

Course Outline

1. General

SCHOOL	Engineering		
DEPARTMENT	Electrical and Computer Engineering		
LEVEL OF STUDY	Undergraduate		
COURSE UNIT CODE	8.006	SEMESTER	8 th
COURSE TITLE	Lighting Technology		
COURSEWORK BREAKDOWN		TEACHING WEEKLY HOURS	ECTS Credits
Theory (Lectures)		2	2
Exercises		2	2
TOTAL		4	4
COURSE UNIT TYPE	Specialized knowledge/Consolidation		
PREREQUISITES	-		
LANGUAGE OF INSTRUCTION/EXAMS	Greek		
COURSE DELIVERED TO ERASMUS STUDENTS	No		
COURSE WEB PAGE (URL)	https://eclass.hmu.gr/courses/ECE184/		

2. LEARNING OUTCOMES

Learning outcomes
<p>The course "Lighting Technology" aims to give students the basic concepts of light propagation in space and within materials, the subjective and objective quantities of measurement, and the methods involved in lighting installations. Upon successful completion of the course the student will be able to calculate (analyze / design) systems of lighting fixtures to cover commercial, work, industrial and domestic spaces, and know in depth the physical and technological characteristics of light sources and parameters, the parameters that make them useful in applications, as well as modern technology of control, production and application of light.</p>
General skills
<ul style="list-style-type: none"> ▪ Search, analysis and synthesis of data and information, using the necessary technologies. ▪ Autonomous work ▪ Teamwork ▪ Search, analysis and synthesis of data and information, using the necessary technologies. ▪ Decision making ▪ Promoting liberal, creative, and inductive/deductive thinking ▪ Work in an interdisciplinary environment

3. Syllabus

Theoretical Lectures

Visible radiation and light.

Photopic, scopic and mesopic vision. Black body. Spectrum, colorimetric systems, colorimetry.

Color temperature. Color rendering index (CRI). Basic principles, quantities and units of measurement of photometry.

Light intensity, light flux, light intensity, brightness. Photometric laws.

Photometric diagrams. Polar distribution diagrams. Equal illumination diagrams.

Zonal light flux distribution and coding.

Utilization rate. Blurring. Types of lamps. Utilization of natural lighting. Control systems. Methods of photometric calculations

Laboratory Exercises

Exercises with software simulation and network simulation package:

Lighting design software (RELUX or DIALUX). Indoor and outdoor lighting studies. Laboratory measurements of photometric quantities in lamps and luminaires.

4. Teaching methods -assessment

MODE OF DELIVERY	In-Class Face-to-Face		
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY	<ul style="list-style-type: none"> ▪ Use of ICTs in lecturing ▪ Use of ICTs in weekly tests. ▪ Use of ICTs for the communication with students via the e-class platform 		
TEACHING ORGANIZATION	Method description/Activity	Semester Workload	
	Lectures	26	
	Laboratory exercises	26	
	Non-guided personal study	52	
	Homework exercises	13	
	Electronic test	3	
	Total Contact Hours	120	
ASSESSMENT METHODS	<p>All announcements for the course regulations and complementary reading material are permanently posted in the course web page. The course grade incorporates the following evaluation procedures:</p> <ol style="list-style-type: none"> 1. Weekly tests (10%) <ul style="list-style-type: none"> • Short answer questions 2. Written examination I (40%) <ul style="list-style-type: none"> • Problemsolving. • Short answer questions 3. Final written examination (50%) <ul style="list-style-type: none"> • Problemsolving. • Short answer questions • Multiple choice questions 		

5. Recommended bibliography

-Books:

1. *Energy Saving Secrets*: <http://www.energysavingsecrets.co.uk>
2. *EN 15232:2008, Energy performance of buildings, Impact of building automation, Controls and building management, 2008. (July2007).*
3. *Interior lighting for environmental designers*, Nuckolls, James L., New York: Wiley, c1983.
4. *Lamps and lighting: a manual of lamps and lighting prepared by members of staff of THORN EMI Lighting Ltd.* London; Baltimore, Md., USA: E. Arnold, 1993.

Journals:

1. *International Journal of Sustainable Energy*
2. *Building Research & Information*
3. *Interior Lighting, Springer*
4. *Solid-State Lighting*
5. *Lighting Journal*
6. *Color Science and Photometry for Lighting with LEDs and Semiconductor Nanocrystals*
7. *Lighting Research & Technology*