Course guide
370013 - FONAMVB - Binocular Vision Bases

Last modified: 21/03/2024

Unit in charge: Terrassa School of Optics and Optometry
Teaching unit: 731 - OO - Department of Optics and Optometry.

Degree: BACHELOR'S DEGREE IN OPTICS AND OPTOMETRY (Syllabus 2020). (Compulsory subject).

Academic year: 2023 **ECTS Credits:** 6.0 **Languages:** Catalan

LECTURER

Coordinating lecturer: José Luis Älvarez Muñoz. Titular d'escola universitària.
https://futur.upc.edu/JoseLuisAlvarezMunoz
Montserrat Tàpias Anton. Titular d'universitat. https://futur.upc.edu/MontserratTapiasAnton

Others:

PRIOR SKILLS

Having studied Geometric Optics and Visual Optics.

REQUIREMENTS

Haver cursat Òptica Geomètrica i Òptica Visual.

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
CE06. (ENG) The ability to recognise the eye as an optical system. The ability to understand the basic models of vision. The ability to understand ocular models and parameters.
CE13. Understand the factors that limit retinal image quality. Demonstrate knowledge of the spatial and temporal aspects of vision. Carry out psychophysical tests to determine levels of visual perception. Demonstrate knowledge of the functioning of the retina as a receptor of radiant energy. Demonstrate knowledge of the basic models of vision of colour, shape and movement. Demonstrate knowledge of age-related changes in perceptual processes. Measure and interpret psychophysical data obtained from an assessment of visual perception.
CE20. Measure, interpret and treat refractive errors. Describe the sensory and oculomotor mechanisms of binocular vision. Identify the principles of and measure, interpret and treat accommodative and binocular vision anomalies. Demonstrate skills in communication, recording data and writing clinical histories. Demonstrate skills in the interpretation and clinical judgement of results of vision tests, to establish the most suitable diagnosis and treatment. Demonstrate skills in instrumental assessment tests of visual function and eye health. Carry out a complete medical history. Identify, apply and interpret instrumental tests relating to visual health problems. Demonstrate the clinical skills required for the examination and treatment of patients. Examine, diagnose and treat visual anomalies with an emphasis on differential diagnosis. Describe the nature and organisation of types of clinical care. Describe the protocols that are applied to patients.

Generical:
CG4. Critically reflect on the clinical, scientific, ethical and social issues involved in the professional practice of optometry, understand the scientific foundations of optics and optometry and critically evaluate terminology, clinical trials and research methods related to optics and optometry.
CG13. Demonstrate and interpret methods for critical analysis and theory development and apply them to the field of optometry.

Transversal:
CT5. Efficient use of informacion resources. To manage data and technical and scientific information adquisition, organization, analysis and visualization and to provide a critical appraisal of the results of this management

TEACHING METHODOLOGY

LEARNING OBJECTIVES OF THE SUBJECT

4. Conocimiento de los principios y competencia para diagnosticar y recomendar un tratamiento para las anomalías acomodativas, de visión binocular y motilidad ocular.

STUDY LOAD

Type	Hours	Percentage
Hours medium group	45,0	30.00
Hours small group	15,0	10.00
Self study	90,0	60.00

Total learning time: 150 h

CONTENTS

T1.- INTRODUCCIÓ A LA VISIÓ BINOCULAR

Description:
Condicions per a la visió binocular. Tipus d'estimulacions del sistema visual binocular. Camp visual binocular. Camp de fixació binocular. Transmissió neural i camp visual conjunt. Graus de visió simultània. Espai visual i espai físic

Specific objectives:

Related activities:
P1, PAT1, PAL, IP

Related competencies :
CE20. Measure, interpret and treat refractive errors. Describe the sensory and oculomotor mechanisms of binocular vision. Identify the principles of and measure, interpret and treat accommodative and binocular vision anomalies. Demonstrate skills in communication, recording data and writing clinical histories. Demonstrate skills in the interpretation and clinical judgement of results of vision tests, to establish the most suitable diagnosis and treatment. Demonstrate skills in instrumental assessment tests of visual function and eye health. Carry out a complete medical history. Identify, apply and interpret instrumental tests relating to visual health problems. Demonstrate the clinical skills required for the examination and treatment of patients. Examine, diagnose and treat visual anomalies with an emphasis on differential diagnosis. Describe the nature and organisation of types of clinical care. Describe the protocols that are applied to patients.
CT5. Efficient use of informacion resources. To manage data and technical and scientific information adquisition, organization, analysis and visualization and to provide a critical appraisal of the results of this management

Full-or-part-time: 15h
Practical classes: 4h
Laboratory classes: 2h
Self study : 9h

T2.- MOTILITAT MONOCULAR

Description:
Posició dels ulls al cap. Plans i eixos de referencia. Duccions. Acció dels músculs extraoculars. Músculs sinergistes i antagonistes homolaterals. Llei de Donders i Llei de Listing.

Specific objectives:
ar.

Related activities:
PAT1

Related competencies :
CG13. Demonstrate and interpret methods for critical analysis and theory development and apply them to the field of optometry.
CE20. Measure, interpret and treat refractive errors. Describe the sensory and oculomotor mechanisms of binocular vision. Identify the principles of and measure, interpret and treat accommodative and binocular vision anomalies. Demonstrate skills in communication, recording data and writing clinical histories. Demonstrate skills in the interpretation and clinical judgement of results of vision tests, to establish the most suitable diagnosis and treatment. Demonstrate skills in instrumental assessment tests of visual function and eye health. Carry out a complete medical history. Identify, apply and interpret instrumental tests relating to visual health problems. Demonstrate the clinical skills required for the examination and treatment of patients. Examine, diagnose and treat visual anomalies with an emphasis on differential diagnosis. Describe the nature and organisation of types of clinical care. Describe the protocols that are applied to patients.
CT5. Efficient use of informacion resources. To manage data and technical and scientific information adquisition, organization, analysis and visualization and to provide a critical appraisal of the results of this management

Full-or-part-time: 10h
Practical classes: 4h
Self study : 6h

T3.- MOTILITAT BINOCULAR

Description:
Versions i vergències. Camp d'acció diagnòstic. Músculs sinergistes contralaterals. Llei d'igual innervació de Hering. Moviments binoculars habituals.

