



Faculty of Health, Science and Technology  
Physics

# Syllabus

## Engineering Physics, Bachelor Degree Project

**Course Code:** TFGC01

**Course Title:** Engineering Physics, Bachelor Degree Project  
*Examensarbete för kandidatexamen i Teknisk fysik*

**Credits:** 15

**Degree Level:** Undergraduate level

**Progressive** First cycle, has at least 60 credits in first-cycle course/s as entry

**Specialisation:** requirements, contains degree proj. for B.A./B.Sc. (G2E)

**Major Field of Study:**

TKA (Engineering Physics)

### Course Approval

The syllabus was approved by the Faculty of Health, Science and Technology 2020-05-27, and is valid from the Autumn semester 2020 at Karlstad University.

### Prerequisites

75 ECTS credits completed in Engineering Physics/Physics, including Solid State Physics (7.5 ECTS credits), Physical Electronics (7.5 ECTS credits), Quantum Physics I (7.5 ECTS credits), and Electromagnetic Field Theory/Electromagnetic Field Theory for Engineers (7.5 ECTS credits), and 35 ECTS credits completed in Mathematics, or equivalent.

### Learning Outcomes

The aim of the course is to provide a specialised conclusion to the Bachelor-level degree programme in Engineering Physics, in which students independently carry out an investigative science project in a chosen area.

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

- give an account of the scientific basis of engineering physics, especially of the theories, methods, and applications in a chosen subarea, and of some current research issues,
- independently identify, formulate, and solve problems and carry out tasks in a project within given time limits,
- give an account of and discuss information, problems, and solutions scientifically, orally and in writing,
- search and collect relevant information, critically evaluate its reliability and quality, and make correct interpretations of and references to it,
- evaluate and critically review the obtained results in relation to the scientific literature, and
- assess relevant social and ethical aspects in the chosen subarea and demonstrate insight into the role of knowledge in society and our responsibility for how it is used.

### **Content**

The course is carried out in the form of an individual project, supervised by university staff. The degree project gives students the opportunity to acquire specialised knowledge and skills in a particular area. Students work independently and are responsible for the process and the result. The project is chosen in consultation with the supervisor. The purpose, objective, method, and time plan of the project must meet the approval of the examiner before it is begun. In case two students collaborate on a larger project, their individual research questions must be clearly stated at the start of the project. The students write and present individual reports.

### **Reading List**

See separate document.

### **Examination**

Assessment is based on the following components: problem formulation, implementation, individual written report, and oral presentation. The report is to be written in Swedish or English. If the report is written in English, a title and summary in Swedish must be added.

If students have a decision from Karlstad University entitling them to special pedagogical 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 Distinction (VG), Pass (G), or Fail (U) is awarded in the examination of the course. For students in Engineering programmes, one of the grades 5 (Pass with Distinction), 4 (Pass with Some Distinction), 3 (Pass), or U (Fail) is awarded in the examination of the course.

### **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.