

Education plan

for

Master's Programme in Theoretical Physics
Masterprogram i teoretisk fysik

120.0 Higher Education
Credits
120.0 ECTS credits

Programme code:	NTEFO
Valid from:	Autumn 2007
Date of approval:	2006-10-18
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

The compulsory courses during the first year should give a thorough knowledge in theoretical physics and an ability to use advanced mathematical and statistical methods. The individually selected courses provide the possibility to specialize within one (or some) of the areas of modern theoretical physics, and give a solid basis for further studies at the Ph.D. level. Examples of specialized areas are condensed matter physics, quantum field theory, string theory, general relativity, cosmology, and statistical physics. The ability to use sophisticated theoretical methods of analysis, and advanced mathematical modeling are attractive skills, both in industry and other sectors of the society.

Goals

In order to obtain a Masters Degree in theoretical physics the student should,

- demonstrate a good knowledge and understanding of theoretical physics, which includes a broad knowledge of general physics and a substantial in-depth knowledge of certain areas of theoretical physics as well as in-depth knowledge of present research and developments.
- demonstrate an in-depth knowledge of methods in theoretical physics.
- demonstrate an ability to critically and systematically integrate knowledge, and to analyze, assess and handle complex phenomena, problems and situations, even when only limited information is available.
- demonstrate an ability to critically, independently and creatively identify and formulate problems; to plan, and use adequate methods to carry out, qualified tasks within given time limit, thereby contributing to the systematic development of knowledge; to critically evaluate her/his work.
- demonstrate an ability, in both a national and an international context, to orally and in writing present and discuss his/her results and the theories, facts and logical arguments that constitute their basis.
- acquire the skills needed to take part in research and development work or to work independently in other qualified areas.
- demonstrate an ability to, within her/his area of expertise, make assessments taking into account scientific, social and ethical aspects and to show awareness of ethical aspects on research and development work.

- demonstrate an awareness of the prospects and limitations of science, its role in society and of the individuals responsibility for its use
- demonstrate an ability to identify her/his need for additional knowledge and to take responsibility for acquiring such knowledge.

Courses

Compulsory courses year 1 and 2: Quantum mechanics III AN 7,5 credits, Electrodynamics I AN 7,5 credits, Statistical physics I AN 7,5credits, Analytical mechanics AN 7,5 credits, Mathematical methods, Programming for physicists AN 7,5 credits.

Year 2: Project 45 credits(exceptionally, the project can be 30 or 60 credits).

Individually selected courses: Normally 30 credits (but exceptionally 15 or 45, depending on the size of the project).

Degree

Master in theoretical physics

Misc

Students that have been accepted to the program but have not finished their studies within two years can ask permission to finish their studies later.