

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS & OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	4051	SEMESTER	4 th
COURSE TITLE	NEUROPHYSIOLOGY OF THE EYE		
INDEPENDENT TEACHING ACTIVITIES <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>	WEEKLY TEACHING HOURS	CREDITS	
LECTURES	3	4	
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	CSC - Compulsory Specialization Courses		
PREREQUISITE COURSES:	3052 ANATOMY OF THE EYE		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)			

(2) LEARNING OUTCOMES

<p>Learning outcomes <i>The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described. Consult Appendix A</i></p> <ul style="list-style-type: none"> • <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i> • <i>Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i> • <i>Guidelines for writing Learning Outcomes</i>
<p>LEARNING OUTCOMES The aim of the course is the understanding of the human eye neurology student but also more specialized neurophysiology issues related to their professional career. Upon successful completion of the course the student will be able to:</p> <ul style="list-style-type: none"> • understand basic concepts of ocular neurology • to know subjects of neurophysiology and data for the understanding of technological and scientific research methods in the subject of neurophysiology of the human eye • be familiar with neurophysiology and scientific thought

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

*Search for, analysis and synthesis of data and information,
with the use of the necessary technology
Adapting to new situations
Decision-making
Working independently
Team work
Working in an international environment
Working in an interdisciplinary environment
Production of new research ideas*

*Project planning and management
Respect for difference and multiculturalism
Respect for the natural environment
Showing social, professional and ethical responsibility and sensitivity to gender issues
Criticism and self-criticism
Production of free, creative and inductive thinking
.....
Others...
.....*

*Working independently
Team work*

(3) SYLLABUS

Theoretical Part of the Course

- IMAGE PERCEPTION: Structure and function of retinal neurons.
- VISUAL PATHS IN LIGHTING CONDITIONS. Sensory system design principles specialization in space
- VISUAL PATHS IN DARK CONDITIONS. Speed sensitivity and adaptability of retinal neurons.
- VISUAL PATHS IN SEMI-LIGHT CONDITIONS - spatial, temporal analysis of the retinal image
- PHOTO RECEPTORS FUNCTION - Retina image color control - Retina organization - Nervous and visual limitations of visual acuity - Nervous image in the brain and image processing
- VISUAL PERCEPTION

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Face-to-face In classroom	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	Learning process support through the electronic platform e-class	
TEACHING METHODS <i>The manner and methods of teaching are described in detail.</i> <i>Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.</i> <i>The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</i>	Activity	Semester workload
	Lectures,	39
	Study and analysis of bibliography	51
	Course total	90
STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure</i> <i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</i> <i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i>	I. Written final exam (100%)	

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Greek language

1. **Neuroscience** Kandel E.R., Schwartz J.H., Jessell T.M., Πανεπιστημιακές Εκδόσεις Κρήτης, 2005
2. **Internal vision** Zeki Semir Πανεπιστημιακές Εκδόσεις Κρήτης, 2005

Foreign language

3. **Eye, Brain and Vision**; David H. Hubel, Scientific American Library, N.Y. 1995
4. **From Neuron to Brain**, Nichols J.G., Martin A.R., Wallace B.G., Sinauer Ass., Sunderland Mass., USA, 1992
5. **Neurons in the retina.**, Kuffler S.W., Cold Spring Harbor Symposia in Biology 17:281-282, 1952
6. **Foundations of Cyclopean Perception**, Julesz Bela, University of Chicago Press, Chicago 1971
7. **Outlines of a Theory of the Light Sense**, Hering, Ewald, Harvard University Press, Cambridge, Mass., 1964
8. **Genes for colour Vision**, Nathans J., Sci. Am. 260 :42-49, 1989
9. **The developing Brain**, Shatz C. J., Sci. Am. 267 :60-67, 1992
10. **Neurobiology: A Science in need of a Copernicus.**, Hubel, D.H., MIT Press, Cambridge. Mass., pp 243 –260
11. **Physiology of the eye : an introduction to the vegetative functions /** Irving Fatt, Barry A. Weissman. - Boston : Butterworth-Heinemann, 1992
12. **The Wills eye manual** : office and emergency room diagnosis and treatment of eye disease. - Philadelphia : Lippincott, 1994
13. **Fundamentals of anatomy and physiology.** Applications manual / Frederic H. Martini, Kathleen Welch ; with William C. Ober, art coordinator and illustrator ; Claire W. Garrison, illustrator ; Ralph T. Hutchings, biomedical photographer. - Upper Saddle River, N.J. : Prentice Hall, 1998