Specific objectives:

Related activities:
PAT1

Related competencies :
CG13. Demonstrate and interpret methods for critical analysis and theory development and apply them to the field of optometry.
CE20. Measure, interpret and treat refractive errors. Describe the sensory and oculomotor mechanisms of binocular vision. Identify the principles of and measure, interpret and treat accommodative and binocular vision anomalies. Demonstrate skills in communication, recording data and writing clinical histories. Demonstrate skills in the interpretation and clinical judgement of results of vision tests, to establish the most suitable diagnosis and treatment. Demonstrate skills in instrumental assessment tests of visual function and eye health. Carry out a complete medical history. Identify, apply and interpret instrumental tests relating to visual health problems. Demonstrate the clinical skills required for the examination and treatment of patients. Examine, diagnose and treat visual anomalies with an emphasis on differential diagnosis. Describe the nature and organisation of types of clinical care. Describe the protocols that are applied to patients.
CT5. Efficient use of informacion resources. To manage data and technical and scientific information adquisition, organization, analysis and visualization and to provide a critical appraisal of the results of this management

Full-or-part-time: 10h
Practical classes: 4h
Self study : 6h

T4.- HETEROFÒRIES I ESTRABISMES

Description:
Posicions de repòs, fixació i fusió. Tipus de convergències. Definició i classificació de les heterofòries. Sistemes dissociadors i percepció de l'heterofòric. Efecte dels prismes sobre el sistema visual binocular. Anisofòries. Estrabismes.

Specific objectives:

Related activities:
P2, PAT1, PAL, IP

Related competencies :
CG4. Critically reflect on the clinical, scientific, ethical and social issues involved in the professional practice of optometry, understand the scientific foundations of optics and optometry and critically evaluate terminology, clinical trials and research methods related to optics and optometry.
CG13. Demonstrate and interpret methods for critical analysis and theory development and apply them to the field of optometry.
CE20. Measure, interpret and treat refractive errors. Describe the sensory and oculomotor mechanisms of binocular vision. Identify the principles of and measure, interpret and treat accommodative and binocular vision anomalies. Demonstrate skills in communication, recording data and writing clinical histories. Demonstrate skills in the interpretation and clinical judgement of results of vision tests, to establish the most suitable diagnosis and treatment. Demonstrate skills in instrumental assessment tests of visual function and eye health. Carry out a complete medical history. Identify, apply and interpret instrumental tests relating to visual health problems. Demonstrate the clinical skills required for the examination and treatment of patients. Examine, diagnose and treat visual anomalies with an emphasis on differential diagnosis. Describe the nature and organisation of types of clinical care. Describe the protocols that are applied to patients.
CE13. Understand the factors that limit retinal image quality. Demonstrate knowledge of the spatial and temporal aspects of vision. Carry out psychophysical tests to determine levels of visual perception. Demonstrate knowledge of the functioning of the retina as a receptor of radiant energy. Demonstrate knowledge of the basic models of vision of colour, shape and movement. Demonstrate knowledge of age-related changes in perceptual processes. Measure and interpret psychophysical data obtained from an assessment of visual perception.
CT5. Efficient use of informacion resources. To manage data and technical and scientific information adquisition, organization, analysis and visualization and to provide a critical appraisal of the results of this management

Full-or-part-time: 17h 30m
Practical classes: 5h
Laboratory classes: 2h
Self study : 10h 30m

T5.- CONVERGÈNCIA I ACOMODACIÓ BINOCULAR

Description:
Distància interpupil·lar i línia base. Notacions de la convergència. Línia de Donders. Relació ACA i relació CPA. Zona de visió binocular simple i nítida. Condicions de confort per a la prescripció de prismes. Efecte de la neutralització dels errors refractius sobre la VB.

Specific objectives:

Related activities:
P3, PAT2, PAL, IP

Related competencies :
CG4. Critically reflect on the clinical, scientific, ethical and social issues involved in the professional practice of optometry, understand the scientific foundations of optics and optometry and critically evaluate terminology, clinical trials and research methods related to optics and optometry.
CG13. Demonstrate and interpret methods for critical analysis and theory development and apply them to the field of optometry.
CE20. Measure, interpret and treat refractive errors. Describe the sensory and oculomotor mechanisms of binocular vision. Identify the principles of and measure, interpret and treat accommodative and binocular vision anomalies. Demonstrate skills in communication, recording data and writing clinical histories. Demonstrate skills in the interpretation and clinical judgement of results of vision tests, to establish the most suitable diagnosis and treatment. Demonstrate skills in instrumental assessment tests of visual function and eye health. Carry out a complete medical history. Identify, apply and interpret instrumental tests relating to visual health problems. Demonstrate the clinical skills required for the examination and treatment of patients. Examine, diagnose and treat visual anomalies with an emphasis on differential diagnosis. Describe the nature and organisation of types of clinical care. Describe the protocols that are applied to patients.
CE13. Understand the factors that limit retinal image quality. Demonstrate knowledge of the spatial and temporal aspects of vision. Carry out psychophysical tests to determine levels of visual perception. Demonstrate knowledge of the functioning of the retina as a receptor of radiant energy. Demonstrate knowledge of the basic models of vision of colour, shape and movement. Demonstrate knowledge of age-related changes in perceptual processes. Measure and interpret psychophysical data obtained from an assessment of visual perception.
CT5. Efficient use of informacion resources. To manage data and technical and scientific information adquisition, organization, analysis and visualization and to provide a critical appraisal of the results of this management

Full-or-part-time: 25h
Practical classes: 8h
Laboratory classes: 2h
Self study : 15h

T6.- DIRECCIONS VISUALS

Description:
Direcció visual monocular. Correspondència retinal o binocular. Direcció visual binocular. Tipus de dominància. Disparitat binocular. Correspondència retinal geomètrica. L'horòpter geomètric o teòric. L'horòpter empíric.

Specific objectives:

Related activities:
P4, PAT3, PAL, IP

Related competencies :
CG13. Demonstrate and interpret methods for critical analysis and theory development and apply them to the field of optometry.
CE20. Measure, interpret and treat refractive errors. Describe the sensory and oculomotor mechanisms of binocular vision. Identify the principles of and measure, interpret and treat accommodative and binocular vision anomalies. Demonstrate skills in communication, recording data and writing clinical histories. Demonstrate skills in the interpretation and clinical judgement of results of vision tests, to establish the most suitable diagnosis and treatment. Demonstrate skills in instrumental assessment tests of visual function and eye health. Carry out a complete medical history. Identify, apply and interpret instrumental tests relating to visual health problems. Demonstrate the clinical skills required for the examination and treatment of patients. Examine, diagnose and treat visual anomalies with an emphasis on differential diagnosis. Describe the nature and organisation of types of clinical care. Describe the protocols that are applied to patients.
CE13. Understand the factors that limit retinal image quality. Demonstrate knowledge of the spatial and temporal aspects of vision. Carry out psychophysical tests to determine levels of visual perception. Demonstrate knowledge of the functioning of the retina as a receptor of radiant energy. Demonstrate knowledge of the basic models of vision of colour, shape and movement. Demonstrate knowledge of age-related changes in perceptual processes. Measure and interpret psychophysical data obtained from an assessment of visual perception.
CT5. Efficient use of informacion resources. To manage data and technical and scientific information adquisition, organization, analysis and visualization and to provide a critical appraisal of the results of this management

Full-or-part-time: 16h 30m
Practical classes: 4h 30m
Laboratory classes: 2h
Self study : 10h

T7.- ÀREA DE PANUM, FUSIÓ I DISPARITAT DE FIXACIÓ

Description:
Àrea i espai de Panum. Lleis de direcció visual. Tipus de fusió. Rivalitat binocular. Supressió binocular. Supressió monocular. Disparitat de fixació.

