COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS AND OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	5010	**SEMESTER**	5th
COURSE TITLE	VISUAL OPTICS		

INDEPENDENT TEACHING ACTIVITIES *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*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	4	6
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Specialty module
PREREQUISITE COURSES:	NO
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	

(2) LEARNING OUTCOMES

Learning outcomes

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

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The course aims to understand the visual principles of operation of the human eye and the basic optical instruments Optometry for use in everyday practice in his professional career.

Upon successful completion of the course the student will be able to:

• Understand the visual principles of operation of the human eye and refractive errors
• Understand the wavefront aberrations in the eye
• Understand the metrics of vision
• Understand the principles of color vision and colorimetry

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**

- Evolution of the eye in nature
- Optics of the eye, cornea and crystalline lens, accommodation range, pupil.
- axes – angles of the eye
- Paraxonic schematic eyes
- Retina and its structure, receptive fields
- Low-order ametropias (defocus-astigmatism), spectacle lens magnification
- Wave aberrations of the eye and image quality at the retina.
- Visual metrics (Visual acuity - contrast sensitivity)
- Color vision - Colorimetry.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In class
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	e-class
TEACHING METHODS *The manner and methods of teaching are described in detail.* *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.* *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*	***Activity*** — ***Semester workload*** Lectures — 52 Study — 68 Course total — *120*
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *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* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Written final exam (100%)

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

In Greek

1. *Visual Optics, Drakopoulos Panos and George Asimellis, pp 440, Syghroni Gnosi 2014*
2. *Geometrical Optics, Asimellis George, Vamvakas Ioannis, Panos Drakopoulos, pp281, Syghroni Gnosi, 2012*
3. *Visual Optical Instruments, Drakopoulos Panos and George Asimellis, pp 256, Syghroni Gnosi, 2011*
4. *Optics and Supervision, George Asimellis, Syghroni Gnosi 2008.*
5. *Basic principles of Chromatometry, V. Orphanakos, Stamoulis Ed., 2004*

English

1. *Handbook of Optics, M. Bass editor, Volumes II, III, McGraw-Hill Inc, 3rd edition, 2010*
2. *Optics, Hecht E., Addison Wesley, 4th Edition, 2001*
3. *Optics of the Human Eye, Atchison D.A. and G. Smith, Butterworth –Heinemann, 2000.*
4. *Seeing the light, Falk D., Brill D., Stork D., John Wiley and Sons, 1986.*

5. *Optics, Freeman M.H., Butterworth – Heinemann, 10th Edition, 1990*
6. *Optometric Instrumentation, Henson D.B., Butterworth-Heinemann, 2nd Edition, 1996*
7. *Animal eyes, Lang M., Nilsson D., Oxford University Press, 2002.*
8. *The eye and visual optical instruments, Smith G. and Atchison D.A. Cambridge University Press, 1997.*
9. *Introduction to Geometrical Optics, Katz M., World Scientific Publishing Co, 2002*
10. *Geometric, Physical, and Visual Optics, Keating MP, Butterworth – Heinmann, 2002.*
11. *Human colour vision, Kaiser PK, Boynton RM, Optical Society of America, 1996*
12. *The science of colour, Shevell SK. Editor, Optical Society of America, 2003*