

Subatomic Physics II (C003119)

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

Credits 6.0

Study time 180 h

Course offerings and teaching methods in academic year 2023-2024

A (semester 1)

Dutch

Gent

lecture

seminar

Lecturers in academic year 2023-2024

Dobur, Didar

WE05

lecturer-in-charge

Offered in the following programmes in 2023-2024

crdts

offering

[Master of Science in Teaching in Science and Technology\(main subject Physics and Astronomy\)](#)

6

A

[Master of Science in Physics and Astronomy](#)

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.

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

Seminar, Lecture

Learning materials and price

Suggested textbooks

Modern Particle Physics, Thomson, Cambridge

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.

Assessment moments

end-of-term and continuous assessment

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

Written assessment with open-ended questions

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

Written assessment with open-ended questions

Examination methods in case of permanent assessment

Written assessment with open-ended questions

Possibilities of retake in case of permanent assessment

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%.