UNIVERSITÀ DI PAVIA

Anno Accademico 2020/2021

INSTRUMENTAL PHYSICS LABORATORY

Enrollment year	2019/2020
Academic year	2020/2021
Regulations	DM270
Academic discipline	FIS/01 (EXPERIMENTAL PHYSICS)
Department	DEPARTMENT OF PHYSICS
Course	
Curriculum	Didattica e storia della fisica
Year of study	2°
Period	2nd semester (01/03/2021 - 11/06/2021)
ECTS	6
Lesson hours	60 lesson hours
Language	Italian
Activity type	ORAL TEST
Teacher	MARABELLI FRANCO (titolare) - 6 ECTS
Prerequisites	Basic notions of the physics of materials, electromagnetism, optics will be applied, as provided by the bachelor courses.
Learning outcomes	The target of the course is in giving the basis and the criteria of managing some techniques and instruments commonly present in research laboratory and in discussing their advantages and limits.
Course contents	Learning of the way of using the main physical instrument and techniques concerning cryogenics systems, optical spectroscopy and noise reduction in measurements. In particular the following topics will be taken into consideration: signal acquisition and data treatment and conversion, the strategies adopted for noise reduction and lock-in, Fourier transforms and their usage, temperature detection and cryogenics, Vacuum techniques, the basis of optical spectroscopy instruments and devices, sources and detectors.

Teaching methods

The course is developed in a dedicated laboratory and is formed by lessons introducing the different problems, followed by practical exercises with instruments and experiments. Students will be invited to independently implement some measurement experiments.

Reccomended or required readings

R.A. Dunlap, Experimental Physics, Modern Methods, Orford University Press, 1988. ISBN 0-19-504949-7
Some complementary material and handouts will be provided by the teacher (through Kiro platform).

Assessment methods

Oral examination. The examination starts from the discussion of one of the performed experiments, chosen by the student, then extended to the general concepts illustrated during the course.

Further information

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