



Czech Technical University in Prague

**Curricula
2011-2012**

**Faculty of Nuclear Sciences
and Physical Engineering**

FACULTY OF NUCLEAR SCIENCES AND PHYSICAL ENGINEERING CZECH TECHNICAL UNIVERSITY IN PRAGUE

The Faculty of Nuclear Sciences and Physical Engineering (FNSPE) was established in 1955, as part of the Charles University, but in 1959 became a new special faculty of the Czech Technical University in Prague. The establishment of the Faculty was connected with the beginning of a new era of the peaceful use of nuclear energy. A complex approach to all nuclear branches was intended, so specialists from universities, technological institutions, and industry were brought together to comply with this task. Later, newly developed areas of physics application, e.g. plasma and solid state physics, lasers, cosmic research were included in the Faculty curricula.

The characteristics of the Faculty activities developed during its history, and the most advanced areas of technological progress have always attracted its attention. Students with a special interest in mathematics were taught individually, and, subsequently, the study of mathematical engineering was established. In the last fifteen years the rapidly developing branches of mathematical and software engineering, interdisciplinary application to ecology, medicine, economy, archeology have been also evolved. The Faculty is equipped with several large research facilities, such as the VR-1 training nuclear reactor, scanning electron microscopes, high power laser systems, computational and advanced radiochemical laboratories, and satellite laser ranging station (Helwan, Egypt).

14101 DEPARTMENT OF MATHEMATICS - KM

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Mathematics is one of the main theoretical disciplines at FNSPE. The Department of Mathematics provides all tutoring for all the study branches of mathematics taught at the faculty. The study of mathematics takes place during the first three years. The students gain a relatively deep knowledge of mathematical analysis and linear algebra. They become familiar with the basics of working with computers. Courses in other mathematical disciplines follow, such as ordinary and partial differential equations, numerical methods, probability theory and mathematical statistics.

The Department of Mathematics guarantees courses in four specializations: **Mathematical Modelling** and **Applied Mathematical-Stochastic Methods** in the branch Mathematical Engineering, **Software Engineering and Mathematical Informatics** and **Software Design** in the branch IT Engineering . In all specializations, emphasis is put on the applications of knowledge, including solving the problems using modern computer technology. Teaching takes place, within science“, because students solve tasks in their thesis that stem from either theoretical or practical problems appearing in various areas of science, technology, or industry.

The staff of the Department engage in scientific research, mainly in the areas of:

- applications of algebra, functional analysis and geometry in mathematical physics and quantum theory
- mathematical modelling, creating and analysing deterministic and stochastic models of physical, technological, ecological, biological medicinal processes
- applying algebraic number theory and discrete mathematics in symbolical dynamical systems
- analysis of the microscopic structure of transportation flows and modelling agent systems
- statistical processing of general monitoring signals with applications in acoustical defectoscopy of materials.

14102 DEPARTMENT OF PHYSICS - KF

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The department of physics offers physics courses on the BSc. and MSc. level. The courses include mechanics, electricity and magnetism, thermodynamics and statistical physics, wave phenomena, optics and atomic physics. The department offers advanced courses based on the elementary courses including experimental physics, theoretical physics including classical and quantum, nuclear physics, elementary particle physics and plasma physics. Advanced courses include specialized courses based on the graduate's chosen profile.

Graduates are prepared for scientific as well as experimental work. The broad offer and extensive studies allow the graduates to pursue careers in scientific centres or commercially oriented high technology companies.

The research activities of the department follow several lines. The core activities include mathematical physics and experimental nuclear physics and are supplemented by activities in theoretical physics, statistical physics, quantum optics and quantum informatics, computer physics and plasma physics. PhD studies can be pursued in all the above listed specializations. The department offers PhD studies in Mathematical physics (Mathematical engineering), Experimental nuclear physics (Nuclear engineering) and Physics and technology of thermonuclear fusion (Physical engineering)

The scientific activities of the department are closely linked with foreign partners and scientific centres abroad.

14111 DEPARTMENT OF SOLID STATE ENGINEERING - KIPL

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Milena Uhmánová

The department guarantees the education of specialists in the field of Physical Engineering, specialization Solid State Engineering. The study program is based on the fundamentals of theoretical and experimental solid state physics with an emphasis on the following disciplines: theory and structure of solid matter, physics of semiconductors, superconductors, metals, dielectrics, magnetic materials, surfaces and thin layers, low temperature physics, analogue and microprocessor electronics, technology of semiconductor devices and computer simulations of properties of condensed systems.

The scientific and research activity of the department takes place at specialized research workplaces - laboratories. They comprise (in alphabetic order) the Laboratory of Applied Photonics

(LAP), Laboratory of Materials Modelling (LMM), Laboratory of Neutron Diffraction (LND), Laboratory of Optical Spectroscopy (LAP), Laboratory of Experiment Control (LEC) and Laboratory of Structural Roentgenography (LSR). The problems solved cover both pure and applied fields of research. The education that forms the focus of the bachelor, magisterial and doctoral program closely relates to research projects in the laboratories, which are carried out in co-operation with Czech and foreign research and educational institutions.

14112 DEPARTMENT OF PHYSICAL ELECTRONICS - KFE

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The department ensures education of students in the following branches:

- Physical Engineering, in specializations:
 - Physical Electronics - Bachelor and Doctoral degree,
 - Optical Physics - Master degree,
 - Laser Technology and Electronics - Master degree,
 - Physics of Nanostructures - Master degree,
 - Laser Technology and Optoelectronics - Bachelor degree,
- Engineering Informatics, in specializations:
 - Information Physics - Bachelor, Master and Doctoral degree,
 - Instruments and Informatics - Bachelor degree,
 - Information Technology - Master degree (in particular linked to Bachelor degree programme Instruments and Informatics).

Broad spectrum of specializations available at the Department allows students to acquire, in addition to a general foundation in applied physics, also deeper knowledge and experience from experiments in the field of physics and technology of lasers, classical and quantum electronics, in contemporary optics, optoelectronics, microelectronics, in nanostructures and associated advanced technologies, in technology and application of ion beams, etc. During their studies at the Department students can also broaden their knowledge in applied information technology, in particular connected to the modelling of physical processes.

The department is also participating in providing a basic education in the field of information technology, numerical mathematics and physics, and also covers the fundamentals of electronics and molecular physics.

