



Faculty of Health, Science and Technology
Physics

Syllabus

Physics Preparatory A

Course Code:	FYBX13
Course Title:	Physics Preparatory A <i>Fysik Bas A</i>
Credits:	7.5
Degree Level:	Preparatory
Progressive Specialisation:	()

Major Field of Study:

Course Approval

The syllabus was approved by the Faculty of Health, Science and Technology 2026-02-04, and is valid from the Autumn semester 2026 at Karlstad University.

Prerequisites

General entry requirements and upper secondary level Mathematics 2a, 2b, or 2c in accordance with Gy11, or Mathematics level 2a, 2b, or 2c in accordance with Gy25. An equivalence assessment can be made.

Learning Outcomes

Upon completion of the course, students should be able to:

- plan and conduct basic experimental investigations, and report and interpret the results orally and in writing,
- discuss physical quantities, concepts, and models and perform calculations on the basis of these models,
- describe and analyse some everyday phenomena and processes using physical concepts and models,
- give an account of the concepts force and momentum and use the concepts to describe equilibrium and linear motion,
- give an account of the concepts heat, temperature, and pressure and perform simple calculations, and
- give an account of the law of conservation of energy and energy transformation, as well as the meaning of the concept energy quality and use the knowledge of energy to discuss societal energy and climate issues.

Content

The course includes the following:

- Mechanics: uniform and accelerated motion, free fall. Newton's laws, force, moment, momentum, and impulse. Work, energy, effect, and friction.
- Thermodynamics: The first and second law of thermodynamics. Pressure and temperature. Heat and internal energy. Phase transformation, energy quality, and the ideal gas law.
- Laboratory work related to the above.

Instruction is in the form of lectures, exercises, and laboratory sessions.

Reading List

See separate document.

Examination

Assessment is based on individual written exams and lab reports, both individually and in group. Laboratory sessions are mandatory.

If students have a decision from Karlstad University entitling them to Targeted Study Support due to a documented disability, the examiner has the right to give such students an adapted examination or to examine them in a different

manner.

Grades

One of the grades Fail (U) or Pass (G) is awarded in the examination of the course (see RB 17/26, Dnr C2026/102).

Quality Assurance

Follow-up relating to learning conditions and goal-fulfilment takes place both during and upon completion of the course in order to ensure continuous improvement. Course evaluation is partly based on student views and experiences obtained in accordance with current regulations and partly on other data and documentation. Students will be informed of the result of the evaluation and of any measures to be taken.

Course Certificate

A course certificate will be provided upon request.

Additional information

The local regulations for studies at the Bachelor and Master levels at Karlstad University stipulate the obligations and rights of students and staff.

The course corresponds in part to Physics 1a in accordance with Gy11, or Physics level 1b in accordance with Gy25 for upper secondary level natural science and technology programmes.