Specific objectives:

Related activities:
P5, PAT3, PAL, IP

Related competencies :
CG4. Critically reflect on the clinical, scientific, ethical and social issues involved in the professional practice of optometry, understand the scientific foundations of optics and optometry and critically evaluate terminology, clinical trials and research methods related to optics and optometry.
CG13. Demonstrate and interpret methods for critical analysis and theory development and apply them to the field of optometry.
CE20. Measure, interpret and treat refractive errors. Describe the sensory and oculomotor mechanisms of binocular vision. Identify the principles of and measure, interpret and treat accommodative and binocular vision anomalies. Demonstrate skills in communication, recording data and writing clinical histories. Demonstrate skills in the interpretation and clinical judgement of results of vision tests, to establish the most suitable diagnosis and treatment. Demonstrate skills in instrumental assessment tests of visual function and eye health. Carry out a complete medical history. Identify, apply and interpret instrumental tests relating to visual health problems. Demonstrate the clinical skills required for the examination and treatment of patients. Examine, diagnose and treat visual anomalies with an emphasis on differential diagnosis. Describe the nature and organisation of types of clinical care. Describe the protocols that are applied to patients.
CE13. Understand the factors that limit retinal image quality. Demonstrate knowledge of the spatial and temporal aspects of vision. Carry out psychophysical tests to determine levels of visual perception. Demonstrate knowledge of the functioning of the retina as a receptor of radiant energy. Demonstrate knowledge of the basic models of vision of colour, shape and movement. Demonstrate knowledge of age-related changes in perceptual processes. Measure and interpret psychophysical data obtained from an assessment of visual perception.
CT5. Efficient use of informacion resources. To manage data and technical and scientific information adquisition, organization, analysis and visualization and to provide a critical appraisal of the results of this management

Full-or-part-time: 21h
Practical classes: 6h 30m
Laboratory classes: 2h
Self study : 12h 30m

T8.- DISTÀNCIA VISUAL I ESTEREÒPSIA

Description:
Factors empírics de percepció de la profunditat. Factors binoculars de percepció de la profunditat. Principi de funcionament dels estereoscopis. Estereoagudesa i estereotests. Estereòpsia sota condicions especials d'estimulació.

Specific objectives:

Related activities:
P6, PAT3, PAL, IP

Related competencies :
CG4. Critically reflect on the clinical, scientific, ethical and social issues involved in the professional practice of optometry, understand the scientific foundations of optics and optometry and critically evaluate terminology, clinical trials and research methods related to optics and optometry.
CG13. Demonstrate and interpret methods for critical analysis and theory development and apply them to the field of optometry.
CE20. Measure, interpret and treat refractive errors. Describe the sensory and oculomotor mechanisms of binocular vision. Identify the principles of and measure, interpret and treat accommodative and binocular vision anomalies. Demonstrate skills in communication, recording data and writing clinical histories. Demonstrate skills in the interpretation and clinical judgement of results of vision tests, to establish the most suitable diagnosis and treatment. Demonstrate skills in instrumental assessment tests of visual function and eye health. Carry out a complete medical history. Identify, apply and interpret instrumental tests relating to visual health problems. Demonstrate the clinical skills required for the examination and treatment of patients. Examine, diagnose and treat visual anomalies with an emphasis on differential diagnosis. Describe the nature and organisation of types of clinical care. Describe the protocols that are applied to patients.
CE13. Understand the factors that limit retinal image quality. Demonstrate knowledge of the spatial and temporal aspects of vision. Carry out psychophysical tests to determine levels of visual perception. Demonstrate knowledge of the functioning of the retina as a receptor of radiant energy. Demonstrate knowledge of the basic models of vision of colour, shape and movement. Demonstrate knowledge of age-related changes in perceptual processes. Measure and interpret psychophysical data obtained from an assessment of visual perception.
CT5. Efficient use of informacion resources. To manage data and technical and scientific information adquisition, organization, analysis and visualization and to provide a critical appraisal of the results of this management

Full-or-part-time: 16h 30m
Practical classes: 4h 30m
Laboratory classes: 2h
Self study : 10h

T9.- ANISOMETROPIA I ANISOICONIA

Description:
Classificació de l'anisometropia. Problemes derivats de la neutralització de l'anisometropia. Definició i tipus d'anisoiconia. Eiconometria de comparació directa. Neutralització de l'anisoiconia. Distorsió en la percepció de l'espai.

Specific objectives:

Related activities:
P7, PAT3, PAL, IP

Related competencies :
CG4. Critically reflect on the clinical, scientific, ethical and social issues involved in the professional practice of optometry, understand the scientific foundations of optics and optometry and critically evaluate terminology, clinical trials and research methods related to optics and optometry.
CG13. Demonstrate and interpret methods for critical analysis and theory development and apply them to the field of optometry.
CE06. (ENG) The ability to recognise the eye as an optical system. The ability to understand the basic models of vision. The ability to understand ocular models and parameters.
CE20. Measure, interpret and treat refractive errors. Describe the sensory and oculomotor mechanisms of binocular vision. Identify the principles of and measure, interpret and treat accommodative and binocular vision anomalies. Demonstrate skills in communication, recording data and writing clinical histories. Demonstrate skills in the interpretation and clinical judgement of results of vision tests, to establish the most suitable diagnosis and treatment. Demonstrate skills in instrumental assessment tests of visual function and eye health. Carry out a complete medical history. Identify, apply and interpret instrumental tests relating to visual health problems. Demonstrate the clinical skills required for the examination and treatment of patients. Examine, diagnose and treat visual anomalies with an emphasis on differential diagnosis. Describe the nature and organisation of types of clinical care. Describe the protocols that are applied to patients.
CE13. Understand the factors that limit retinal image quality. Demonstrate knowledge of the spatial and temporal aspects of vision. Carry out psychophysical tests to determine levels of visual perception. Demonstrate knowledge of the functioning of the retina as a receptor of radiant energy. Demonstrate knowledge of the basic models of vision of colour, shape and movement. Demonstrate knowledge of age-related changes in perceptual processes. Measure and interpret psychophysical data obtained from an assessment of visual perception.
CT5. Efficient use of informacion resources. To manage data and technical and scientific information adquisition, organization, analysis and visualization and to provide a critical appraisal of the results of this management

Full-or-part-time: 18h 30m
Practical classes: 5h 30m
Laboratory classes: 2h
Self study : 11h

ACTIVITIES

P1.- Camp visual binocular i camp de fixació binocular

Description:
Pràctica que s'ha de fer al laboratori, en grups de fins a 3 persones, amb una durada de 2 hores. Al laboratori s'ha de dur a terme la part experimental i l'obtenció de les dades. Com a aprenentatge autònom dirigit es preveuen dues activitats: una prèvia a l'experimentació, en què l'estudiant ha fet una lectura del guió amb la finalitat de respondre una sèrie de preguntes orals que plantejarà el professor per identificar l'aprenentatge prelaboratori (identificació dels objectius); i l'altra, posterior a l'experimentació, en què l'estudiant ha de fer un tractament de les dades i una memòria resum, per identificar l'aprenentatge postlaboratori (elaboració de les conclusions).

