

Course Specifications

From the academic year 2015-2016 up to and including the

Physics Laboratory 1 (C000973)

Course size (nominal values; actual values may depend on programme)

Credits	6.0	Study time	180 h	Contact hrs	60.0 h
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Course offerings and teaching methods in academic year 2018-2019

A (semester 1)	Dutch	self-reliant study activities	10.0 h
		practicum	40.0 h
		lecture	10.0 h

Lecturers in academic year 2018-2019

Jachowicz, Natalie	WE05	lecturer-in-charge
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Offered in the following programmes in 2018-2019

	crdts	offering
Bachelor of Arts in Archaeology	6	A
Bachelor of Arts in Philosophy	6	A
Bachelor of Science in Physics and Astronomy	6	A

Teaching languages

Dutch

Keywords

Laboratory Physics

Position of the course

Learning the necessary skills to perform independently experiments, to analyse data and to deduce physically meaningful results. Getting acquainted with reporting the principles and the results of the performed experiment, taking into account error analysis and the reliability of the results obtained.

Contents

In the formal part (A) the objectives and the methodology, including data treatment, of the experiments are explained: Introduction to physical experimenting - Measuring physical quantities and error estimation - Error calculations - Error and statistics - Data treatment - Reporting - LaTeX and gnuplot.

In the practical part (B), the student performs a number of experiments related to mechanics, optics, fluids and electricity.

Initial competences

This course deals with basic physics experiments and essentially needs no prior knowledge of physics. However, notions of physics on a secondary school level with respect to mechanics, optics and electricity are recommended

Final competences

- 1 Knowing and applying the basic concepts and methods of physics, using models and techniques necessary for the problems at hand.
- 2 Being aware of the fact that every theory in physics has to be verified experimentally. Being able to perform an experiment in an independent and accurate way, and to analyse the data and interpret the results with the application of appropriate error analysis.
- 3 Showing physical intuition, creativity and accuracy, being able to judge the correctness of the obtained results in a critical way.
- 4 The student is able to write a succinct report with an appropriate use of the physical terminology. The student has the ICT competences necessary for word and dataprocessing and presentation (LaTeX, gnuplot).

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Lecture, practicum, self-reliant study activities

Extra information on the teaching methods

- Introductory lectures: Oral class,
- Guided laboratory sessions: Individual experiments
- Homework: drawing up the report.

Learning materials and price

Short syllabus and laboratory texts available
Estimated cost: 10 EUR

References

John R. Taylor : An Introduction to Error Analysis - The study of Uncertainties in Physical Measurements, Oxford University Press, ISBN 0-935702-10-5
G.L. Squires : Practical Physics, Cambridge University Press, ISBN 0-52127095-2
Syllabi : Mechanics, Waves and Optics, Electricity and Magnetism
Douglas C. Giancoli, Natuurkunde deel 1 Pearson, ISBN 90-430-1324-6

Course content-related study coaching

The students can test their practical knowledge and skills via the interaction during the lab sessions. There is always opportunity for individual consultation with the assistant. Explanation of more general aspects can be obtained by electronic way or by personal contact after each class or by appointment. Interaction with teaching staff or among the students is possible via Minerva.

Evaluation methods

end-of-term evaluation and continuous assessment

Examination methods in case of periodic evaluation during the first examination period

Written examination with open questions, open book examination, oral examination

Examination methods in case of periodic evaluation during the second examination period

Written examination with open questions, open book examination, oral examination

Examination methods in case of permanent evaluation

Skills test, report

Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible

Extra information on the examination methods

- Written examination with open book on the analysis of experiments and error analysis
- Oral examination on the insight in the various physical experiments

Calculation of the examination mark

Permanent evaluation (50%)
Periodic evaluation (50%) Students who eschew period-aligned and/or non-period-aligned evaluation may be failed by the examiner.