Scientific activities carried out in the Department offer students a wide range of opportunities for direct involvement in research work in teams within the Department as well as in a considerable variety of cooperating research institutes, allowing their participation in projects both domestic as well as international. Whereby acquired skills become very useful for students' future prospects in fundamental as well as in applied research. The department possesses well-equipped specialized laboratories with contemporary experimental as well as computer technologies, and also features laboratories for the practical education of students (in electronics, optoelectronics and

optics, and laser technology). The department also maintains several computer laboratories (PC and UNIX workstations) accessible to students on a 24/7 basis.

14114 DEPARTMENT OF MATERIALS - KMAT

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doc. Ing. Hynek Lauschmann, CSc.
doc. Ing. Vladislav Oliva, CSc.
doc. Ing. Jan Siegl, CSc. (vedoucí laboratoří)
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Technical Staff Ivana Bubalová
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Jiří Švácha

Students are provided with an education emphasising the fundamentals and principles of theoretical and experimental study of structure/property relationship. They are orientated towards the application of various research methods into the solution of problems dealing with the development of new materials and technologies, testing of material properties, mathematical modelling of crack growth, reliability of mechanical systems etc. Within the framework of individual projects, students participate in the research activities of the Department of materials. Wide cooperation with many institutions from both industry and academia is focused especially on the study of damage processes, failure analysis, material testing etc. Special attention is given to the fatigue of structural materials; this degradation process is studied by means of mathematical modelling of stress and strain fields on the crack tip, a probabilistic approach to the damage process, experimental testing methods and microfractography. The fractographic laboratory has a broad spectrum of activities; the results are applied in such areas as classical and nuclear power

engineering, aerospace, transport industry, machinery, chemical engineering, etc. In the above-mentioned areas, graduates will find accessible very good possibilities of jobs and opportunities to put their knowledge into practice.

14115 DEPARTMENT OF NUCLEAR CHEMISTRY - KJCH

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The department provides education in nuclear chemistry at three different levels. The education of students at bachelor level puts emphasis on a good basis in maths, physics and a theoretical and practical training in all chemical fields including nuclear chemistry. In the master programme the department provides an education in basic and applied research in the field of nuclear chemistry, environmental chemistry and applied nuclear chemistry including nuclear chemistry in biology and medicine. Graduates have a good theoretical basis and practical training for the work in chemical and radiochemical laboratories. They are able to use chemical and

radiochemical methods to solve analytical, ecological, physico-chemical, biomedical and technological problems. Graduates are employed in research institutes, nuclear power plants, hospitals and engineering companies. The Ph.D. course in nuclear chemistry is oriented towards the candidates' independent research. The main areas of research activity are focused on radioecology, the chemistry of the nuclear fuel cycle, radiation methods and radionuclide behaviour in the environment, separation of radionuclides and heavy metals, radiation methods, treatment of radioactive wastes, modelling of the migration and separation processes and the application of radionuclides and ionising radiation in research.

14116 DEPARTMENT OF DOSIMETRY AND APPLICATION OF IONISING RADIATION - KDAIZ

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Department of Dosimetry and Application of Ionising Radiation educates new experts in the specialization Dosimetry and Applications of Ionising Radiation in the programmes Radiological Physics, Radiological Technics and in the specialization Radiation Protection and Environment.

The master study specialization Dosimetry and Applications of Ionising Radiation offers the following fields of study: Experimental Nuclear Physics and Technology, Personal Dosimetry, Environmental Problems, Dosimetry of Nuclear Technology Devices, Metrology of Ionising

Radiation, Application of Ionising Radiation in Science, Technology and Medicine and in other branches using the ionising radiation and radioisotopes. The education also concentrates on Mathematical Modelling of the Radiation Transport and Biological Effectiveness of Ionising Radiation.

The Master study programme Radiological Physics and the Bachelor study programme Radiological Technics are the medical programmes according to the Act 96/2004 Coll. All students take general courses in Mathematics and Physics in their first year. These programmes include the core courses in Radiodiagnostics, Radiotherapy and Nuclear medicine plus the basic medical courses Anatomy, Physiology, Biology, Biochemistry etc. and the courses in Dosimetry, Detection techniques, Imaging methods and Mathematical Modelling in Radiological Physics.

The Bachelor study specialization Radiation Protection and Environment offers the following fields of study: Experimental Nuclear Physics and Technology, Personal Dosimetry, Dosimetry and Environmental Problems in Application of Ionising Radiation.

The Department is also engaged in research work in the field of Nuclear physics, Dosimetry and Radiological Physics. It cooperates with many Universities and research Institutes in the Czech Republic and abroad.

14117 DEPARTMENT OF NUCLEAR REACTORS - KJR

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The Department of Nuclear Reactors provides education in the field of Nuclear Engineering. Within the Bachelor's degree programme the education is specialized in „Theory and Technology of Nuclear-Reactors“. Within the successive Master degree programme education is specialized in „Theory and Technology of Nuclear-Reactors“ and „Nuclear Energy and Environment“. In the parallel Bachelor's degree programme education is specialized in „Nuclear facilities“. Within the

doctoral programme students can specialize in reactor physics, safety of nuclear installations, applied nuclear physics, and in nuclear energy and the environment. At the department theoretical education is supported by experimental education in laboratories and at VR-1 training reactor. Scientific activity of the department is focused on issues of theoretical and experimental reactor physics, digital control systems of research reactors, modelling of NPP operational states, preparation of educational materials, NPP safe and reliable operation of nuclear facilities, including ecological aspects, alternative sources of energy, calculation of parameters of burned-up nuclear fuel, on gen. IV. reactors and on the economic assessment of various nuclear facilities.

The department operates and organizes the utilisation the VR-1 training reactor. Besides departmental students, the reactor serves for education of another ca. 15 Czech faculties and also, to a lesser extent, secondary school students. The reactor workplace is well equipped, with measuring and computation equipment to provide a high standard of education and successive research projects. Because of the reactor, the department cooperates with several foreign universities equipped with similar nuclear facilities (STU Bratislava, TU Wien, TU Budapest, TU Aachen, KTH Stockholm and others).

14118 DEPARTMENT OF SOFTWARE ENGINEERING IN ECONOMY - KSE

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Department of Software Engineering in Economics provides education for students of two specializations. For the bachelor's degree, this department offers education in Prague, as well as in the branch of the faculty in Děčín. The continuing master degree study is available in Prague. The education is oriented towards mathematics, information technology and the fundamentals of economics. Students will obtain an in-depth and wide-ranging knowledge of the branches of mathematics common in technical universities. Applications, mainly in software development, are given priority.

