**COURSE OUTLINE**

1. **GENERAL**

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| **SCHOOL** | School of Environment | | | | |
| **ACADEMIC UNIT** | Department of Environment | | | | |
| **LEVEL OF STUDIES** | Undergraduate | | | | |
| **COURSE CODE** |  | **SEMESTER** | | **1** | |
| **COURSE TITLE** | Physics | | | | |
| **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 | | | 3 | | 5 |
| Laboratory exercises | | |  | |  |
|  | | |  | |  |
| *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 | | | | |
| **IS THE COURSE OFFERED TO ERASMUS STUDENTS** | No | | | | |
| **COURSE WEBSITE (URL)** | http://aegeanmoodle.aegean.gr | | | | |

1. **LEARNING OUTCOMES**

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| **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* | |
| * **Description of basic principles of Physics, related to environmental science** * **The significance of the scientific method as a methodology for understanding the physical world is underlined** * **Analysis of physical (mostly thermodynamical) processes on which phenomena examined in more advanced courses are based** * **Examination of analytical tools and their application on Physics problems** | |
| **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…*  *…….* |
| Production of free, creative and inductive thinking  Production of new research ideas  Working independently  Search for, analysis and synthesis of data and information, with the use of the necessary technology | |

1. **SYLLABUS**

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| * Scientific method, Environmental science * Heat, Temperature, Heat transfer * Thermal properties of matter, Kinetic Theory, Specific heat * Equipartition theorem, Maxwell-Boltzmann distribution, Phase diagrams * First law of thermodynamics, P-V diagrams, Thermodynamic processes * Second law of thermodynamics, Carnot engine, Entropy, T-S diagrams * Photoelectric phenomenon, Atom structure, Laser, Black body * Gas emission spectra, Wave-particle duality, Heisenberg uncertainty principle * Radioactivity, Half-life, Nuclear reactions |

1. **TEACHING and LEARNING METHODS - EVALUATION**

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| **DELIVERY** *Face-to-face, Distance learning, etc.* | Face-to-face |
| **USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY** *Use of ICT in teaching, laboratory education, communication with students* | **The distribution of course material, as well as a significant part of the evaluation is through the electronic platform moodle (aegeanmoodle.aegean.gr)** |
| **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 | | Study and analysis of bibliography | 86 | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  | | Course total | ***125*** | |
| **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.* | Language of evaluation: Greek   * Compulsory weekly quizzes on moodle (30% of the grade) * Final examination on moodle (70% of the grade)   Both quizzes and final exam consist of multiple choice questions and quantitative problems |

1. **ATTACHED BIBLIOGRAPHY**

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| *- Suggested bibliography:*   1. H. D. Young and R. A. Friedman, (2012), University Physics with Modern Physics, Volume III: Thermodynamics and Modern Physics, in Greek, Papazisi Editions, Athens 2. G. Paul Hewitt, (2009), The concepts of Physics, in Greek, University Editions of Crete, Crete 3. R. Wolfson, (2019), Essential University Physics, in Greek, Kritiki Editions, Athens   *- Related academic journals:* |