

Study Programme: Optometry
Course Unit Title: Physiological Optics
Course Unit Code: O18FO
Name of Lecturer(s): dr Olivera Klisurić
Type and Level of Studies: Vocational studies of OPTOMETRY
Course Status (compulsory/elective): compulsory
Semester (winter/summer): winter
Language of instruction: English
Mode of course unit delivery (face-to-face/distance learning): face-to-face
Number of ECTS Allocated: 6
Prerequisites: Anatomy and Physiology of the Eye
<p>Course Aims:</p> <p>This module aims to provide students with:</p> <ol style="list-style-type: none"> 1. Knowledge of the behaviour of light in relation to the eye 2. An understanding of the basic concepts of visual processing, with emphasis on the scientific methods used in its exploration 3. An understanding of neurophysiological processing within the visual system by presenting the normal features of colour vision and introduces the basis of abnormalities 4. Understanding the physiological basis of visual acuity and ability to evaluate critically methods used in its measurement <p>An understanding of the contrast sensitivity and the physiological basis of contrast sensitivity at the retinal and cortical level.</p>
<p>Learning Outcomes:</p> <p>The overall competence is acquiring knowledge and students' ability for individual and team scientific research work in the field of applying physical concepts to the visual perception. The specific competences are, for example:</p> <p><i>Knowledge and Understanding:</i></p> <ul style="list-style-type: none"> • Working knowledge of the concept of threshold, its physiological basis and measurement • Knowledge of visual performance under different lighting conditions and ability to interpret the influence of experimental parameters • Ability to discuss the physiological basis for suprathreshold performance in judging brightness and size • Ability to interpret some visual illusions and appreciation of what illusions can teach us about the visual system • Ability to describe the classical theories of colour vision • Ability to distinguish between the different forms of colour defects and evaluate tests of colour vision <p><i>Skills:</i></p> <ul style="list-style-type: none"> • An ability to demonstrate skills associated with the use of selected optometric equipment. <p>The intellectual skills associated with the assimilation of educational subject matter; preparation of notes, revision material, the ability to access and utilise information from a variety of sources.</p>
<p>Syllabus:</p> <p><i>Theory</i></p> <p>This module provides the student with a basic understanding of light in relation to the eye and the formation of the retinal image. This module provides information on the physiological processes of human vision. The subject areas include retinal</p>

processes, visual acuity, contrast sensitivity and vision at different light levels. Limits of vision are investigated in relation to spatial and temporal performance. Theory and practical aspects of assessing normal and abnormal colour vision is included in this module.

Practice

Lab exercises on Biopac Student Lab System.

Required Reading:

1. Steven H. Schwartz, Visual Perception: A Clinical Orientation, McGraw-Hill, 2004.
2. Steven H. Schwartz, Geometrical and Visual Optics: A Clinical Introduction, McGraw-Hill, 2013.
3. Southall, J. P. C.: Introduction to Physiological Optics, Dover Publications, inc., New York, 1937, 1961.

Weekly Contact Hours:

Lectures:3

Practical work:2

Teaching Methods:

Knowledge Assessment (maximum of 100 points):

Pre-exam obligations	points	Final exam	points
Active class participation	5	written exam	25
Practical work	10	oral exam	30
Preliminary exam(s)	25	
Seminar(s)			

The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.