2.5 CE0250 – Physics

(1) GENERAL

SCHOOL	ENGINEERING SCHOOL		
ACADEMIC UNIT	CIVIL ENGINEERING DEPARTMENT		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**CE0250**	**SEMESTER**	**2**
COURSE TITLE	**Earthquake Resistant Design II**		

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**
	4	4
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*	General Background
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek and English
IS THE COURSE OFFERED TO ERASMUS STUDENTS	
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/modules/auth/opencourses.php?fc=69

(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 is an introductory course in classic and modern areas of Physics.

The course material aims to deepen the students' knowledge of Physics, which is hidden behind the modern applications in technology, but also to give them the foundations they need to attend courses of the later semesters.

Much of the course material focuses on the theory that governs the interaction of radiation with matter, heat exchange and other chapters of Modern Physics, which are tangential to the science of Civil Engineering.

As a result of the above, the student at the end of the course knows the basic elements of Physics related to the following topics such as: mechanics, heat transfer, thermal insulation and energy consumption in buildings,

renewable energy sources (photovoltaics), air, daylight and artificial lighting (LED, Laser), photometric sizes, acoustics, sound insulation in buildings, eigenvectories, radon, gravity. The basics are embedded in theory and practice exercises.

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

1. To understand in general the contribution and application of Classic and Modern Physics in the Field of Civil Engineering.
2. To monitor the new modern technologies, based on the evolution of Modern Physics, and introduce them to the science of Civil Engineering.
3. To promote new knowledge in the science of Civil Engineering.
4. To know special basic techniques and methods for the calculation and measurement of various natural sizes, making use of basic applications of Physics.
5. To evaluate the results of his researches and to propose solutions and ways of control or procedures in his profession.

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	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*Others…*

The course aims at the following general competencies:

1. Autonomous work, based on research of the subject.
2. Analysis, synthesis of information and data, and writing-writing of a study on the subject.
3. Promotion of complex creative thinking with a solid foundation of Modern Physics.

(3) SYLLABUS

Classical Mecanics, Closed and open energy systems, insulators, conductors, semiconductors, electrical circuits, Archimedes' principle, viscosity, surface phenomena, fluids, oscillations, waves, energy production and transfer, interactions of light with matter, microstructures, chemical bonds, crystalline and amorphous materials, semiconductors of the p-n type, quantum mechanical phenomena and applications (photoelectric effect,), thermodynamics, gravity.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face, Distance learning, etc.
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Teaching using ICT, Communication and Electronic Submission.\ • Support of the Learning Process through the e-class electronic platform. • Multimedia material (Videos, Slides, Exercises) available Online. • Additional communication via e-mail and secretarial announcements. • Support of the learning process with the availability of selected additional exercises and indicatively solved examples

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	39
Classwork	16
Preparation for Project	30
Personal Study	80
Course total	**175**

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 (60%) which includes problem solving and other questions of judgment and multiple choice
- Written examination (progress) in the middle of the semester (10%)
- Written Papers (30%) of various topics of the material.

The assessment language is Greek unless the students come from the Erasmus program, in which case the exam is conducted in English

(5) ATTACHED BIBLIOGRAPHY

Greek Bibliography:

1. “Physics of Movement and Stillness”, G. Nikolaidis-A. Skountzos, Publisher: Contemporary Publishing, EVDOXOS : 12713021

Foreign Bibliography:

1. "Physics for Scientists and Engineers, Electricity and Magnetism, Light and Optics, Modern Physics", Raymond A., Serway R., John W Jewett University of Crete, EVDOXOS 22750112