UNIVERSITÀ DI PISA

PHYSICS III

MARCO STANISLAO SOZZI

Anno accademico	2022/23
CdS	MATHEMATICS
Codice	243BB
CFU	6

Moduli	Settore/i	Tipo	Ore	Docente/i
FISICA III	FIS/01	LEZIONI	60	MARCO STANISLAO SOZZI

Learning outcomes

Knowledge
The student will complete the knowledge of classical physics and will be introduced to the two main physics revolutions of the XX century.

Assessment criteria of knowledge
The acquired knowledge will be assessed through the evaluation of the problem-solving capability during the written tests and examinations, and an oral examination.

Skills
The student will acquire the ability to solve problems in thermodynamics, special relativity and simple issues on the basis of quantum mechanics.

Assessment criteria of skills
The skills will be assessed during the written tests and the examination.

Behaviors
The student will improve the ability to obtain solid numerical answer to specific problems on the discussed topics, and might acquire an interest in physics through the understanding ot its unity and modern development.

Assessment criteria of behaviors
The ability to move from theory to practical answers will be assessed through the evaluation of the solved problems.

Prerequisites
Mechanics, electro-magnetism, calculus.

Syllabus
(a) Thermodynamics: thermology, systems and thermodynamical transformations, perfect gas, first and second laws, temperature and enthropy, elements of kinetic theory of gases
(b) Introduction to special relativity: gauge transformations and retarded potentials, principles of special relativity, Lorentz transformations, four-vectors, relativistic dynamics
(c) Introduction to modern physics: crisis of classical physics, the black body problem, atomic structure, principles and concepts of quantum mechanics.

Bibliography

UNIVERSITÀ DI PISA

Any university-level text on classical physics and introduction to quantum mechanics, or small parts of:
Fermi - Thermodynamics (part a)
Griffiths - Introduction to electrodynamics (part b)
Feynman - Feynman's lectures on physics (vol. I for part a, vol. II for part b, vol. III for part c)
Griffiths - Introduction to quantum mechanics (first chapters, for part c)

Non-attending students info

Contact the teacher.

Assessment methods

The examination consists in a written test and a possible oral discussion.

Updated: 29/07/2022 10:41