

Subatomic Physics II (C003119)

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

Credits	6.0	Study time	180 h	Contact hrs	52.5 h
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Course offerings and teaching methods in academic year 2018-2019

A (semester 1)	Dutch	lecture	30.0 h
		seminar	22.5 h

Lecturers in academic year 2018-2019

Dobur, Didar	WE05	lecturer-in-charge
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Offered in the following programmes in 2018-2019

Master of Science in Physics and Astronomy	crdts	offering
	6	A

Teaching languages

Dutch

Keywords

Particle Physics

Position of the course

This course is a continuation of the course "Subatomic Physics I" in the Bachelor Physics and Astronomy. The concepts of particle physics are studied in more depth. The emphasis is on the phenomenology of particle physics, starting from the experiment, rather than on a pure theoretical framework. The content of this course focusses on M.1.1, M.O.2.

Contents

- Introduction and review
- Quantum numbers
- Feynman diagrams, processes and corrections
- DIS, nucleon structure, PDFs
- QCD
- Parity Violation
- Electroweak precision tests
- Higgs Boson
- Meson mixing and oscillations
- CP violation
- Neutrinos
- Physics beyond the Standard Model

Initial competences

The student knows the basic principles of subatomic physics. She/he has a good working knowledge of quantum mechanics and special relativity.

Final competences

- 1 The student has received a thorough introduction in the concepts of subatomic physics.
- 2 She/he can independently or in a team attack problems in this field.

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, seminar

Learning materials and price

Suggested textbooks

Introduction to Elementary Particle Physics, Bettini, Cambridge, 2008

Introduction to high energy physics, Perkins, 4th ed., Cambridge

Particle physics, Martin and Shaw, 2nd ed., Wiley

Quarks and leptons, Halzen and Martin, Wiley

Introduction to Elementary Particles, Griffiths, Wiley

References

Course content-related study coaching

The students can individually or in group request further explications in between or after lectures. The lecturer can always be reached by e-mail.

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

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

Written examination with open questions

Examination methods in case of permanent evaluation

Written examination with open questions, open book examination

Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible

Extra information on the examination methods

The coursework consists of weekly problem sets (open book) and a final written examination (closed book). The course grade is the weighted average of all homework (40% weight) and the written exam (60% weight).

Calculation of the examination mark

Periodical (final exam) 60% + non-periodical (continuous assessment) 40%.