Physics II (E020220)

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 2025-2026

| A (semester 1) | Dutch | Gent | lecture |
| | | | seminar |

Lecturers in academic year 2025-2026

| Leys, Christophe | | TW17 | lecturer-in-charge |

Offered in the following programmes in 2025-2026	crdts	offering
Bachelor of Science in Engineering(main subject Biomedical Engineering)	6	A
Bachelor of Science in Engineering(main subject Chemical Engineering and Materials Science)	6	A
Bachelor of Science in Engineering(main subject Civil Engineering)	6	A
Bachelor of Science in Engineering(main subject Computer Science Engineering)	6	A
Bachelor of Science in Engineering(main subject Electrical Engineering)	6	A
Bachelor of Science in Engineering(main subject Electromechanical Engineering)	6	A
Bachelor of Science in Engineering(main subject Engineering Physics)	6	A
Preparatory Course European Master of Science in Nuclear Fusion and Engineering Physics	6	A
Preparatory Course Master of Science in Biomedical Engineering	6	A

Teaching languages

Dutch

Keywords

magnetism, optics, relativity, quantum physics

Position of the course

Physics II is the second of two courses that constitute the physics curriculum common to all bachelor study programmes in engineering.

Contents

- 1. MAGNETISM
- 1.1. Magnetic Field and Magnetic Forces
- 1.2. Sources of Magnetic Field
- 1.3. Electromagnetic Induction
- 1.4. Inductance: Alternating Current
- 1.5. Electromagnetic Waves
- 2. OPTICS
- 2.1. Nature and Propagation of Light
- 2.2. Geometric optics, Interference
- 2.3. Diffraction, Polarization
- 3. MODERN PHYSICS
- 3.1. Relativity
- 3.2. Wave Nature of Particles
- 3.3. Introduction to Quantum Mechanics
- 3.4. Atomic Structure
- 3.5. Nuclear structure and Applications of Nuclear Physics

Initial competences

Physics I. Mathematical Analysis I and II.

Final competences

1 To understand the physical laws and concepts of the covered chapters.
2 To be able to solve physics problems by applying these laws and concepts.
3 To master basic research skills: accuracy in measurements, critical sense in analyzing experimental data, correctness in reporting.

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

Group work, Seminar, Lecture, Practical, Independent work

Extra information on the teaching methods

The student gets prepared for the on campus lectures (with demonstrations) and plenary problem solving sessions by making assignments on the online learning platform Mastering Physics. The group work consists of performing a lab experiment (practical) and a home experiment.

Study material

Type: Handbook

Name: University Physics with Modern Physics, 15th Edition in SI Units (Global Edition)
Indicative price: € 75
Optional: no
Language : English
Author : Hugh D. Young, Roger A. Freedman
ISBN : 978-1-29231-495-2
Number of Pages : 1552
Oldest Usable Edition : 14th
Online Available : No
Available in the Library : Yes
Available through Student Association : Yes
Usability and Lifetime within the Course Unit : intensive
Usability and Lifetime within the Study Programme : regularly
Usability and Lifetime after the Study Programme : occasionally

References

Course content-related study coaching

Personal coaching by the lecturer as scheduled. Additional personal coaching by assistants on request.

Assessment moments

end-of-term and continuous assessment

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

Written assessment

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

Written assessment

Examination methods in case of permanent assessment

Participation

Possibilities of retake in case of permanent assessment

not applicable

Calculation of the examination mark

The assignments and lab reports lead to a score T (on 20).
The exam leads to a score E (on 20).
The final score is calculated as: $0{,}10T + 0{,}90E$