Specific objectives:
En finalitzar la pràctica l'estudiant o estudianta ha de ser capaç de:
- Diferenciar els conceptes de camp visual binocular i camp de fixació binocular.
- Familiaritzar-se amb les diferents metodologies per a la mesura dels camps binoculars.
- Dominar la representació gràfica de les dades.

Material:
Tot el material per a la realització de l'experiment està especificat al guió de la pràctica, disponible a ATENEA.

Delivery:
Registre per part del professorat de la comprovació de l'aprenentatge autònom prelaboratori de l'estudiant i del treball al laboratori, amb la comprovació de les dades experimentals.
Lliurament, la següent sessió, de la memòria de pràctiques amb les conclusions i el tractament de les dades. Es torna corregit i amb la corresponent retroalimentació del professorat a la mateixa sessió.
Representa la meitat de la nota de laboratori.

Related competencies :
CG13. Demonstrate and interpret methods for critical analysis and theory development and apply them to the field of optometry.
CG4. Critically reflect on the clinical, scientific, ethical and social issues involved in the professional practice of optometry, understand the scientific foundations of optics and optometry and critically evaluate terminology, clinical trials and research methods related to optics and optometry.
CE20. Measure, interpret and treat refractive errors. Describe the sensory and oculomotor mechanisms of binocular vision. Identify the principles of and measure, interpret and treat accommodative and binocular vision anomalies. Demonstrate skills in communication, recording data and writing clinical histories. Demonstrate skills in the interpretation and clinical judgement of results of vision tests, to establish the most suitable diagnosis and treatment. Demonstrate skills in instrumental assessment tests of visual function and eye health. Carry out a complete medical history. Identify, apply and interpret instrumental tests relating to visual health problems. Demonstrate the clinical skills required for the examination and treatment of patients. Examine, diagnose and treat visual anomalies with an emphasis on differential diagnosis. Describe the nature and organisation of types of clinical care. Describe the protocols that are applied to patients.
CE06. (ENG) The ability to recognise the eye as an optical system. The ability to understand the basic models of vision. The ability to understand ocular models and parameters.
CE13. Understand the factors that limit retinal image quality. Demonstrate knowledge of the spatial and temporal aspects of vision. Carry out psychophysical tests to determine levels of visual perception. Demonstrate knowledge of the functioning of the retina as a receptor of radiant energy. Demonstrate knowledge of the basic models of vision of colour, shape and movement. Demonstrate knowledge of age-related changes in perceptual processes. Measure and interpret psychophysical data obtained from an assessment of visual perception.
CT5. Efficient use of informacion resources. To manage data and technical and scientific information adquisition, organization, analysis and visualization and to provide a critical appraisal of the results of this management

Full-or-part-time: 2h
Laboratory classes: 2h

P2.- Relació ACA

Description:
Pràctica que s'ha de fer al laboratori, en grups de fins a 3 persones, amb una durada de 2 hores. Al laboratori s'ha de dur a terme la part experimental i l'obtenció de les dades. Com a aprenentatge autònom dirigit es preveuen dues activitats: una prèvia a l'experimentació, en què l'estudiant ha fet una lectura del guió amb la finalitat de respondre una sèrie de preguntes orals que plantejarà el professor per identificar l'aprenentatge prelaboratori (identificació dels objectius); i l'altra, posterior a l'experimentació, en què l'estudiant ha de fer un tractament de les dades i una memòria resum, per identificar l'aprenentatge postlaboratori (elaboració de les conclusions).

Specific objectives:
En finalitzar la pràctica l'estudiant o estudianta ha de ser capaç de:
- Conèixer la rutina de mesura de les heterofòries horitzontals.
- Posar de manifest la relació entre els paràmetres convergència i acomodació binocular.
- Justificar respostes anòmales del pacient.
- Dominar el càlcul de regressió lineal.

Material:
Tot el material per a la realització de l'experiment està especificat al guió de la pràctica, disponible a ATENEA.

Delivery:
Registre per part del professorat de la comprovació de l'aprenentatge autònom prelaboratori de l'estudiant i del treball al laboratori, amb la comprovació de les dades experimentals.
Lliurament, la següent sessió, de la memòria de pràctiques amb les conclusions i el tractament de les dades. Es torna corregit i amb la corresponent retroalimentació del professorat a la mateixa sessió.
Representa la meitat de la nota de laboratori.

Related competencies :
CG13. Demonstrate and interpret methods for critical analysis and theory development and apply them to the field of optometry.
CG4. Critically reflect on the clinical, scientific, ethical and social issues involved in the professional practice of optometry, understand the scientific foundations of optics and optometry and critically evaluate terminology, clinical trials and research methods related to optics and optometry.
CE06. (ENG) The ability to recognise the eye as an optical system. The ability to understand the basic models of vision. The ability to understand ocular models and parameters.
CE13. Understand the factors that limit retinal image quality. Demonstrate knowledge of the spatial and temporal aspects of vision. Carry out psychophysical tests to determine levels of visual perception. Demonstrate knowledge of the functioning of the retina as a receptor of radiant energy. Demonstrate knowledge of the basic models of vision of colour, shape and movement. Demonstrate knowledge of age-related changes in perceptual processes. Measure and interpret psychophysical data obtained from an assessment of visual perception.
CE20. Measure, interpret and treat refractive errors. Describe the sensory and oculomotor mechanisms of binocular vision. Identify the principles of and measure, interpret and treat accommodative and binocular vision anomalies. Demonstrate skills in communication, recording data and writing clinical histories. Demonstrate skills in the interpretation and clinical judgement of results of vision tests, to establish the most suitable diagnosis and treatment. Demonstrate skills in instrumental assessment tests of visual function and eye health. Carry out a complete medical history. Identify, apply and interpret instrumental tests relating to visual health problems. Demonstrate the clinical skills required for the examination and treatment of patients. Examine, diagnose and treat visual anomalies with an emphasis on differential diagnosis. Describe the nature and organisation of types of clinical care. Describe the protocols that are applied to patients.
CT5. Efficient use of informacion resources. To manage data and technical and scientific information adquisition, organization, analysis and visualization and to provide a critical appraisal of the results of this management

Full-or-part-time: 2h
Laboratory classes: 2h

name english

Description:
Pràctica que s'ha de fer al laboratori, en grups de fins a 3 persones, amb una durada de 2 hores. Al laboratori s'ha de dur a terme la part experimental i l'obtenció de les dades. Com a aprenentatge autònom dirigit es preveuen dues activitats: una prèvia a l'experimentació, en què l'estudiant ha fet una lectura del guió amb la finalitat de respondre una sèrie de preguntes orals que plantejarà el professor per identificar l'aprenentatge prelaboratori (identificació dels objectius); i l'altra, posterior a l'experimentació, en què l'estudiant ha de fer un tractament de les dades i una memòria resum, per identificar l'aprenentatge postlaboratori (elaboració de les conclusions).