14201 CENTRE FOR RADIOCHEMISTRY AND RADIATION CHEMISTRY - CRRC

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In 2003, Centre for Radiochemistry and Radiation Chemistry (CRRC) was founded as a research spin-off of Department of Nuclear Chemistry. Its primary goal is to continue in the tradition of nuclear research and ensure further development in the field of radiochemistry and radiation chemistry at CTU. The mission of this research centre has been to fully integrate research in radiochemistry and radiation chemistry at the CTU into the European structures and to offer opportunities for professional advancement to a new generation of researchers, all this in close cooperation with the DNC whose premises and equipment it shares.

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prof. Ing. Miloslav Havlíček, DrSc. (KM)

prof. RNDr. Ladislav Hlavatý, DrSc. (KF)

doc. Ing. Goce Chadzitaskos, CSc. (KF)

prof. RNDr. Petr Šeba, DrSc. (UHK)

prof. Ing. Pavel Šťovíček, DrSc. (KM)

RNDr. Miloš Znojil, DrSc. (ÚJF)

The Doppler Institute was founded 1993 as a centre of research and advanced studies of the FNSPE. The character of FNSPE gives the DI the status of an autonomous part whose activities are financed from external sources. Its members are employees of FNSPE (departments of mathematics and physics), Czech Academy of Sciences (Institute of Nuclear Science) and the University of Hradec Králové.

The prime aim of the Doppler institute is research and advanced studies. In particular research and education in mathematical physics, with an emphasis on modern trends in quantum theory, is cultivated there. The research of the DI benefits considerably from close collaboration with other important centres (Academy of Science, MFF UK, foreign centres). The DI offers opportunities to young talented MSc. and PhD graduates at the start of their scientific career. The DI offers Bsc, MSc. and PhD. thesis supervision on modern and up-to-the-minute topics of research and offers the use of a wealth of scientific contacts. The programme of the DI includes a regular Seminar from the DI, The quantum circle and other forms of lectures and seminars. The DI co organizes international colloquia „Integrable systems“, a regular international winter school of mathematical physics and other conferences.

For the year 2006-2001 the activities of the DI were financed by a grant of the Czech Ministry of Education LC06 - Doppler Institute for mathematical physics and applied mathematics lead by prof. RNDr. Pavel Exner. The primarily aim of the project is the support of young researchers and the extension of international collaboration.

**STUDY PROGRAM STRUCTURING,
FIELDS OF STUDY AND GRADUATE PROFILES**

**BACHELOR STUDY PROGRAM
APPLICATION OF NATURAL SCIENCES**

(THREE YEAR STUDY)

The program is taught in Czech only

FIELDS OF STUDY

**Mathematical Engineering
Engineering Informatics
Nuclear Engineering
Radiological Technics
Physical Engineering
Nuclear Chemical Engineering**

MASTER STUDY PROGRAM (continuation)

APPLICATION OF NATURAL SCIENCES

(THREE YEAR STUDY)

The program is taught in Czech and English

FIELDS OF STUDY

Mathematical Engineering
Engineering Informatics
Nuclear Engineering
Radiological Physics
Physical Engineering
Nuclear Chemical Engineering

FIELD OF STUDY MATHEMATICAL ENGINEERING

The study of the branch **Mathematical Engineering** has its origins in mathematical physics; it deepens mathematical knowledge and teaches the application of mathematics to physics, natural sciences, engineering and other problems. Having graduated in the field one is able to bridge mathematics and traditional engineering. After finishing the bachelor programme, students can continue their studies in specializations such as Mathematical Modelling or Mathematical Physics.

Specialization Mathematical Modelling

Guarantee: Department of Mathematics

Students of Mathematical Modelling deepen their knowledge in the disciplines needed to create mathematical models in various fields of science and technology. They are educated in effective use of top-field computer technology. The thesis is prepared during the last three years, and is mostly directly linked to distinct tasks, specified by teachers of the Department or cooperating experts from other scientific institutions or the industry.

Graduates in the field find themselves employed at universities, research institutions, and those practical fields where the problems being solved require advanced mathematical and computational methods.

Specialization Mathematical Physics

guarantee: Department of Physics

The studies allow the student to gain a wide-ranging and in-depth knowledge of physics, in particular theoretical physics and in mathematical methods of physics including modern algebra, differential geometry and algebraic topology. Apart from analytic methods the students develop practical tools of mathematical modelling, the use of modern computers, symbolic computations and simulations of processes of different kinds.

The studies include a significant part of individual work by the students. The high quality of the graduates is guaranteed by international collaboration carried out in cooperation with the Doppler Institute (Czech Academy of Sciences, MFF UK, SÚJV Dubna, Université de Montréal, Université de Paris VII etc.)

The extensive theoretical foundation in modern mathematics and physics, in particular quantum theory allows the graduate to pursue a career in emerging interdisciplinary trends of natural sciences or technology and contribute to their further development during the remainder of the graduate's career.

Specialization Applied Mathematical-Stochastic Methods

guarantee: Department of Mathematics

Aimed at those students of Mathematics B level who want to continue in their studies of mathematical disciplines which have direct applications. Besides theoretical subjects (advanced calculus, mathematical statistics, probability theory, information theory, numerical mathematics), a large part of the study is dedicated to specific applications (models of transportation, mathematical predictions in biology, statistical methods, decision processes, deterministic chaos, systems of interacting agents, neural networks, image processing, etc).

Graduates benefit from this foremost by getting both a good theoretical background in mathematical-statistical disciplines reflecting current scientific trends and also practical experience in selected fields of applied research.

Graduates get employed in positions involving directing and optimising transportation flows, in technical fields of the transportation, engineering or energy industry, in analytical

departments of companies, in statistical research institutions, in research teams of scientific institutions, in financial institutions, and in many areas of processing engineering, transport, social and reliability data.

FIELD OF STUDY ENGINEERING INFORMATICS

Graduates in the branch **Engineering informatics** get a well-grounded education in computer science, including both the theoretical and practical parts. After graduating from the Bsc programme, a deeper understanding of modern applications (in science, technology, economics, administration, healthcare, etc) is made possible through a specialized study.

Specialization Software Engineering and Mathematical Informatics

guarantee: Department of Mathematics

Graduates in the specialization Software Engineering and Mathematical Informatics get a good mathematical background and a well-grounded education in computer science. They go through both theoretical parts (mathematics with emphasis on discrete and stochastic areas, algebra, information and coding theory, numerical methods, computability theory, image processing) and practical subjects (programming languages, computer architecture, software team projects, programming techniques, object-oriented programming, operating systems, databases, computer networks, system administration, mainframe administration).

Graduates get employed in design, analysis and management of advanced software projects, in research institutions, in consulting companies and in solving problems requiring difficult mathematical knowledge and computer experience.

