Course Code		PHY 302	PHY 322	PHY 341	PHY 435
Course Title		Advanced Physics Laboratory I	Advanced Physics Laboratory II	Electronics	Theoretical Physics
Type of course (compulsory, optional)		Compulsory	Compulsory	Compulsory	Compulsory
Level of course Is it a first, second or third cycle course?		First	First	First	First
Academic year of study		Year of Study	Year of Study	Year of Study	Year of Study
Semester when the course will be offered		SPRING Semester	Fall Semester	Spring Semester	Spring Semester
Number of ECTS credits allocated		7.5 ECTS	7.5 ECTS	7.5 ECTS	7.5 ECTS
Name of lecturer		Prof. Andreas Othonos	Prof. Panos Razis	Prof. Andreas Othonos	Prof. Constantia Alexandrou
Are there any course prerequisites and/or co-requisites if any?(write the course codes if any)	prerequisites				
	co-requisites				
Course contents (description)		(Solid State Physics Experiments) The Hall effect in p-germanium. The behaviour and study of photocells. The bandgap of germanium. The Hall effect in metals. Spectroscopy of semiconductors. X-ray diffraction - Bragg scattering of a crystal structure. A study of microwaves - the behaviour of microwaves. Advanced interferometry - methods and measurements. The Ar+ ion laser - the study of a gas laser system.	(Atomic and Nuclear Physics Experiments) Introduction. Measurement of the specific charge of the electron. Observation of the Zeemann effect. Observation of the electron spin resonance. The Compton effect. X-ray fluorescence and Moseley's law. Rutherford scattering. Spectroscopy of α-Particles. Spectroscopy of β-Particles. Spectroscopy of γ-Rays. The Geiger-Müller Counter.	The objective of this course is to introduce students to modern electronics, providing a thorough, comprehensive and practical coverage of electronic devices, circuits and applications. Laboratory experience is an essential part of the course. Most of the lectures will describe how a variety of basic modern electronic elements such as diodes, bipolar junction transistors, field-effect transistors operate and how to analyse a circuit containing these elements. Contents: DC and AC circuits. Semiconductors and applications to circuits. PN junction diodes. Transistors. Field-effect transistors. Digital circuits.	Symmetries: Definition, physical consequences of symmetries, Symmetries in classical mechanics, symmetries in quantum mechanics. The Heisenberg representation. Classical Fields: Gauge invariance, the action functional of the electromagnetic field, the energy and momentum tensor. Relativistic quantum mechanics: The Klein-Goldon equation, the Dirac equation, elements of second quantisation. Scattering theory: Green's functions, asymptotic states, potential scattering, phase shifts, resonances. Introduction to string theory.
What are the course assessment methods (mid term, final exam, assignments) write yes	mid term exam	Yes	Yes	Yes	Yes
	final exam	Yes	Yes	Yes	Yes
	assignments	Yes	Yes	Yes	Yes
Language of instruction		English	English	English	English