



Faculty of Health, Science and Technology
Physics

Syllabus

Physics Preparatory C

Course Code:	FYBX33
Course Title:	Physics Preparatory C <i>Fysik Bas C</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 Physics 1a and Mathematics 3, or Physics level 1b and Mathematics Further level 1, or registered in Physics Preparatory B (7.5 access credits) as well as Mathematics Preparatory B (7.5 access credits). An equivalence assessment can be made.

Learning Outcomes

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

- plan and conduct experimental investigations based on a given question and present the results orally and in writing,
- describe and analyse as well as mathematically process problems related to physics using appropriate quantities, concepts, and models,
- describe and analyse induction and some of its applications,
- describe and analyse as well as mathematically process mechanical and electromagnetic waves and some applications in these areas,
- describe, use, and explain Bohr's atomic model,
- explain the structure of the atom using quantum physics concepts and relevant experimental measuring methods, and
- demonstrate insight into the special relativity theory on the basis of physical phenomena like time dilation and length contraction.

Content

The course includes the following:

- Induction and alternating current
- Harmonic oscillation, resonance, mechanical waves, acoustics
- Light, reflection, refraction, interference and diffraction, polarisation
- Einstein's postulate, time dilation, and relativistic energy
- The structure of atoms, relations between energy levels, atomic spectra, and the photon concept
- Absorption and emission of electromagnetic radiation, energy quantisation
- Wave particle duality
- 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 upper secondary level Physics 1a and 2 in accordance with Gy11, or Physics level 1b and 2 in accordance with Gy25 for natural science and technology programmes.