a) General			
School	ENGINEERING		
Academic unit	MECHANICAL ENGINEERING		
Level of studies	Undergraduate		
Course code	MM001Y05	*Semester*	1
Course title	**Physics**		

Independent teaching activities	*Weekly teaching hours*	*ECTS*
Lectures	3	5.5
Laboratory exercises	2	

Course type	General background
Course category	Compulsory
Prerequisite courses	-
Language of instruction and examinations	Greek & English
Is the course offered to Erasmus students	Yes
Course website (url)	

b) Learning outcomes and general competences

b1. Learning outcomes

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

- Understanding physics laws and principles required in the specialization courses.
- Understanding physics laws that apply to mechanical engineering systems.
- Give solutions to technological problems using among other their Physics background too.

b2. General competences

- 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

c) Syllabus

Electromagnetism and elementary Nuclear Physics

Electrostatics(charge and its properties, Coulomb's Law, Electric field, Gauss Law, electric energy and potential, Capacitance and Dielectric materials. Electric current, Magnetic field and Magnetic force, Amperes Law, Electromagnetic induction, Faraday's Law, Maxwell equations. Electromagnetic waves, Light propagation, self-inductance, ac circuits. Optics. Introduction to the principles and applications of Nuclear Physics.

d) Teaching and learning methods - Evaluation

Delivery	Face-to-face, Distance learning, etc.	
Use of information and communications technology	- Commercial/free/open source software - Multimedia applications - MS Teams/Moodle/eclass - Open courses	
Teaching methods	*Activity*	*Semester workload*
	Lectures	26
	Tutorials	13
	Laboratory exercises	26
	Computational exercises	
	Individual work	91
	Course total	156
Student performance evaluation	Midterm and final examinations For the lab, weekly (personal or group) written reports preparation +final oral examination/presentations	

e) Suggested bibliography

1. Raymond A. Serway, John W. Jewett, (2013). Φυσική για Επιστήμονες και Μηχανικούς: Ηλεκτρισμός και Μαγνητισμός, Φως και Οπτική, Σύγχρονη Φυσική. Κλειδάριθμος ΕΠΕ.
2. Giancoli, (2011). Φυσική για Επιστήμονες και Μηχανικούς. Τζιόλα & Υιοι ΑΕ.
3. Young H., Freedman R., (2010). Πανεπιστημιακή Φυσική με σύγχρονη φυσική. Α. Παπαζήσης