Specialization Information Technologies

guarantee: Department of Physical Electronics

Graduation from the engineering part of studies will deepen knowledge of one's general mathematical and physical foundations and further broaden knowledge in various fields of engineering informatics, control of processes and modern physical technologies. The opportunity to broaden knowledge of foreign languages and economics will be also offered. Theses can be written in English. The supervision of students will concentrate on the individual design of hardware and software for various applications. Graduates will find its use in the development of new information technologies.

Specialization Software Design

guarantee: Department of Mathematics

This specialization aims at the graduates in the Software Design bachelor programme, but accepts also graduates of other relevant specializations (at either FNSPE or other faculties). Students deepen and broaden their knowledge of the general mathematical and physical background and in computer engineering. Graduates find themselves employed as creators of software for the commercial industry, administration, practical statistics etc. The study programme is augmented with subjects from these areas.

Specialization Software Engineering in Economics

Guarantee: Department of Software Engineering in Economics

With respect to their mathematical and theoretical foundation, a good knowledge of the modern information technologies, economy and international languages, the graduate of this master degree specialization can successfully work in nearly any area of human endeavour. They will be able to offer their talents on the market where people with a technical education and an understanding of computers are in demand. Additionally they will be able to fill posts that require

people that have the communication skills and understand the economy, and not only the basic fields of economics, but also in econometrics. Graduates will be experts in all branches of IT – software project managers, analysts, developers, network administrators etc. The study is based on 3 groups of lectures: informatics (software engineering, programming a descriptive languages, databases, heuristics, security), economy (econometrics, economical decision, production systems, business applications) mathematical (statistics, numerical mathematics, graph theory, number theory). Graduates of this type are in demand mainly as employees of software companies, telecommunication and other IT companies, banks, etc., but many of them are successful as independent IT entrepreneurs, because they will display a notable flair for the development of the software for economics. Students of this kind are in demand far more than „pure IT scientists“ or „pure economists“.

FIELD OF NUCLEAR ENGINEERING

Specialization: Theory and Technology of Nuclear-Reactors

Guarantee: Department of Nuclear Reactors

Students of this specialization are prepared for both theoretical and experimental work in the field of reactor physics and nuclear power engineering. The programme builds upon the fundamentals of nuclear engineering from the bachelor degree programme. This knowledge is extended by specialization courses focused on nuclear reactor physics (both theoretical and experimental), design and construction of nuclear facilities, hydromechanics and thermomechanics, reactor dynamics, operational nuclear reactor physics, nuclear safety and reliability of nuclear power plant, and alternative sources of energy. The lectures are complemented by practical courses of the student's choice, such as control of nuclear power plant, applied nuclear physics, advanced reactor physics, diagnostics, radioactive waste, etc.

The education is supported by necessary computer technology, available both at the Department of Nuclear Reactor premises and in FJFI computer laboratories. An important issue is the integration of a number of experimental tasks at the VR-1 training reactor operated by the Faculty. As a result, the right balance between theoretical and experimental aspects is achieved in the education. The education also reflects the achievements of research programme, in which students actively participate by means of their semester and year research projects, and master theses.

In the case of an individual interest, the department can organized a combined education, enhanced in mathematics, informatics, and microprocessor technology, electronics and nuclear dosimetry.

Graduates develop their careers mainly in the field of calculations and their experimental verification, in operation nuclear power plants (eg, control physicist, supervisory functions, etc.), in research and development laboratories and institutes dealing with specific issues of nuclear energy, its impact on the environment and in centres focusing on the area of nuclear energy.

The aim of this specialization is to prepare graduates not only professionally, but also give them a necessary sense of responsibility for their work and decisions.

Education takes place with an appropriate use of computer technology.

Specialization Dosimetry and Applications of Ionising Radiation

Guarantee: Department of Dosimetry and Application of Ionising Radiation

For all specializations in the programme Nuclear Engineering, students attend a common core of physics and mathematics courses for three years. This accounts for around 75% of the courses with the remaining 25% comprised of courses drawn from within the department. The programme incorporates courses in Experimental Nuclear Physics and Technology, Personal Dosimetry, Environmental Problems, Dosimetry of Nuclear Technology Device, Metrology of Ionising Radiation, Application of Ionising Radiation in the Science, Technology and Medicine and

in other branches using the ionising radiation and radioisotopes. The education also concentrates on Mathematical Modelling of the Radiation Transport and Biological Effectiveness of Ionising Radiation.

Specialization Experimental Nuclear Physics

guarantee: Department of Physics

Studies are focused on nuclear and subnuclear physics, i.e. sciences searching for fundamental results concerning the structure of matter, and a fundamental understanding of the interactions between elementary particles. Much of the knowledge and methods developed has already left the confines of physics and found application in various other fields of human endeavour.. The curriculum is based on common studies of physics, mathematics and chemistry. The fundamentals of the specialized studies are courses in atomic and subatomic physics which exploit the courses in theoretical and quantum physics. The basic course is followed by courses in the theory of atomic nuclei, neutron physics, atomic and nuclear spectroscopy, electronics for physicists, experimental methods of nuclear and subnuclear physics. The studies also include a two semester practicum in atomic and nuclear physics. Emphasis is put on experimental data acquisition methods, their processing using computer methods and the physical interpretation of the results obtained and possible practical aspects of the methods obtained. The education puts emphasis on individual work in laboratories. Students are closely linked to scientific research programmes and are integrated into modern research teams. The work is carried out in collaboration with institutions outside the technical university (Academy of sciences, MFF UK, CERN, BNL Brookhaven, FNAL Chicago, GSI Darmstadt etc.).

Graduates in the specialization acquire the qualification of a physicist-researcher with a broad range of possible positions in research (fundamental, applied, strategic) and development. Graduates can solve physics problems using the latest methods in experimental physics. The study offers a complete education in physics chemistry and mathematics which allows graduates to solve new interdisciplinary problems of natural science.

FIELD OF STUDY RADIOLOGICAL PHYSICS

Guarantee: Department of Dosimetry and Application of Ionising Radiation

The programme is primary focused on Radiotherapy, Radiodiagnostics and Nuclear Medicine. The master study programme Radiological Physics deals with the application of ionising radiation in Radiotherapy, Radiodiagnostics and Nuclear Medicine. Upon attaining their bachelor degree graduates will have gained the competency to practise in the medical services in the function radiological physicist. The curriculum takes courses in Nuclear Physics, Physics of Ionising Radiation, Detection and Dosimetry of Ionising Radiation specialised on radiological technics. The education also concentrates on the medical courses Anatomy, Physiology, Biology Biochemistry, Pharmacology, Imaging Methods and Mathematical Modelling in the Radiological Physics. All students undertake a basic practical training in special laboratories. Practical exercises and working experience in hospitals are a part of the study.