Specific objectives:
En finalitzar la pràctica l'estudiant o estudianta ha de ser capaç de:
- Conèixer la rutina de mesura de la zona de visió binocular simple i nítida.
- Decidir correctament quines dades corresponen a les diferents rectes limitants de la zona de visió binocular simple i nítida.
- Justificar respostes anòmales del pacient.
- Dominar el càlcul de regressió lineal.

Material:
Tot el material per a la realització de l'experiment està especificat al guió de la pràctica, disponible a ATENEA.

Delivery:
Registre per part del professorat de la comprovació de l'aprenentatge autònom prelaboratori de l'estudiant i del treball al laboratori, amb la comprovació de les dades experimentals.
Lliurament, la següent sessió, de la memòria de pràctiques amb les conclusions i el tractament de les dades. Es torna corregit i amb la corresponent retroalimentació del professorat a la mateixa sessió.
Representa la meitat de la nota de laboratori.

Full-or-part-time: 2h
Laboratory classes: 2h

P4.- L'horòpter

Description:
Pràctica que s'ha de fer al laboratori, en grups de fins a 3 persones, amb una durada de 2 hores. Al laboratori s'ha de dur a terme la part experimental i l'obtenció de les dades. Com a aprenentatge autònom dirigit es preveuen dues activitats: una prèvia a l'experimentació, en què l'estudiant ha fet una lectura del guió amb la finalitat de respondre una sèrie de preguntes orals que plantejarà el professor per identificar l'aprenentatge prelaboratori (identificació dels objectius); i l'altra, posterior a l'experimentació, en què l'estudiant ha de fer un tractament de les dades i una memòria resum, per identificar l'aprenentatge postlaboratori (elaboració de les conclusions).

Specific objectives:
En finalitzar la pràctica l'estudiant o estudianta ha de ser capaç de:
- Diferenciar els conceptes de direcció visual monocular i binocular.
- Entendre el mètode experimental emprat en la determinació de les direccions visuals.
- Identificar els diferents tipus de diplopia fisiològica.

Material:
Tot el material per a la realització de l'experiment està especificat al guió de la pràctica, disponible a ATENEA.

Delivery:
Registre per part del professorat de la comprovació de l'aprenentatge autònom prelaboratori de l'estudiant i del treball al laboratori, amb la comprovació de les dades experimentals.
Lliurament, la següent sessió, de la memòria de pràctiques amb les conclusions i el tractament de les dades. Es torna corregit i amb la corresponent retroalimentació del professorat a la mateixa sessió.
Representa la meitat de la nota de laboratori.

Full-or-part-time: 2h
Laboratory classes: 2h

P5.- Àrees de Panum

Description:
Pràctica que s'ha de fer al laboratori, en grups de fins a 3 persones, amb una durada de 2 hores. Al laboratori s'ha de dur a terme la part experimental i l'obtenció de les dades. Com a aprenentatge autònom dirigit es preveuen dues activitats: una prèvia a l'experimentació, en què l'estudiant ha fet una lectura del guió amb la finalitat de respondre una sèrie de preguntes orals que plantejarà el professor per identificar l'aprenentatge prelaboratori (identificació dels objectius); i l'altra, posterior a l'experimentació, en què l'estudiant ha de fer un tractament de les dades i una memòria resum, per identificar l'aprenentatge postlaboratori (elaboració de les conclusions).

Specific objectives:
En finalitzar la pràctica l'estudiant o estudianta ha de ser capaç de:
- Entendre el mecanisme de la fusió.
- Entendre l'orígen de l'espai de Panum.
- Entendre el mètode experimental emprat en la determinació de les àrees de Panum.

Material:
Tot el material per a la realització de l'experiment està especificat al guió de la pràctica, disponible a ATENEA.

Delivery:
Registre per part del professorat de la comprovació de l'aprenentatge autònom prelaboratori de l'estudiant i del treball al laboratori, amb la comprovació de les dades experimentals.
Lliurament, la següent sessió, de la memòria de pràctiques amb les conclusions i el tractament de les dades. Es torna corregit i amb la corresponent retroalimentació del professorat a la mateixa sessió.
Representa la meitat de la nota de laboratori.

Related competencies :
CG4. Critically reflect on the clinical, scientific, ethical and social issues involved in the professional practice of optometry, understand the scientific foundations of optics and optometry and critically evaluate terminology, clinical trials and research methods related to optics and optometry.
CG13. Demonstrate and interpret methods for critical analysis and theory development and apply them to the field of optometry.
CE13. Understand the factors that limit retinal image quality. Demonstrate knowledge of the spatial and temporal aspects of vision. Carry out psychophysical tests to determine levels of visual perception. Demonstrate knowledge of the functioning of the retina as a receptor of radiant energy. Demonstrate knowledge of the basic models of vision of colour, shape and movement. Demonstrate knowledge of age-related changes in perceptual processes. Measure and interpret psychophysical data obtained from an assessment of visual perception.
CE06. (ENG) The ability to recognise the eye as an optical system. The ability to understand the basic models of vision. The ability to understand ocular models and parameters.
CE20. Measure, interpret and treat refractive errors. Describe the sensory and oculomotor mechanisms of binocular vision. Identify the principles of and measure, interpret and treat accommodative and binocular vision anomalies. Demonstrate skills in communication, recording data and writing clinical histories. Demonstrate skills in the interpretation and clinical judgement of results of vision tests, to establish the most suitable diagnosis and treatment. Demonstrate skills in instrumental assessment tests of visual function and eye health. Carry out a complete medical history. Identify, apply and interpret instrumental tests relating to visual health problems. Demonstrate the clinical skills required for the examination and treatment of patients. Examine, diagnose and treat visual anomalies with an emphasis on differential diagnosis. Describe the nature and organisation of types of clinical care. Describe the protocols that are applied to patients.
CT5. Efficient use of informacion resources. To manage data and technical and scientific information adquisition, organization, analysis and visualization and to provide a critical appraisal of the results of this management

Full-or-part-time: 2h
Laboratory classes: 2h

P6.- Estereoagudesa

Description:
Pràctica que s'ha de fer al laboratori, en grups de fins a 3 persones, amb una durada de 2 hores. Al laboratori s'ha de dur a terme la part experimental i l'obtenció de les dades. Com a aprenentatge autònom dirigit es preveuen dues activitats: una prèvia a l'experimentació, en què l'estudiant ha fet una lectura del guió amb la finalitat de respondre una sèrie de preguntes orals que plantejarà el professor per identificar l'aprenentatge prelaboratori (identificació dels objectius); i l'altra, posterior a l'experimentació, en què l'estudiant ha de fer un tractament de les dades i una memòria resum, per identificar l'aprenentatge postlaboratori (elaboració de les conclusions).

