

COURSE SYLLABUS

Basic Physics 2, 6 Pre-education credits

Grundläggande fysik 2, 6 förutbildningspoäng

Course Code:	TG2F07	Education Cycle:	Pre-university level
Confirmed:	Oct 25, 2023	Disciplinary domain:	Natural sciences
Valid From:	Jan 18, 2027	Subject group:	Other Subjects within Natural Science

Intended Learning Outcomes (ILO)

On completion of the course the student shall:

Skills and Abilities

- demonstrate skills in using experimental methods and interpret the results in laboratory work
- demonstrate the ability to solve equilibrium problems
- demonstrate the ability to solve motion problems in two dimensions
- demonstrate the ability to apply theories of mechanical vibrations and waves
- demonstrate the ability to perform calculations with electric and magnetic fields
- demonstrate skills within electromagnetic induction and AC power
- demonstrate the ability to apply electromagnetic wave properties
- demonstrate the ability to solve problems related to the atomic electron structure.

Content

The course contains basic physics with particular importance to the field of technology. In addition, the course will provide familiarity with the use of mathematical skills and concepts in physics.

The course includes the following elements:

- Mechanics: Vectors, torque and conditions of equilibrium.
- Two-dimensional motion : Projectile motion and centripetal acceleration.
- Mechanical vibrations: Spring and pendulum applications, energy calculations, resonance.
- Mechanical waves: Properties of mechanical waves such as standing waves.
- Sound: Sounds and characteristics of sound waves.
- Electrical and magnetic fields: The capacitor, charged particles in magnetic fields.
- Electromagnetic induction : Inductance, self-induction.
- AC power: Generators, the transformer, inductor and capacitor in an AC circuit.
- Electromagnetic waves: Properties such as interference and diffraction.
- Wave optics: Properties such as reflection and refraction.
- Atomic Physics: The atomic electron structure.

Type of Instruction

Lectures, seminars and laboratory exercises.

Language of instruction is Swedish or English.

Entry Requirements

General entry requirements and Physics 1, Matematics 3b/3c or Physics A, Matematics C alternatively completed course Basic Physics 1, 9 credits (or the equivalent).

Examination and Grades

The course is graded 5, 4, 3 or U.

Registration of examination:

Name of the Test	Value	Grading
Examination ¹	4 credits	5/4/3/U
Laboratory work and Assignments	2 credits	G/U

¹Determines the final grade of the course, which is issued only when all course units have been passed.

Course Literature

Please note that the course literature may be revised up to eight weeks before the start of the course.

Literature if the course is given in Swedish:

Title: Impuls Fysik 2

Author: Fraenkel, Gottfridsson, Jonasson

Publisher: Gleerups

ISBN: 978-91-40-67708-2

Literature if the course is given in English:

College Physics, Openstax

Additional literature included in the course will be provided free of charge and is specified in the course guide (course PM).