FIELD OF STUDY PHYSICAL ENGINEERING

Specialization: Solid State Engineering

Guarantee: Department of Solid State Engineering

To the graduate student, the courses included in the specialization plan provide knowledge of the physical essence of condensed matter, the theoretical description and interpretation of a considerable variety of special phenomena and properties arising from the diversity of the internal order of solid materials, principals of common experimental techniques and an overview of technical applications used to explore the phenomena and properties mentioned.

Basic mathematical and physical courses are followed by special lectures and practical training familiarizing students with the practical usage of condensed matter physics, such as details and instrumentation of various method of experimental investigation of structure of solid materials, application of optical spectroscopy methods, exploitation of special properties of surfaces and thin layers, metals, semiconductors, superconductors, polymers, dielectrics and magnetic materials and their employment in the recent electronic and photonic technologies, and the application of techniques of computer simulations of structure and properties of condensed systems by methods of quantum and molecular mechanics. The skills obtained by the graduate include analysis of physical and technical problems, creative formulation of new problems to be solved and application of the solutions found in practice.

The graduate of the specialization will find occupation in all academic and industrial facilities dealing with research and development in some of the fields which creatively utilize the findings of condensed matter physics, such as microelectronics, physics of thin films and low-dimensional systems, sensorics, video-technique, photovoltaic, low temperature physics, superconductivity, applied photonics and telecommunications, in specialized analytic and development laboratories working with techniques of optical spectroscopy, X-ray diffraction, electric measurements and computer simulations of materials and, of course, in laboratories of basic research. Because of the analytical and mathematical skills obtained, some of our graduates also find jobs in the sectors of corporate management and finances.

Specialization Material Sciences and Engineering

Guarantee: Department of Materials

Multi-disciplinary studies are based on the synthesis of knowledge on mechanics of continuum, material sciences and applied mathematics. Study in this specialization is based on a solid grounding in mathematics and physics, and is completed by a knowledge of the physics of solid states, elastomechanics, theory of plasticity, fracture mechanics, computer mechanics, applied theory of probability and mathematical statistics. Graduates, highly qualified, are able to solve demanding problems dealing with the influence of mechanical loading, temperature, aggressive environments and other external effects on materials, development of new materials and technologies, durability and safety of systems etc. In order to study said problems, a wide spectrum of experimental methods, theoretical procedures and mathematical modelling is applied. A substantial part of the education consists of cooperation of students in various research projects carried out at the department of materials or at external institutes and companies. Graduates have very good prospects of jobs in nuclear and classical energy industries, automotive and aircraft engineering, material processing and many other areas. Due to the complex character of knowledge and notable adaptability, graduates are ready for immediate integration into both engineering and research practice.

Specialization Physics and Technology of Thermonuclear Fusion

Guarantee: Department of Physics

The MSc. Studies of this specialization have three strands: theory, experimental physics and fusion technology. Students are required to master a certain minimal amount of knowledge in all three parts. However, students have the possibility to choose which of the directions they prefer and adjust their courses and topic of their MSc. thesis accordingly. The education also requires the study of English as most of the terminology and communication is in English.

Graduates of the specialization have a broad education in mathematics and physics, which can be applied to a number of technological, research and development challenges linked to project of thermonuclear fusion.

The specialization is designed in such a way as to allow a smooth integration into international collaborations in thermonuclear fusion and also participate in decision-making processes involving safety issues of thermonuclear fusion. The graduate can choose a career in research as well as in technology companies or the public sector.

Specialization Optical Physics

Guarantee: Department of Physical Electronics

Students of the specialization *Optical Physics* will deepen their knowledge in geometrical, physical, diffractive and non-linear optics, holography, optical processing of information, in quantum optics, electrodynamics, quantum physics, and electronics, solid state physics, optoelectronics and x-ray optics. Thereby acquiring more in-depth knowledge in the fields representing the dominant source of information for mankind. According to how optional courses and theses are selected students can get involved not only in purely optical topics, but also in closely related problems, e.g., optical aspects of lasers, problems of radiation from plasmas, optical and x-ray measurements, optics of nanostructures, etc.

Besides general theoretical studies in a given field students can also get specific experience and practical skills in experimentally oriented education (from advanced optical practicals, excursions to various specialized laboratories, and possibly during their own experimental research). In parallel, students are familiarizing themselves with modern trends in a given field.

Graduates – engineers – are able to assert themselves as theoretical and experimental explorers in a wide range of research and development activities (the need for optical methods of measurement is on the rise), besides this graduates can also find a use for their skills in the field of applications – in institutions specialized in measurement control, in industry, communications, public health, and entrepreneurial circles. Internal adaptability is an obvious quality towards which a project oriented educational system of *recherché*, research and diploma work is aimed.

The master's degree specialization of *Optical Physics* is a direct continuation of the bachelor specialization of Physical Electronics. This specialization is also open to interested graduates of bachelor studies from other departments and faculties. Further information concerning the specialization of *Optical Physics*, requirements, links-up and study plans can be found at <http://kfe.fjfi.cvut.cz>

Specialization Laser Technology and Electronics

Guarantee: Department of Physical Electronics

Students of the specialization *Laser Technology and Electronics* deepen their knowledge in quantum physics, electronics, electrodynamics, laser technology, optics, solid state physics, modern application of lasers, communications, including advanced applications in biomedicine. Similarly to other specializations students can also broaden their knowledge in related subjects, in this particular case ranging from optics and x-ray lasers, to plasma technologies and applications in medicine.

Graduates – engineers – are finding a range of opportunities available to them everywhere where lasers are used.

This field is gradually broadening; it concerns not only the field of research and development, but also industry, public health, entrepreneurial circles etc. Internal adaptability is an obvious quality towards which a project oriented educational system of *recherché*, research and diploma work is aimed.

The master's degree specialization of Laser Physics is a direct continuation of bachelor specialization of *Physical Electronics* as well as *Laser Technology and Electronics*. This specialization is also open to interested graduates of bachelor studies from other departments and faculties. Further information concerning specialization of *Laser Technology and Electronics*, requirements, links-up and study plans can be found at <http://kfe.fjfi.cvut.cz>

Specialization Physics of Nanostructures

Guarantee: Department of Physical Electronics

In this master's degree specialization students broaden their theoretical and experimental knowledge in quantum physics, solid state physics, and optics into the field of systems with spatial restriction like nanostructures, and in particular nanoparticles. Students also obtain broad

knowledge in closely related fields, like optics (photonics), nanoelectronics, including characterizing methods of nanoscopy, measurements and the like. Study of this specialization runs alongside a graduation in advanced practicals and a system of visits to high class institutes active in relevant fields of research, in particular in Prague.

