

# Education plan

for

**Master's Programme in Physics**  
**Masterprogram i fysik**

**120.0 Higher Education**  
**Credits**  
**120.0 ECTS credits**

**Programme code:** NFYSO  
**Valid from:** Autumn 2017  
**Date of approval:** 2006-10-18  
**Changed:** 2017-03-13  
**Department:** Department of Physics

## Decision

### Prerequisites and special admittance requirements

Degree of Bachelor of Science including more than 90 credits Physics. Also required is knowledge equivalent to Swedish upper secondary course English B or equivalent to one of the following tests; Cambridge CPE and CAE: Pass, IELTS: 6.0 (with no part of the test below 5.0), TOEFL (paper based): 550 (with minimum grade 4 on the written test part), TOEFL (computer based): 213, TOEFL (internet based): 79.

### Programme structure

Compulsory courses during the first year give advanced knowledge in modern experimental techniques and treatment of data. This knowledge is applied in several of the optional courses and in the degree project. The optional courses give the basis for specializing into different fields of physics and for Ph. D. studies. It is also possible to choose courses for specialization in statistics to get an understanding of the important role of statistical methods in modern physics. The knowledge and abilities you acquire in this educational programme have great applicability in analytic and developmental work in modern industry and in public work.

### Goals

In order to obtain a Masters Degree the student must

show good knowledge and understanding of physics, which includes a broad knowledge of general physics and substantial in-depth knowledge in certain areas of physics as well as in-depth knowledge of present research and developments

show in-depth knowledge of methods in physics

show ability to critically and systematically integrate knowledge and to analyse, assess and handle complex phenomena, problems and situations, even with limited information

show ability to critically, independently and creatively identify and formulate problems, to plan and with adequate methods carry out qualified tasks within given time constraints, thereby contributing to the development of knowledge, as well as to evaluate this work

show ability to, both in national and international circumstances, orally and in writing present and discuss his/her results and the knowledge and arguments that constitute their basis

show the skill required to take part in research and development work or to independently work in other qualified activities

show ability to, within physics, make assessments taking into account scientific, social and ethical aspects and to show awareness of ethical aspects on research and development work

show awareness of the prospects and limitations of science, its role in society and of the personal responsibility for its use

show ability to identify his/her need for additional knowledge and to take responsibility for his/her progress

### **Courses**

Compulsory courses:

Programming and Computer Science for Physicists (DA7011), AN, 7.5 credits\*

Statistical Methods in Physics (FK7061), AN, 7.5 credits\*

Physics Degree Project (FK9001), AN, 30 credits\*, (FK9002), AN, 45 credits\*, or (FK9003), AN, 60 credits\*

Selectable courses:

At least one of the experimental courses

Physical Measuring Techniques (FK7063), AN, 7.5 credits\*

Detector Physics (FK7043), AN, 7.5 credits\*

At least one of the theoretical courses

Analytical Mechanics (FK7049), AN, 7.5 credits\*

Electrodynamics (FK7045), AN, 7.5 credits\*

Statistical Physics (FK7058), AN, 7.5 credits\*

At least two of the specialized experimental courses

Atomic Physics (FK7057), AN 7.5 credits\*

Elementary Particle Physics (FK7062), AN, 7.5 credits\*

Condensed Matter Physics (FK7060), AN, 7.5 credits\*

Nuclear Physics (FK7051), AN, 7.5 credits\*

Optic and Laser Physics (FK7046), AN, 7.5 credits\*

Molecular Physics (FK7066), AN, 7.5 credits\*

Quantum Optics (FK7047), AN 7.5 credits\*

Optional courses:

15 – 45 credits depending on the extension of the degree project

\*Courses within the main subject

### **Degree**

Master degree

### **Misc**

Students who have been admitted to the program but have not finished the program during the two years period can ask for dispense to finish the program even after the program is ended. In this case limitations specified in the course plan are implemented. The courses included in the program can be given in English.

For the master degree in Physics it is that the student has completed 120 credits, of which at least 75 credits should be advanced physics courses.

The master degree can include a maximum of 30 credits from non-advanced courses.

Limitations described in individual course plans, as to whether an optional course can be incorporated into the degree apply. Orientation courses cannot be included in the master degree.