Instructions for applicants to the master degree program
Applications of Natural Sciences
Faculty of Nuclear Sciences and Physical Engineering,
Czech Technical University in Prague

Degrees in: Mathematical Engineering, Applied Mathematical – Stochastic Methods, Mathematical Physics, Computational Physics, Experimental Nuclear and Particle Physics, Dosimetry and Applications of Ionizing Radiation, Nuclear Engineering, Solid State Engineering, Diagnostics of Materials, Physics and Technology of Thermonuclear Fusion, Optics and Nanostructures, Laser Technology and Elektronics, Radiological Physics

The program is designed for the students graduated from the preceding bachelor program in the same subject at the FNSPE CTU in Prague or in similar subject elsewhere. In case of necessity the accepted applicants can be provided by the individual study plan allowing them to achieve the knowledge level equivalent to the corresponding bachelor study program.

The applicant is accepted through the admission procedure consisting of the entrance exams in Mathematics and Physics and of the interview. The exams are inwritten form and last 90 minutes. The contents is given by the curriculum of the FNSPE CTU in Prague and is specified in the following topics:

Topics in Mathematics

1) systems of linear algebraic equations
2) eigenvalues and eigen vectors
3) applications of the definite integral
4) power series function expansions
5) linear differential equations of nth order
6) specific cases of differential equations of 1st and 2nd order
7) extrema and constrained extrema of functions of multiple variables

Topics in Physics

1) Newtonian mechanics
2) Lagrangean formulation of mechanics
3) Hamiltonian formulation of mechanics
4) Electricity and magnetism
5) Electromagnetic field
6) Special relativity theory
7) Thermics and molecular physics
8) Vibration, waves and optics
9) Nuclear physics
10) Thermodynamics
11) Statistical physics

Literature:
I. Štoll, J. Tolar, Teoretická fyzika, Skripta FJFI ČVUT
I. Štoll, Elektřina a magnetismus, Skripta FJFI ČVUT
J. Tolar, J. Koníček, Sbírka řešených příkladů z fyziky, Vlnění, Skripta FJFI ČVUT
Z. Maršák, Termodynamika a statistická fyzika, Skripta FJFI ČVUT

The purpose of interview is determination of details of the current professional profile of the applicant (including knowledge of IT and English) and purpose of interest in studying the FNSPE CTU in Prague.

The admission also requires the proof of graduation in the bachelor degree.
Instructions for applicants to the master degree program
Applications of Natural Sciences
Faculty of Nuclear Sciences and Physical Engineering,
Czech Technical University in Prague

Degrees in: Mathematical Informatics, Applications of Software Engineering

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Topics in Mathematics

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6) specific cases of differential equations of 1st and 2nd order  
7) extrema and constrained extrema of functions of multiple variables

Topics in Computer Science

1) Memory and process management in operating systems  
2) Ordering algorithms  
3) Programming language Pascal  
4) Programming language C++  
5) Dynamic data structures

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Instructions for applicants to the master degree program
Applications of Natural Sciences
Faculty of Nuclear Sciences and Physical Engineering,
Czech Technical University in Prague

Degree in: Nuclear Chemistry

The program is designed for the students graduated from the preceding bachelor program in the same subject at the FNSPE CTU in Prague or in similar subject elsewhere. In case of necessity the accepted applicants can be provided by the individual study plan allowing them to achieve the knowledge level equivalent to the corresponding bachelor study program.

The applicant is accepted through the admission procedure consisting of the entrance exams in Mathematics and Physics and of the interview. The exams are inwritten form and last 90 minutes. The contents is given by the curriculum of the FNSPE CTU in Prague and is specified in the following topics:

**Topics in Chemistry**

1) General chemistry  
2) Anorganic chemistry  
3) Organic chemistry  
4) Analytic chemistry  
5) Basics of biochemistry  
6) Chemical thermodynamics  
7) Kinetic mass theory  
8) Electrochemistry and theory of solutions  
9) Reaction kinetics  
10) Instrumental methods

**Topics in Physics**

1) Newtonian mechanics  
2) Lagrangean formulation of mechanics  
3) Hamiltonian formulation of mechanics  
4) Electricity and magnetism  
5) Electromagnetic field  
6) Special relativity theory  
7) Thermics and molecular physics  
8) Vibration, waves and optics  
9) Nuclear physics  
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