

## 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 2024-2025**

A (semester 1)

Dutch

Gent

seminar  
lecture

**Lecturers in academic year 2024-2025**

Dobur, Didar

WE05

lecturer-in-charge

**Offered in the following programmes in 2024-2025**

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

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

**crdts**

**offering**

6

A

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

#### **Study material**

None

#### **References**

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

#### **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%.