Specific objectives:
En finalitzar la pràctica l'estudiant o estudianta ha de ser capaç de:
- Reconèixer diferents sistemes de generació de visió estereoscòpica.
- Familiaritzar-se amb el mètode psicofísic dels estímuls constants per a la mesura de l'estereoagudesa.
- Dominar la representació gràfica de les dades i l'extracció de resultats a partir d'elles.

Material:
Tot el material per a la realització de l'experiment està especificat al guió de la pràctica, disponible a ATENEA.

Delivery:
Registre per part del professorat de la comprovació de l'aprenentatge autònom prelaboratori de l'estudiant i del treball al laboratori, amb la comprovació de les dades experimentals.
Lliurament, la següent sessió, de la memòria de pràctiques amb les conclusions i el tractament de les dades. Es torna corregit i amb la corresponent retroalimentació del professorat a la mateixa sessió.
Representa la meitat de la nota de laboratori.

Related competencies :
CG13. Demonstrate and interpret methods for critical analysis and theory development and apply them to the field of optometry.
CG4. Critically reflect on the clinical, scientific, ethical and social issues involved in the professional practice of optometry, understand the scientific foundations of optics and optometry and critically evaluate terminology, clinical trials and research methods related to optics and optometry.
CE20. Measure, interpret and treat refractive errors. Describe the sensory and oculomotor mechanisms of binocular vision. Identify the principles of and measure, interpret and treat accommodative and binocular vision anomalies. Demonstrate skills in communication, recording data and writing clinical histories. Demonstrate skills in the interpretation and clinical judgement of results of vision tests, to establish the most suitable diagnosis and treatment. Demonstrate skills in instrumental assessment tests of visual function and eye health. Carry out a complete medical history. Identify, apply and interpret instrumental tests relating to visual health problems. Demonstrate the clinical skills required for the examination and treatment of patients. Examine, diagnose and treat visual anomalies with an emphasis on differential diagnosis. Describe the nature and organisation of types of clinical care. Describe the protocols that are applied to patients.
CE06. (ENG) The ability to recognise the eye as an optical system. The ability to understand the basic models of vision. The ability to understand ocular models and parameters.
CE13. Understand the factors that limit retinal image quality. Demonstrate knowledge of the spatial and temporal aspects of vision. Carry out psychophysical tests to determine levels of visual perception. Demonstrate knowledge of the functioning of the retina as a receptor of radiant energy. Demonstrate knowledge of the basic models of vision of colour, shape and movement. Demonstrate knowledge of age-related changes in perceptual processes. Measure and interpret psychophysical data obtained from an assessment of visual perception.
CT5. Efficient use of informacion resources. To manage data and technical and scientific information adquisition, organization, analysis and visualization and to provide a critical appraisal of the results of this management

Full-or-part-time: 2h
Laboratory classes: 2h

P7.- Fusió

Description:
Pràctica que s'ha de fer al laboratori, en grups de fins a 3 persones, amb una durada de 2 hores. Al laboratori s'ha de dur a terme la part experimental i l'obtenció de les dades. Com a aprenentatge autònom dirigit es preveuen dues activitats: una prèvia a l'experimentació, en què l'estudiant ha fet una lectura del guió amb la finalitat de respondre una sèrie de preguntes orals que plantejarà el professor per identificar l'aprenentatge prelaboratori (identificació dels objectius); i l'altra, posterior a l'experimentació, en què l'estudiant ha de fer un tractament de les dades i una memòria resum, per identificar l'aprenentatge postlaboratori (elaboració de les conclusions).

Specific objectives:
En finalitzar la pràctica l'estudiant o estudianta ha de ser capaç de:
- Reconèixer els diferents paràmetres que afecten la fusió.
- Mesurar l'amplitud de fusió.

Material:
Tot el material per a la realització de l'experiment està especificat al guió de la pràctica, disponible a ATENEA.

Delivery:
Registre per part del professorat de la comprovació de l'aprenentatge autònom prelaboratori de l'estudiant i del treball al laboratori, amb la comprovació de les dades experimentals.
Lliurament, la següent sessió, de la memòria de pràctiques amb les conclusions i el tractament de les dades. Es torna corregit i amb la corresponent retroalimentació del professorat a la mateixa sessió.
Representa la meitat de la nota de laboratori.

Related competencies :
CG4. Critically reflect on the clinical, scientific, ethical and social issues involved in the professional practice of optometry, understand the scientific foundations of optics and optometry and critically evaluate terminology, clinical trials and research methods related to optics and optometry.
CG13. Demonstrate and interpret methods for critical analysis and theory development and apply them to the field of optometry.
CE13. Understand the factors that limit retinal image quality. Demonstrate knowledge of the spatial and temporal aspects of vision. Carry out psychophysical tests to determine levels of visual perception. Demonstrate knowledge of the functioning of the retina as a receptor of radiant energy. Demonstrate knowledge of the basic models of vision of colour, shape and movement. Demonstrate knowledge of age-related changes in perceptual processes. Measure and interpret psychophysical data obtained from an assessment of visual perception.
CE20. Measure, interpret and treat refractive errors. Describe the sensory and oculomotor mechanisms of binocular vision. Identify the principles of and measure, interpret and treat accommodative and binocular vision anomalies. Demonstrate skills in communication, recording data and writing clinical histories. Demonstrate skills in the interpretation and clinical judgement of results of vision tests, to establish the most suitable diagnosis and treatment. Demonstrate skills in instrumental assessment tests of visual function and eye health. Carry out a complete medical history. Identify, apply and interpret instrumental tests relating to visual health problems. Demonstrate the clinical skills required for the examination and treatment of patients. Examine, diagnose and treat visual anomalies with an emphasis on differential diagnosis. Describe the nature and organisation of types of clinical care. Describe the protocols that are applied to patients.
CE06. (ENG) The ability to recognise the eye as an optical system. The ability to understand the basic models of vision. The ability to understand ocular models and parameters.
CT5. Efficient use of informacion resources. To manage data and technical and scientific information adquisition, organization, analysis and visualization and to provide a critical appraisal of the results of this management

Full-or-part-time: 2h
Laboratory classes: 2h

Prova d'avaluació de teoria 1 (PAT1)

Description:
Prova individual escrita realitzada a l'aula, d'una hora de durada, sobre els conceptes teòrics treballats als continguts 1, 2, 3 i 4.

Specific objectives:
Valorar el grau d'aprenentatge de l'estudiant.

Material:
Proveït pel Centre.

Delivery:
Resolució de la prova. Representa el 22.5% de la qualificació final de l'assignatura.

