)

4. obiettivi formativi/LEARNING OBJECTIVES

The course aims to allow the student to know and understand the principles of geometrical and physical optics and their applications on the human eye through theoretical and practical lessons. It also aims to learn about the ocular diopter and the refractive defects associated with it and to acquire knowledge regarding the physical mechanisms of refraction with particular regard to optical instrumentation for measuring visual function: objective refraction (autorefractometer), ophthalmometry, schiascopy. Finally, it has the objective of learning how to measure visual acuity according to the different age groups.

The course has the following specific educational objectives:

Knowledge and understanding (Dublino 1): The student has to demonstrate knowledge and understanding of the basic principles of clinical optics, the characteristics and the exact use of corrective lenses in the various refractive errors.

Applying knowledge and understanding (Dublino 2): The student must be able to perform an accurate measurement of visual acuity with various methods and to appropriately evaluate and correct refractive defects.

Making judgements (Dublino 3): The student must be able to interpret the data found in the measurement of visual acuity. The student must also be able to identify the appropriate instrumentation based on the refractive defect and the age range.

Communication skills (Dublino 4): The student must be able to communicate clearly and effectively using technical language in professional environments. He must be able to communicate both verbally and in written form in a clear and professional way, also knowing how to interpret technical language.

Learning skills (Dublino 5): The student must be able to update and expand their knowledge using books and specific teaching materials.

5. prerequisiti/prerequisites

In-depth knowledge of ocular anatomy and physiology and of Physical Optics is required.

Prerequisites: The integrated course of Biomedical Sciences is prerequisite for Physiopathological Optics.

6. metodi didattici/TEACHING METHODS

The contents of the course will be illustrated and discussed during lectures. Exercises will also be carried out, in order to allow each student, the possibility of applying in practice the main diagnostic tools illustrated in a theoretical way during the frontal lessons. Theoretical and practical interactive frontal lessons will be carried out, in order to make the student acquire independence of judgment. Slides prepared on Power Point by each single teacher will be presented to the students. An adequate technical and professional language will be taught to the student.

7. altre informazioni/OTHER INFORMATION

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8. modalità di verifica dell'apprendimento/METHODS FOR VERIFYING LEARNING AND FOR EVALUATION

An oral exam will be carried out to ascertain the correct achievement of the knowledge of the course. The student must be able to discriminate between the different types of corrective lenses, the different diagnostic instruments for an adequate optical correction and a correct measurement of visual acuity based on the different age groups.

The vote will be expressed in thirtieths. The student who demonstrates having acquired the knowledge and skills provided by the course and who is able to express a technical language consistent with the topics covered obtains 30/30. The student who passes the oral exam excellently demonstrating a complete mastery of the topics, an optimal knowledge of the skills provided and who expresses these concepts with a technical and professional language obtains 30/30 *cum laude*.

9. programma esteso/program

Scienze tecniche ortottiche (ortottica) 2

- Visual acuity: acuity of visibility, resolution and recognition Evaluation of visual acuity according to the age of the patient
- Description of the optotypical tables for distance and near for adults (Landolt, E di Albin,

- ETDRS) and for children (LEA symbols, Pesando, Pigassou)
- Crowding phenomenon: united and separate stimuli
 - Evaluation of visual acuity in children: preferential gaze techniques (Teller cards), objective techniques (optokinetic nystagmus, VEP and ERG for measuring visual acuity)
 - Practical exercises

Ottica Fisiopatologica 1

- Refractive errors: Myopia, hyperopia, astigmatism and presbyopia: classification, degree, etiology, symptoms and signs
- International and TABO system
- Spherocylindrical and Sturm fan combinations. Spherical equivalent. Transpositions
- Near point and remote point
- Anisometropia
- Pinhole
- Accommodation
- Cyclopegia. I mention the cyclopegic and non-cyclopegic mydriatics

Ottica Fisiopatologica 2

- Geometrical optics: light, reflection, refraction, spherical lenses, cylindrical lenses, prismatic lenses
- Optical aberrations: aberrometry, aberrometers and image quality
- Ophthalmometry
- Autorefractometry
- Schiascopy
- Fogging

Ottica Fisiopatologica 3

- Glasses, contact lenses, intraocular lenses
- Aniseiconia
- Principles and use of the lensmeter
- Examination of objective refraction
- Subjective refraction test: bichromatic test, crossed cylinders
- Optical crosses