This specialization was set-up as the first ever in the Czech Republic (2005) and also integrates top class specialists from Prague. Graduates – engineers – are finding opportunities, besides the research field, in modern and quickly developing nanoindustries and public health.

Master degree specialization *Physics of Nanostructures* is a direct continuation of bachelor specialization of *Physical Electronics*. This specialization is also open to interested graduates of bachelor studies from other departments and faculties. Further information concerning specialization *Physics of Nanostructures*, requirements, links-up and study plans can be found at <http://kfe.fjfi.cvut.cz>

Specialization Computational Physics

guarantee: Department of Physical Electronics

Graduates in the specialization Information Physics will represent a specialist with a balanced education in the field of physical principles of top technologies and in the field of informatics with an emphasis on the capability to effectively apply its modern creations in physical and engineering research, in technology transfer, in expertises aimed at physical and technical fields, in knowledge engineering, etc. As a foundation for this activity a high level of computational systems mastering as well as practical experience with programming tools for advanced application of informatics is expected.

These requirements will be ensured by graduation from the basic group of courses in the field of Engineering Informatics on one side and by a wide range of offered optional courses in the field of mathematics, applied physics, computer technology, medical engineering etc., realized directly at the Faculty or offered by external institutions. The education of students in higher grades is based on individual supervision and their participation in scientific research, in accordance with long term tradition and proven by positive prior experience.

FIELD OF STUDY NUCLEAR CHEMICAL ENGINEERING

Nuclear Chemical Engineering educates specialists for basic and applied research and practice in the field of nuclear chemistry, environmental chemistry and applied nuclear chemistry including applications in biology and medicine. The curriculum provides graduates with a good basis in maths and physics and theoretical and practical training in basic chemical fields such as physical, analytical, organic and inorganic chemistry and biochemistry. On this basis the study of all disciplines of nuclear and radiochemistry is developed. Emphasis is put on the practical application of skills in research and engineering. Students may choose from two specializations - Applied Nuclear Chemistry and Nuclear Chemistry in Biology and Medicine.

Graduates have a good theoretical knowledge and are trained for work in radiochemical and chemical laboratories. They know the methods of ionising radiation detection, separation methods, radioanalytical and methods of radiation chemistry. They are familiar with technology of nuclear materials, radiation protection and environmental chemistry. They have skills required to use radiochemical and chemical methods to solve analytical, ecological, physico-chemical, chemico – biomedical and technological problems. They are employed in research institutes, medical facilities, nuclear energy industries and chemical industries, designated institutes and the engineering of research and operation.

Specialization Applied Nuclear Chemistry

Guarantee: Department of Nuclear Chemistry

This specialization is focused on the application of nuclear methods, radionuclides and ionising radiation in research and development. Students can choose lectures in preparation,

analysis and use of radioactive material and nuclear material, the application of radiation methods and the chemistry of the nuclear fuel cycle. Students may also choose lectures for those wishing to become specialists in the area of environment, namely methods of analysis of environmental components, analysis and description of contaminant transportation and treatment and waste deposition respectively.

Specialization Nuclear Chemistry in Biology and Medicine

Guarantee: Department of Nuclear Chemistry

Students are trained in general nuclear chemical knowledge in addition to theoretical and practical applications in biomedical research and practices. Graduates may be employed in research institutes, medical facilities that are oriented towards the research and application of radioimmunology, research, preparation and application of radiopharmaceuticals or application of radiation methods in biology and medical applications.

Master Study Program

Field of Study: Mathematical Engineering

Specialization: Mathematical Modelling

year 1

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Algebra	01ALG	Mareš	4+0 zk	-	4	-
Functional Analysis 1	01FA1	Havlíček	2+1 z, zk	-	3	-
Functional Analysis 2	01FA2	Šťovíček	-	2+2 z, zk	-	4
Methods of Mathematical Physics	01MMF	Šťovíček	-	4+2 z, zk	-	6
Probability and Mathematical Statistics 1, 2	01PRA12	Kůs	4+2 z, zk	2+0 zk	6	2
Numerical Mathematics 2	01NUM2	Beneš	-	2+1 z, zk	-	3
Functions of Complex Variable	01FKP	Pošta	2 zk	-	2	-
Linear Programming	01LIP	Pytlíček	-	2+1 z, zk	-	3
Search Project 1, 2	01RPMM12	Kůs	0+5 z	0+10 z	5	10
<i>Optional courses:</i>						
Geometric Theory of Ordinary Differential Equations	01GTDR	Beneš	0+2 z	-	2	-
Topology	01TOP	Burdík	2 zk	-	2	-
Quantum Physics	01KF	Havlíček	-	4+2 z, zk	-	6
Lie Algebras and Lie Groups ⁽¹⁾	02LIAG	Šnobl	-	3+2 z, zk	-	6
Differential Equations, Symmetries and Groups	02DRG	Šnobl	2+2 z	-	4	-
Theory of Dynamic Systems	01DYSY	Augustová	-	3 zk	-	3
Mathematical Models of Groundwater Flow	01MMPV	Mikyška	-	2 kz	-	2
Object Oriented Programming	18OOP	Virus	2 z	-	2	-
Simple Compilers	01JEPR	Čulík	-	2 z	-	2
Computer Graphics 1, 2	01POGR12	Oberhuber, Strachota	2 z	2 z	2	2
Statistical Decision Theory	01STR	Kůs	-	2 zk	-	2
Introduction to Operating Systems	01ZOS	Čulík	-	2 z	-	2
Theory of Codes	01TKO	Mareš	-	2 zk	-	2
Windows Programming	01PW	Čulík	2 z	-	2	-
LaTeX - Publication Instrument	01PSL	Ambrož	-	0+2 z	-	2
History of Mathematics	01DEM	Balková	-	0+2 z	-	1

(1) Grading possible after grading in 02GMF1 or 02DRG.