Related competencies :
CG13. Demonstrate and interpret methods for critical analysis and theory development and apply them to the field of optometry.
CG4. Critically reflect on the clinical, scientific, ethical and social issues involved in the professional practice of optometry, understand the scientific foundations of optics and optometry and critically evaluate terminology, clinical trials and research methods related to optics and optometry.
CE06. (ENG) The ability to recognise the eye as an optical system. The ability to understand the basic models of vision. The ability to understand ocular models and parameters.
CE13. Understand the factors that limit retinal image quality. Demonstrate knowledge of the spatial and temporal aspects of vision. Carry out psychophysical tests to determine levels of visual perception. Demonstrate knowledge of the functioning of the retina as a receptor of radiant energy. Demonstrate knowledge of the basic models of vision of colour, shape and movement. Demonstrate knowledge of age-related changes in perceptual processes. Measure and interpret psychophysical data obtained from an assessment of visual perception.
CE20. Measure, interpret and treat refractive errors. Describe the sensory and oculomotor mechanisms of binocular vision. Identify the principles of and measure, interpret and treat accommodative and binocular vision anomalies. Demonstrate skills in communication, recording data and writing clinical histories. Demonstrate skills in the interpretation and clinical judgement of results of vision tests, to establish the most suitable diagnosis and treatment. Demonstrate skills in instrumental assessment tests of visual function and eye health. Carry out a complete medical history. Identify, apply and interpret instrumental tests relating to visual health problems. Demonstrate the clinical skills required for the examination and treatment of patients. Examine, diagnose and treat visual anomalies with an emphasis on differential diagnosis. Describe the nature and organisation of types of clinical care. Describe the protocols that are applied to patients.
CT5. Efficient use of informacion resources. To manage data and technical and scientific information adquisition, organization, analysis and visualization and to provide a critical appraisal of the results of this management

Full-or-part-time: 2h
Practical classes: 2h

Prova d'avaluació de teoria 2 (PAT2)

Description:
Prova individual escrita realitzada a l'aula, d'una hora de durada, sobre els conceptes teòrics treballats al contingut 5.

Specific objectives:
Valorar el grau d'aprenentatge de l'estudiant.

Material:
Proveït pel Centre.

Delivery:
Resolució de la prova. Representa el 12.5% de la qualificació final de l'assignatura.

Related competencies :
CG13. Demonstrate and interpret methods for critical analysis and theory development and apply them to the field of optometry.
CG4. Critically reflect on the clinical, scientific, ethical and social issues involved in the professional practice of optometry, understand the scientific foundations of optics and optometry and critically evaluate terminology, clinical trials and research methods related to optics and optometry.
CE20. Measure, interpret and treat refractive errors. Describe the sensory and oculomotor mechanisms of binocular vision. Identify the principles of and measure, interpret and treat accommodative and binocular vision anomalies. Demonstrate skills in communication, recording data and writing clinical histories. Demonstrate skills in the interpretation and clinical judgement of results of vision tests, to establish the most suitable diagnosis and treatment. Demonstrate skills in instrumental assessment tests of visual function and eye health. Carry out a complete medical history. Identify, apply and interpret instrumental tests relating to visual health problems. Demonstrate the clinical skills required for the examination and treatment of patients. Examine, diagnose and treat visual anomalies with an emphasis on differential diagnosis. Describe the nature and organisation of types of clinical care. Describe the protocols that are applied to patients.
CE13. Understand the factors that limit retinal image quality. Demonstrate knowledge of the spatial and temporal aspects of vision. Carry out psychophysical tests to determine levels of visual perception. Demonstrate knowledge of the functioning of the retina as a receptor of radiant energy. Demonstrate knowledge of the basic models of vision of colour, shape and movement. Demonstrate knowledge of age-related changes in perceptual processes. Measure and interpret psychophysical data obtained from an assessment of visual perception.
CE06. (ENG) The ability to recognise the eye as an optical system. The ability to understand the basic models of vision. The ability to understand ocular models and parameters.
CT5. Efficient use of informacion resources. To manage data and technical and scientific information adquisition, organization, analysis and visualization and to provide a critical appraisal of the results of this management

Full-or-part-time: 1h 30m
Practical classes: 1h 30m

Prova d'avaluació de teoria 3 (PAT3)

Description:
Prova individual escrita realitzada a l'aula, d'una hora de durada, sobre els conceptes teòrics treballats als continguts 6, 7, 8 i 9.

Specific objectives:
Valorar el grau d'aprenentatge de l'estudiant.

Material:
Proporcionat pel Centre.

Delivery:
Resolució de la prova. Representa el 35% de la qualificació final de l'assignatura.

Related competencies :
CG4. Critically reflect on the clinical, scientific, ethical and social issues involved in the professional practice of optometry, understand the scientific foundations of optics and optometry and critically evaluate terminology, clinical trials and research methods related to optics and optometry.
CG13. Demonstrate and interpret methods for critical analysis and theory development and apply them to the field of optometry.
CE06. (ENG) The ability to recognise the eye as an optical system. The ability to understand the basic models of vision. The ability to understand ocular models and parameters.
CE20. Measure, interpret and treat refractive errors. Describe the sensory and oculomotor mechanisms of binocular vision. Identify the principles of and measure, interpret and treat accommodative and binocular vision anomalies. Demonstrate skills in communication, recording data and writing clinical histories. Demonstrate skills in the interpretation and clinical judgement of results of vision tests, to establish the most suitable diagnosis and treatment. Demonstrate skills in instrumental assessment tests of visual function and eye health. Carry out a complete medical history. Identify, apply and interpret instrumental tests relating to visual health problems. Demonstrate the clinical skills required for the examination and treatment of patients. Examine, diagnose and treat visual anomalies with an emphasis on differential diagnosis. Describe the nature and organisation of types of clinical care. Describe the protocols that are applied to patients.
CE13. Understand the factors that limit retinal image quality. Demonstrate knowledge of the spatial and temporal aspects of vision. Carry out psychophysical tests to determine levels of visual perception. Demonstrate knowledge of the functioning of the retina as a receptor of radiant energy. Demonstrate knowledge of the basic models of vision of colour, shape and movement. Demonstrate knowledge of age-related changes in perceptual processes. Measure and interpret psychophysical data obtained from an assessment of visual perception.
CT5. Efficient use of informacion resources. To manage data and technical and scientific information adquisition, organization, analysis and visualization and to provide a critical appraisal of the results of this management

Full-or-part-time: 2h
Practical classes: 2h

Prova d'avaluació de laboratori (PAL)

Description:
Prova individual escrita realitzada a l'aula, d'una hora i mitja de durada, sobre els conceptes treballats a les sessions de laboratori.

Specific objectives:
Valorar el grau d'aprenentatge de l'estudiant.

Material:
Proporcionat pel Centre.

Delivery:
Resolució de la prova. Representa el 15% de la qualificació final de l'assignatura.

