COURSE OUTLINE

(1) General information

FACULTY/SCHOOL	TECHNOLOGY			
DEPARTMENT	ENVIRONMENTAL SCIENCES			
LEVEL OF STUDY	*Undergraduate*			
COURSE UNIT CODE	NEW **COURSE**	**SEMESTER**	1	
COURSE TITLE	PHYSICS FOR ENVIRONMENTAL SCIENCE			
INDEPENDENT TEACHING ACTIVITIES in case credits are awarded for separate components/parts of the course, e.g. in lectures, laboratory exercises, etc. If credits are awarded for the entire course, give the weekly teaching hours and the total credits			**WEEKLY TEACHNG HOURS**	**CREDITS**
THEORETICAL BACKGROUND			5	5
LABORATORY PRACTICE				
TOTAL			5	5
COURSE TYPE Background knowledge, Scientific expertise, General Knowledge, Skills Development	BACKROUND KNOWLEDGE			
PREREQUISITE COURSES:	NO			
LANGUAGE OF INSTRUCTION &EXAMINATION/ASSESSMENT:	GREEK			
THE COURSE IS OFFERED TO ERASMUS STUDENTS	YES			
COURSE WEBSITE (URL)				

(2) LEARNING OUTCOMES

Learning Outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate (certain) level, which students will acquire upon successful completion of the course, are described in detail.
It is necessary to consult:

APPENDIX A

- *Description of the level of learning outcomes for each level of study, in accordance with the European Higher Education Qualifications' Framework.*
- *Descriptive indicators for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and*

APPENDIX B

- *Guidelines for writing Learning Outcomes*

Students after the successful completion of the course will obtain:

- Basic knowledge of modern physics
- Theories of thermodynamics
- Basic tools for environmental sciences

General Competences

Taking into consideration the general competences that students/graduates must acquire (as those are described in the Diploma Supplement and are mentioned below), at which of the following does the course attendance aim?

Search for, analysis and synthesis of data and information by the use of appropriate technologies,	*Project planning and management*
Adapting to new situations	*Respect for diversity and multiculturalism*
Decision-making	*Environmental awareness*
Individual/Independent work	*Social, professional and ethical responsibility and sensitivity to gender issues*
Group/Team work	*Critical thinking*
Working in an international environment	*Development of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Introduction of innovative research	*(Other…….citizenship, spiritual freedom, social awareness, altruism etc.)*
	…….

- Search for, analysis and synthesis of data and information
- Decision-making
- Individual work
- Group/Team work
- Critical thinking
- Development of free, creative and inductive thinking

(3) COURSE CONTENT

1. Scientific method. Environmental sciences. Electrical nature of matter
2. Structure of the individual. Core. Mass spectrometer
3. Radioactivity. Half-life. Nuclear reactions
4. Black body. Photoelectric phenomenon. Gas emission spectra
5. Bohr's atom model. Particle-wave diffusion. Heisenberg uncertainty principle
6. Temperature. Heat. Heat transfer
7. Phase changes. Thermal expansion. Statutory equation
8. First law of thermodynamics. Diagrams P- V. Kinetic theory
9. Equal distribution of energy. Molecular speed distribution
10. Second law of thermodynamics. Carnot machine. Entropy
11. Diagrams T - S. Lorentz Transformations. Length system
12. Time extension. Relative timeliness
13. Relativistic mass. Addition of relativistic speeds. General Theory of Relativity

(4) TEACHING METHODS-ASSESSMENT

MODES OF DELIVERY Face-to-face, in-class lecturing, distance teaching and distance learning etc.	Face-to-face
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY Use of ICT in teaching, Laboratory Education, Communication with students	• Powerpoint presentations • Software use • Communication via e-mail. • E-class platform

<table>
<tr><td></td><td></td></tr>
<tr><td>COURSE DESIGN
Description of teaching techniques, practices and methods:
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, Internship, Art Workshop, Interactive teaching, Educational visits, projects, Essay writing, Artistic creativity, etc.

The study hours for each learning activity as well as the hours of self-directed study are given following the principles of the ECTS.</td><td><table><tr><th>Activity/Method</th><th>Semester workload</th></tr><tr><td>Lectures</td><td>52</td></tr><tr><td>Practice exercises</td><td>13</td></tr><tr><td>Theory study</td><td>60</td></tr><tr><td>Course total
(25 hours of workload per credit unit)</td><td>125</td></tr></table></td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS
Detailed description of the evaluation procedures:

Language of evaluation, assessment methods, formative or summative (conclusive), multiple choice tests, short- answer questions, open-ended questions, problem solving, written work, essay/report, oral exam, presentation, laboratory work, other……etc.

Specifically, defined evaluation criteria are stated, as well as if and where they are accessible by the students.</td><td><u>The final grade is the outcome of the following evaluations:</u>

The main evaluation is done with written exams at the end of the semester and forms the final grade at a rate of 70% (A).

Also, the student's participation in the lectures, solving exercises and delivering assignments that form the final grade at a rate of 30% is evaluated (B).

Final Grade = 70% (A) + 30% (B)</td></tr>
</table>

(5) SUGGESTED BIBLIOGRAPHY:

-***<u>Suggested bibliography</u>***

- University Physics with Modern Physics, 2nd Greek Edition, Volume C: Thermodynamics and Modern Physics, H. D. Young and R. A. Friedman, Papazisis Publications, 2012
- Physics for Scientists and Engineers: Engineering, Oscillations and Mechanical Waves, Thermodynamics, Relativity, 8th Edition, R.A. Serway, J.W. Jewett, Kleidarithmos Publications, 2012
- Environmental Physics, 1st Edition, Kassomenos P., Kleidarithmos Publications, 2017 (in Greek)

-***<u>Complementary bibliography</u>***

Professor's notes: Material of theory lectures and laboratory exercises, which are available through the asynchronous training platform.