Master Study Program

Field of Study: Mathematical Engineering

Specialization: Mathematical Modelling

year 2

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Variational Methods	01VAM	Beneš	2 zk	-	3	-
Asymptotical Methods	01ASY	Mikyška	2+1 z, zk	-	3	-
Introduction to Graph Theory A	01ZTGA	Ambrož	4 zk	-	4	-
Advanced Methods of Numerical Linear Algebra	01PNLA	Mikyška	2 zk	-	3	-
Matrix Theory	01TEMA	Pelantová	-	2 z	-	3
Random Processes	01NAH	Michálek	3 zk	-	3	-
Finite Element Method	01MKP	Beneš	-	2 zk	-	3
Image Processing and Pattern Recognition I	01ROZI	Flusser, Zitová	-	2+2 zk	-	4
Monte Carlo Method	18MOCA	Virus	2+1 z	-	3	-
Methods for Sparse Matrices	01MRM	Mikyška	-	2 zk	-	3
Research Project 1, 2	01VUMM12	Hobza	0+6 z	0+8 kz	6	8
<i>Optional courses:</i>						
Signal Analysis	01ASIG	Převorovský	-	3 zk	-	4
Differential Equations on Computer	12DRP	Liska	2+2 z, zk	-	5	-
Information Theory	01TIN	Hobza	2 zk	-	2	-
Regression Data Analysis	01REGA	Víšek	2 zk	-	2	-
Probabilistic Models of Artificial Intelligence	01UMIN	Vejnarová	2 kz	-	2	-
Complexity Theory	01TSLO	Majerech	3 zk	-	3	-
Parallel Algorithms and Architectures	01PAA	Oberhuber	-	0+3 kz	-	4
Statistical Methods with Applications	01SM	Hobza	-	2 zk	-	2
Calculus Revisited	01MADR	Klika	-	0+2 z	-	2
Mathematical Methods in Fluid Dynamics 1, 2	01MMDT12	Fořt, Neustupa	1+1 z	2 zk	2	2
Relational Databases	01REDA	Loupal	3 zk	-	3	-
Number Theory	01TC	Masáková, Pelantová	-	4+0 zk	-	4
Introduction to Cryptology	01UKRY	Balková	-	2+0 z	-	2
Aperiodic Structures	01APST	Masáková	2 z	-	2	-
Application of Nonclassical Logic	01ANL	Cintula	-	2 zk	-	2
Differential Calculus on Manifolds	01DPV	Pošta	-	2 zk	-	2
Basic of Representation Theory of Lie Algebras	01TRLA	Burdík	-	2+0 zk	-	2
Financial and Insurance Mathematics	01FIMA	Hora	2 zk	-	2	-

Master Study Program

Field of Study: Mathematical Engineering

Specialization: Mathematical Modelling

year 3

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Nonlinear Programming	01NELI	Burdík	3 zk	-	4	-
Mathematical Modelling of Non-linear Systems	01MMNS	Beneš	2 zk	-	3	-
Diploma Seminar	01DSEM	Ambrož	-	0+2 z	-	2
Master Thesis 1, 2	01DPMM12	Ambrož	0+10 z	0+20 z	10	20
<i>Optional courses:</i>						
Numerical Software	01NUSO	Fürst	2 z	-	3	-
Dynamic Decision Making	01DYR	Kárný	3 zk	-	3	-
Foundations of Fuzzy Logic	01ZFL	Hájek	2 zk	-	2	-
Neural Computers and Their Applications	01NSAP	Hakl, Holeňa	3 zk	-	4	-
Probabilistic Learning Models	01PMU	Hakl	2 zk	-	2	-
Stochastic Systems	01STOS	Janžura	2 zk	-	2	-
Image Processing and Pattern Recognition 2	01ROZ2	Flusser	2+1 zk	-	3	-
Method of Finite Volumes	01MKO	Kozel	1+1 kz	-	2	-
Numerical simulations of Convection problems	01NSPP	Kozel	-	1+1 zk	-	2
Special Functions and Transformations in Image Analysis	01SFTO	Flusser	-	2 zk	-	2

Master Study Program

Field of Study: Mathematical Engineering

Specialization: Mathematical Physics

year 1

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Quantum Mechanics	02KVAN	Hlavatý	4+2 z, zk	-	6	-
Quantum Mechanics 2	02KVAN2	Šnobl	-	2+2 z, zk	-	4
Nuclear Physics	02ZJF	Wagner	3+2 z, zk	-	6	-
Functional Analysis 1	01FA1	Havlíček	2+1 z, zk	-	3	-
Functional Analysis 2	01FA2	Šťovíček	-	2+2 z, zk	-	4
Methods of Mathematical Physics	01MMF	Šťovíček	-	4+2 z, zk	-	6
Geometric Methods in Physics 1	02GMF1	Šnobl, Tolar	2+2 z, zk	-	4	-
General Relativity	02OR	Semerák	-	3+0 zk	-	3
Search Project 1, 2	02RPMF12	Hlavatý, Tolar	0+5 z	0+10 z	5	10
<i>Optional courses:</i>						
Differential Equations, Symmetries and Groups	02DRG	Šnobl	2+2 z	-	4	-
Elementary Particle Physics - Models and Experiments	02EMEC	Chudoba	-	2 z	-	2
Algebra	01ALG	Mareš	4+0 zk	-	4	-
Probability and Statistics	01PRST	Hobza	3+1 z, zk	-	4	-
Functions of Complex Variable	01FKP	Pošta	2 zk	-	2	-
Topology	01TOP	Burdík	2 zk	-	2	-
Computer Algebra	12POAL	Liska	2 kz	-	2	-

Master Study Program

Field of Study: Mathematical Engineering

Specialization: Mathematical Physics

year 2

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Quantum Field Theory 1	02KTP1	Hořejší	4+2 z, zk	-	9	-
Groups and Representations	02GR	Chadzitaskos	2+1 z, zk	-	3	-
Quantum Physics	01KF	Havlíček	-	4+2 z, zk	-	6
Geometric Methods in Physics 2	02GMF2	Tolar	-	2+2 z, zk	-	5
Lie Algebras and Lie Groups	02LIAG	Šnobl	-	3+2 z, zk	-	6
Winter School of Mathematical Physics ⁽¹⁾	02ZS	Tolar	1 week z	-	1	-
Research Project 1, 2	02VUMF12	Hlavatý, Tolar	0+6 z	0+8 kz	6	8
<i>Optional courses:</i>						
Quantum Field Theory 2	02KTP2	Hořejší	-	4+2 z, zk	-	6
Quantum Information and Communication	02KIK	Jex	2 z	-	2	-
Nonequilibrium Systems	02NSY	Jex	-	2 z	-	2
Differential Equations, Symmetries and Groups	02DRG	Šnobl	2+2 z	-	4	-
Asymptotical Methods	01ASY	Mikyška	2+1 z, zk	-	3	-
Random Processes	01NAH	Michálek	3 zk	-	3	-
Variational Methods	01VAM	Beneš	2 zk	-	3	-
Topology	01TOP	Burdík	2 zk	-	2	-
Computer Algebra	12POAL	Liska	2 kz	-	2	-
Advanced Topics of Quantum Theory	02PPKT	Exner	-	2 zk	-	2
Elementary Particle Physics - Models and Experiments	02EMEC	Chudoba	-	2 z	-	2
Simulations of Collisionless Plasmas 1, 2	02NMP12	Trávníček	2 z	2 z	2	2
Relativistic Physics 1	02REL1	Bičák, Semerák	4+2 z, zk	-	6	-
Relativistic Physics 2	02REL2	Bičák, Semerák	-	4+2 z, zk	-	6
Introduction to Graph Theory A	01ZTGA	Ambrož	4 zk	-	4	-
Functions of Complex Variable	01FKP	Pošta	2 zk	-	2	-
Quantum Circle 1, 2	02KVK12	Exner	2 z	2 z	2	2
Solvable Models of Mathematical Physics	02RMMF	Hlavatý	-	2+0 z	-	2