Related competencies :
CG4. Critically reflect on the clinical, scientific, ethical and social issues involved in the professional practice of optometry, understand the scientific foundations of optics and optometry and critically evaluate terminology, clinical trials and research methods related to optics and optometry.
CG13. Demonstrate and interpret methods for critical analysis and theory development and apply them to the field of optometry.
CE20. Measure, interpret and treat refractive errors. Describe the sensory and oculomotor mechanisms of binocular vision. Identify the principles of and measure, interpret and treat accommodative and binocular vision anomalies. Demonstrate skills in communication, recording data and writing clinical histories. Demonstrate skills in the interpretation and clinical judgement of results of vision tests, to establish the most suitable diagnosis and treatment. Demonstrate skills in instrumental assessment tests of visual function and eye health. Carry out a complete medical history. Identify, apply and interpret instrumental tests relating to visual health problems. Demonstrate the clinical skills required for the examination and treatment of patients. Examine, diagnose and treat visual anomalies with an emphasis on differential diagnosis. Describe the nature and organisation of types of clinical care. Describe the protocols that are applied to patients.
CE13. Understand the factors that limit retinal image quality. Demonstrate knowledge of the spatial and temporal aspects of vision. Carry out psychophysical tests to determine levels of visual perception. Demonstrate knowledge of the functioning of the retina as a receptor of radiant energy. Demonstrate knowledge of the basic models of vision of colour, shape and movement. Demonstrate knowledge of age-related changes in perceptual processes. Measure and interpret psychophysical data obtained from an assessment of visual perception.
CE06. (ENG) The ability to recognise the eye as an optical system. The ability to understand the basic models of vision. The ability to understand ocular models and parameters.
CT5. Efficient use of informacion resources. To manage data and technical and scientific information adquisition, organization, analysis and visualization and to provide a critical appraisal of the results of this management

Full-or-part-time: 1h 30m
Practical classes: 1h 30m

Informes de pràctiques (IP)

Description:
Entrega dels informes amb els resultats i conclusions de les pràctiques.

Specific objectives:
Valorar el grau d'aprenentatge de l'estudiant.

Material:
A càrrec de l'estudiant.

Delivery:
La setmana posterior a la realització de la pràctica. Aquests informes tenen un pes del 15%.

Related competencies :
CG13. Demonstrate and interpret methods for critical analysis and theory development and apply them to the field of optometry.
CG4. Critically reflect on the clinical, scientific, ethical and social issues involved in the professional practice of optometry, understand the scientific foundations of optics and optometry and critically evaluate terminology, clinical trials and research methods related to optics and optometry.
CE06. (ENG) The ability to recognise the eye as an optical system. The ability to understand the basic models of vision. The ability to understand ocular models and parameters.
CE13. Understand the factors that limit retinal image quality. Demonstrate knowledge of the spatial and temporal aspects of vision. Carry out psychophysical tests to determine levels of visual perception. Demonstrate knowledge of the functioning of the retina as a receptor of radiant energy. Demonstrate knowledge of the basic models of vision of colour, shape and movement. Demonstrate knowledge of age-related changes in perceptual processes. Measure and interpret psychophysical data obtained from an assessment of visual perception.
CE20. Measure, interpret and treat refractive errors. Describe the sensory and oculomotor mechanisms of binocular vision. Identify the principles of and measure, interpret and treat accommodative and binocular vision anomalies. Demonstrate skills in communication, recording data and writing clinical histories. Demonstrate skills in the interpretation and clinical judgement of results of vision tests, to establish the most suitable diagnosis and treatment. Demonstrate skills in instrumental assessment tests of visual function and eye health. Carry out a complete medical history. Identify, apply and interpret instrumental tests relating to visual health problems. Demonstrate the clinical skills required for the examination and treatment of patients. Examine, diagnose and treat visual anomalies with an emphasis on differential diagnosis. Describe the nature and organisation of types of clinical care. Describe the protocols that are applied to patients.
CT5. Efficient use of informacion resources. To manage data and technical and scientific information adquisition, organization, analysis and visualization and to provide a critical appraisal of the results of this management

Full-or-part-time: 14h
Self study: 14h

European Diploma Competences

Description:
The subject BINOCULAR VISION FOUNDATIONS participates in the competences of the European diploma nº 2, 3, 7 and 10 of the area A1 "Geometrical Optics" with a weight of 0.4 ECTS.
The subject BINOCULAR VISION FOUNDATIONS participates in the competence of the European diploma nº 3 of the area A2 "Physical Optics" with a weight of 0.1 ECTS.
The subject BINOCULAR VISION FOUNDATIONS participates in the competence of the European diploma nº 8 of the area A5 "Optical Appliances. Knowledge and Practical" with a weight of 0.1 ECTS.
The subject BINOCULAR VISION FOUNDATIONS participates in the competence of the European diploma nº 1 of the area A6 "Occupational Optics. Knowledge and Practical" with a weight of 0.1 ECTS.
The subject BINOCULAR VISION FOUNDATIONS participates in the competences of the European diploma nº 1, 4, and 8 of the area B4 "Visual Perception" with a weight of 0.3 ECTS.
The subject BINOCULAR VISION FOUNDATIONS participates in the competence of the European diploma nº 1 of the area B8 "Refraction. Knowledge and Practical" with a weight of 0.1 ECTS.
The subject BINOCULAR VISION FOUNDATIONS participates in the competences of the European diploma nº 1, 2, and 7 of the area B10 "Ocular Motility and Binocular Vision. Knowledge and Practical" with a weight of 0.3 ECTS.
The subject BINOCULAR VISION FOUNDATIONS participates in the competence of the European diploma nº 2 of the area C22 "Ocular Anatomy and Physiology. Knowledge" with a weight of 0.1 ECTS.

Full-or-part-time: 15h
Practical classes: 15h

GRADING SYSTEM

BIBLIOGRAPHY

Basic:
- Steinman, Scott B.; Steinman, Barbara A.; Garzia, Ralph P. Foundations of binocular vision: a clinical perspective. New York: McGraw-Hill, cop. 2000. ISBN 0838526705.
- Benjamin, William J.; Borish, Irvin M. Borish's clinical refraction. 2nd edition. St. Louis, MO: Butterworth Heinemann/Elsevier, cop. 2006. ISBN 0750675241.
- Rabbetts, Ronald B.; Bennett, Arthur G. Clinical visual optics. 4th ed. Edinburgh [etc.]: Elsevier/Butterworth Heinemann, 2007. ISBN 9780750688741.
- Goss, David A.; Hofstetter, Henry W. Ocular accommodation, convergence, and fixation disparity: a manual of clinical analysis. 2nd edition. Boston [etc.]: Butterworth-Heinemann, cop. 1995. ISBN 0750694971.
- Scheiman, Mitchell; Wick, Bruce. Clinical management of binocular vision: heterophoric, accommodative, and eye movement disorders. 4th edition. Philadelphia, PA: Lippincott Williams & Wilkins, [2014]. ISBN 9781451175257.