



# LTH

FACULTY OF  
ENGINEERING

*Course syllabus*

## Naturvetenskapligt basår: Fysik 1-2, del c

## Pre-University Course in Natural Sciences: Physics 1-2, part c

**TBAA26, 6 credits, G1 (First Cycle)**

**Valid for:** 2023/24

**Faculty:** Faculty of Engineering, LTH

**Decided by:** PLED TB

**Date of Decision:** 2023-04-19

### General Information

**Compulsory for:** TNB1-NABA

**Language of instruction:** The course will be given in Swedish

### Aim

The purpose of the three courses Physics 1-2 (Part a, Part b and Part c) is to complement an upper secondary school education in Physics 1 and Physics 2.

### Learning outcomes

*Knowledge and understanding*

For a passing grade the student must

Does not exist in this form.

*Competences and skills*

For a passing grade the student must

Does not exist in this form.

*Judgement and approach*

For a passing grade the student must

Does not exist in this form.

## Contents

Simple harmonic motion. Circular motion.

Wave motion: The motion of mechanical and electromagnetic waves. Transverse waves. Resonance. Polarization. Interference and diffraction. Intensity. Standing waves.

Reflection and refraction of electromagnetic waves.

The wave-particle duality. The photoelectric effect.

Atomic physics, nuclear physics and particle physics: The nature of the atom and the nature of the nucleus. Interaction of the strong nuclear force, the weak nuclear force, the electromagnetic force and the gravitational force. Absorption and emission of radiation. The quantization of the energy.

The Bohr model of the hydrogen atom. Nuclear reactions. Radioactive decay and activity. Ionizing radiation, absorbed dose.

The equivalence of mass and energy.

Information of the special relativity.

## Examination details

**Grading scale:** UG - (U,G) - (Fail, Pass)

**Assessment:** Written exam and passed laboratory works.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

### Parts

**Code:** 0122. **Name:** Written Examination.

**Credits:** 5. **Grading scale:** UG. **Assessment:** Written examination.

**Code:** 0222. **Name:** Laboratory Works.

**Credits:** 1. **Grading scale:** UG. **Assessment:** Passed laboratory works.

## Admission

**The number of participants is limited to:** No

## Reading list

- Cutnell, John D, Johnson, Kenneth W, Young, David & Stadler, Shane:  
Physics, 11th Edition , EMEA Edition. John Wiley & Sons Inc, 2019, ISBN:  
9781119585299.

## Contact and other information

**Course coordinator:** Rasmus Westerström, [rasmus.westerstrom@sljus.lu.se](mailto:rasmus.westerstrom@sljus.lu.se)

**Course homepage:** <https://www.lu.se/lubas/i-uoh-lu-TZTNB-NABA>

**Further information:** The contents of the courses Physics 1-2, Part a and Physics, Part b correspond to the upper secondary school education in Physics 1. The contents of the courses Physics 1-2, Part b and Physics, Part c correspond to the upper secondary school education in Physics 2. The scope for this course is expressed in access education credits (fup).