



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Matematica e Informatica		
ACADEMIC YEAR	2016/2017		
BACHELOR'S DEGREE (BSC)	COMPUTER SCIENCE		
INTEGRATED COURSE	PHYSICS		
CODE	03245		
MODULES	Yes		
NUMBER OF MODULES	2		
SCIENTIFIC SECTOR(S)	FIS/05, FIS/04		
HEAD PROFESSOR(S)	PERES GIOVANNI	Cultore della Materia	Univ. di PALERMO
OTHER PROFESSOR(S)	PERES GIOVANNI	Cultore della Materia	Univ. di PALERMO
	ZIINO GIORGIO	Professore Associato	Univ. di PALERMO
CREDITS	12		
PROPAEDEUTICAL SUBJECTS			
MUTUALIZATION			
YEAR	1		
TERM (SEMESTER)	1° semester		
ATTENDANCE	Not mandatory		
EVALUATION	Out of 30		
TEACHER OFFICE HOURS	PERES GIOVANNI Monday 15:30 17:30 Specola Universitaria (Dip. Fisica e Chimica) - Piazza Parlamento 1 - Studio del Prof. Peres (Stanza nr. 15) Tuesday 15:30 17:30 Specola Universitaria (Dip. Fisica e Chimica) - Piazza Parlamento 1 - Studio del Prof. Peres (Stanza nr. 15) ZIINO GIORGIO Tuesday 10:00 12:30 Dipartimento di Fisica e Chimica, Via Architrafì 36, primo piano, stanza N. 118		

PREREQUISITES	Mathematical knowledge typically acquired in high schools or technical high schools, including trigonometry and logarithms. A basic knowledge of calculus, including the concept of derivative and integral are not mandatory albeit useful.
LEARNING OUTCOMES	Knowledge and understanding Learning the concepts and laws of basic classical physics, learning and understanding the physical method. Applying knowledge and understanding Ability to solve simple physics problems, to apply the scientific analysis to solve various problems. Making judgements During lessons and exercises, we stimulate an inquisitive approach in the learning process of the various concepts and in the solution of the Physics problems. We tend to compare, whenever possible, different approaches and methods discarding the inadequate or inappropriate ones. Communication skills Students are invited to interact during the lessons and the exercises, expressing their opinion (or solution) on a subject (or a problem) under scrutiny. Learning skills Students are asked to approach the written text (book) autonomously and suggestions are made on the way to study and to test their learning autonomously.
ASSESSMENT METHODS	What follows concerns the final exams. At the end we provide details on the intermediate tests. Final exam will be based on a written and an oral exam. The written exam requires solving, without access to books or notes, four simple problems concerning laws of classical physics. The written exam allows us to test the level of knowledge of physical laws, in particular the ability to make and solve simple mathematical formulations of physical problems. The ability to find quantitative results is important. The oral exam will be a discussion about the physical laws part of the syllabus and their use to solve simple physical problems posed to the student. The exam aims at determining the knowledge and understanding of the student, the ability to apply them, the ability to use an adequate scientific language and the ability to communicate clearly. Final grade, properly scaled, will be assigned on the basis of these conditions: a) only basic knowledge of physical laws and limited ability to apply them autonomously, just sufficient ability to analyze phenomena and to expose clearly the solution process followed (grade 18 - 21); b) adequate knowledge of physical laws and adequate ability to apply them autonomously, adequate ability to analyze phenomena and to expose clearly the solution process followed (grade 22-25); c) good knowledge of physical laws and good ability to apply them autonomously, good ability to analyze phenomena and to expose clearly the solution process followed (grade 26-28); d) deep and broad knowledge of physical laws and excellent ability to apply them autonomously, excellent ability to analyze phenomena and to expose clearly the solution process followed (grade 29-30L); Intermediate tests are just a downscaled version of the final exam and will cover just a well defined part of the subject.
TEACHING METHODS	This is a two-semester course. Teaching is given through lessons and exercises dedicated to solving typical problems. We allow for non-mandatory intermediate tests; the student may just skip the intermediate tests and undergo the final exam. Near the end of each semester and each intermediate test we intensify the activity of collective exercises intended to test the students' ability to apply their knowledge and to prepare them to intermediate tests and to the exam.

MODULE ELECTROMAGNETISM AND OPTICS

Prof. GIORGIO ZIINO

SUGGESTED BIBLIOGRAPHY

Halliday, Resnick, Walker - Fondamenti di Fisica - Ambrosiana
R. A. Serway – Fisica - EdiSES

AMBIT	10701-Attività formative affini o integrative
INDIVIDUAL STUDY (Hrs)	102
COURSE ACTIVITY (Hrs)	48

EDUCATIONAL OBJECTIVES OF THE MODULE

Object of the module is to introduce the study of Electricity and Magnetism with a short account of the structure of matter .
Optical phenomena are faced with the laws of Geometrical Optics and Physical Optics .

SYLLABUS

Hrs	Frontal teaching
1	Aims of the course and references to physical and mathematical knowledge used.
2	Electric field.
2	Gauss's law.
3	Electric potential.
2	Capacity and dielectrics.
4	Current and resistance, direct current circuits.
6	Magnetic forces, magnetic fields, magnetic sources.
3	Faraday-Lenz's law.
3	Maxwell's law of induction. Waves, wave equation, electromagnetic waves.
11	Numerical applications of electricity, magnetism and electro-magnetic induction .
7	Geometrical optics and wave optics.
4	Numerical applications of geometrical optics and physical optics.

MODULE POINT MECHANICS

Prof. GIOVANNI PERES

SUGGESTED BIBLIOGRAPHY

Halliday, Resnick, Walker - Fisica - Ambrosiana

Consultazione

R. A. Serway – Fisica - EdiSES

AMBIT	10701-Attività formative affini o integrative
INDIVIDUAL STUDY (Hrs)	102
COURSE ACTIVITY (Hrs)	48

EDUCATIONAL OBJECTIVES OF THE MODULE

This modulus is dedicated to provide the student with knowledge of quantities, concepts and laws of classical mechanics and of thermodynamics.

SYLLABUS

Hrs	Frontal teaching
1	Scope of the course and short mention of basic mathematical knowledge needed.
5	One-dimensional and two-dimensional motion.
5	Dynamics of massive points.
6	Work and energy
6	Impulse and momentum
2	Rotational cinematics and dynamics.
9	Oscillations
6	Waves
8	Thermodynamics