



Faculty of Science

FYTK02, Theoretical Physics: Bachelor's Degree Project, 15 credits

Teoretisk Fysik: Examensarbete för kandidatexamen, 15 högskolepoäng
First Cycle / Grundnivå

Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2014-10-07 and was last revised on 2020-05-10. The revised syllabus comes into effect 2020-05-10 and is valid from the spring semester 2021.

General information

Language of instruction: English

Supervision can be in Swedish if both the student and the supervisor agree on this.

Other course elements are in English.

Main field of study *Specialisation*

Physics G2E, First cycle, has at least 60 credits in first-cycle course/s as entry requirements, contains degree project for Bachelor of Arts/Bachelor of Science

Learning outcomes

The overall purpose of the degree project is that the student, through an independent project, should show knowledge, understanding, competence, skills, judgement and approach in accordance with the requirements for obtaining a degree of Bachelor of Science in Physics.

Knowledge and understanding

On completion of the course, the students shall be able to:

1. describe, use and explain physics that is included in the undergraduate education, including its disciplinary foundation
2. use and apply the methods of physics
3. give an overview of current research issues in a sub-field of physics
4. describe and explain a specialisation within a sub-field of physics

Competence and skills

On completion of the course, the students shall be able to:

5. search for, gather, evaluate and critically interpret the relevant information for a formulated problem in physics
6. discuss phenomena and issues within physics
7. independently formulate, appropriately define and solve problems in physics
8. complete tasks within given time frames
9. orally present and discuss information, problems and solutions within physics in dialogue with different audiences.
10. in writing present and discuss information, problems and solutions within physics in dialogue with different audiences.
11. work independently within the field of physics

Judgement and approach

On completion of the course, the students shall be able to:

12. identify, discuss and make assessments considering relevant scientific, social and ethical aspects of physics
13. identify and discuss the role of physics in society and the responsibility of the individual for how it is used
14. identify, discuss and plan their own need for further knowledge
15. identify different ways to develop their skills in physics or other fields.

Course content

In consultation with the supervisor and examiner, the student chooses an independent degree project corresponding to 15 credits. The project can be experimental or theoretical. The project can either be linked to current scientific projects at the department or to problems within the subject area at companies or other departments within or outside the university. If the project is carried out outside the department, there should also be a supervisor from the department. Proposals on degree projects are, for example, posted on the website of the department.

Course design

The degree project requires a survey of the literature and specialised studies. Furthermore, a number of compulsory course elements are included in the form of teaching sessions and seminars that cover, for example, scientific writing, academic writing in English and Swedish, popular science writing, academic conduct and the use of library resources.

The project should correspond to ten weeks of qualified full-time studies. During the project, guidance is given by the supervisor. If the project is carried out outside the department, or the supervisor does not have the competence equal to a docent, then another supervisor, that fulfils this requirement, will be appointed at the department.

At the beginning of the course, the student and the supervisor should register the degree project with the course responsible. A plan that contains a definition of the project, an analysis of the problem and a time plan should be attached to the registration. The plan is written in cooperation between the student and the supervisor. The plan has to be approved by the examiner.

During the project, the student should keep a progress diary, where the student analyses and discusses their own learning.

During the implementation of the degree project, at least one progress report is required, for example half way through the project. The progress report consists of a written report from the student about the progress of the work. The report is written under supervision of the supervisor and is approved by the examiner.

The degree project is presented in the form of a thesis report in English, with a popular description in Swedish or English. The degree project is also presented orally in English or Swedish, at a public seminar for discussion, criticism and analysis. Before the presentation, the student should review their work, together with their supervisor, based on the expected learning outcomes in this course syllabus and/or the qualifications for a Bachelor's degree in the Higher Education Ordinance.

Assessment

The examination and the compulsory course elements, which are required to pass the course, consists of the following (the learning outcomes that the different parts can examine are given within brackets):

- an approved plan that is established in the beginning of the project (outcome 1 and 7),
- participation in all compulsory course elements (prepare for outcome 9 and 10),
- progress report, that is demanded and approved by the examiner (outcome 3, 4, 7, 8, 10, 11, 14),
- a scientific, written thesis report about the project (outcome 1-8, 10-15),
- an oral presentation of the project, before an examination committee consisting of the examiner and at least one assessor who is an expert in the field. Supervisors have the right to attend and voice their opinion when the examination committee meets and decides the grade (outcome 1-9, 11-15)
- a popular science description of the project (outcome 10, 12-13)
- a brief description of the implementation of the project and reflection over the student's learning that is approved by the examiner (outcome 10 and 14).

The written report should be submitted to the examiner, in a version that admits examination, at least two weeks before the seminar. Before that, the report has to be checked by the supervisor. The department is responsible for making copies of the report according to the requirements of the university and the faculty. After final approval, the student is responsible for archiving the report in the system supplied by the university.

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.

Grades

Grading scale includes the grades: Fail, Pass, Pass with distinction

The final grade is determined by combining the results in the different parts of the examination. The examiner decides the grade in consultation with the examination committee. The supervisor has the right to attend and voice their opinion at the meetings of the examination committee. If the examiner assesses that the degree project can not be approved, the student should be given possibility to supplement the project for a renewed assessment within approximately half a semester. However, it is important that this extended time for completion does not contradict learning outcome 8. If the degree project does not satisfy the learning outcomes for the course

after this renewed assessment, the examiner can decide to fail it. This can imply that a new project is required, in order to be able to fulfil all learning outcomes.

Entry requirements

For admission to the course, a completed basic course block of 120 credits in physics and mathematics is required according to the programme syllabus for a Bachelor of Science in Physics.

Further information

See also the rules and recommendations for degree projects at the faculty of Science (Dnr N 2011/130).