(1) Course for students of this specialization only.

Master Study Program

Field of Study: Mathematical Engineering

Specialization: Mathematical Physics

year 3

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Cohomological Methods in Theoretical Physics	02KOHO	Tolar	2 zk	-	4	-
Selected Topics in Statistical Physics and Thermodynamics	02VPSF	Jex	2+2 z, zk	-	7	-
Master Thesis 1, 2	02DPMF12	Hlavatý, Tolar	0+10 z	0+20 z	10	20
<i>Optional courses:</i>						
Relativistic Physics 1	02REL1	Bičák, Semerák	4+2 z, zk	-	6	-
Relativistic Physics 2	02REL2	Bičák, Semerák	-	4+2 z, zk	-	6
Quantum Information and Communication	02KIK	Jex	2 z	-	2	-
Quantum groups 1, 2	01KVGR12	Burdík	2 z	2 z	2	2
Mathematical Modelling of Non-linear Systems	01MMNS	Beneš	2 zk	-	3	-
Quantum Circle 1, 2	02KVK12	Exner	2 z	2 z	2	2
Introduction to Graph Theory A	01ZTGA	Ambrož	4 zk	-	4	-

Master Study Program

Field of Study: Mathematical Engineering

Specialization: Applied Mathematical-Stochastic Methods

year 1

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
The Equations of Mathematical Physics	01RMF	Krbálek	2+4 z, zk	-	6	-
Probability and Statistics	01PRST	Hobza	3+1 z, zk	-	4	-
Statistical Methods with Applications	01SM	Hobza	-	2 zk	-	2
Modeling of Traffic Systems	01MDS	Krbálek	-	2+1 z, zk	-	3
Numerical Methods 2	01NME2	Beneš	-	2+0 kz	-	2
Stochastic Games and Bayesian Decision Making	01SBAR	Kůs	-	2+1 zk	-	3
Introduction to Graph Theory B	01ZTGB	Ambrož	2+2 z, zk	-	4	-
Econometrics	18EKONS	Fiala	-	2+2 z, zk	-	5
Programming in MATLAB	18MTL	Kukal	2+2 z, zk	-	5	-
LaTeX - Publication Instrument	01PSL	Ambrož	-	0+2 z	-	2
Search Project 1, 2	01RPAM12	Kůs	0+5 z	0+10 z	5	10
<i>Optional courses:</i>						
Theory of Dynamic Systems	01DYSY	Augustová	-	3 zk	-	3
Computer Graphics 1, 2	01POGR12	Oberhuber, Strachota	2 z	2 z	2	2
Advanced Probability	01POPR	Kůs	-	2+0 z	-	2
Evolutional Computing Systems	12EVS	Lažanský	2+1 zk	-	3	-
Scientific and Technical Computing	12VTV	Procházka	-	1+1 z	-	2
Functions of Complex Variable	01FKP	Pošta	2 zk	-	2	-
Matlab Applications	18AMTL	Kukal	-	2+2 kz	-	4

Master Study Program

Field of Study: Mathematical Engineering

Specialization: Applied Mathematical-Stochastic Methods

year 2

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Applied Information Theory	01ATI	Hobza	-	2+0 zk	-	3
Chaotic Systems and Their Analysis	01CHAOS	Pluhař	2+0 zk	-	2	-
Diagnostic Signal Processing	01ZSIG	Převorovský	-	3+0 zk	-	3
Generalized Linear Models and Applications	01ZLIM	Hobza, Víšek	-	2+1 zk	-	3
Mathematical Methods in Biology and Medicine	01MBI	Klika	0+3 kz	-	3	-
Monte Carlo Method	18MOCA	Virius	2+1 z	-	3	-
Functional Analysis 1	01FA1	Havlíček	2+1 z, zk	-	3	-
System Reliability and Clinical Experiments	01SKE	Kůs	0+2 kz	-	3	-
Modelling of Extreme Events	01MEX	Fabian, Hanousková	-	2+0 zk	-	2
Applied Econometrics and Time Series Theory	18AEK	Kalčevová	2+2 z, zk	-	4	-
Regression Data Analysis	01REGA	Víšek	2 zk	-	2	-
Image Processing and Pattern Recognition 1	01ROZ1	Flusser, Zitová	-	2+2 zk	-	4
Conference Research Week, Excursion	01KTVE	Krbálek	-	5 days z	-	1
Research Project 1, 2	01VUAM12	Hobza	0+6 z	0+8 kz	6	8
<i>Optional courses:</i>						
Algebra	01ALG	Mareš	4+0 zk	-	4	-
Asymptotical Methods	01ASY	Mikyška	2+1 z, zk	-	3	-
Theory of Codes ⁽¹⁾	01TKO	Mareš	-	2 zk	-	2
Introduction to Bioinformatics	01UBIO	Oberhuber	2 kz	-	2	-
Random Processes	01NAH	Michálek	3 zk	-	3	-
Probabilistic Models of Artificial Intelligence	01UMIN	Vejnarová	2 kz	-	2	-
Special Functions and Transformations in Image Analysis	01SFTO	Flusser	-	2 zk	-	2
Computer Algebra	12POAL	Liska	2 kz	-	2	-
Models and Methods for Economic Decisions	18MEK	Fiala	2+2 z, zk	-	5	-
Project Management of Economic Systems	18REK	Fiala	-	2+2 z, zk	-	4

(1) Grading in 01TKO requires grading in 01ALG.

Master Study Program

Field of Study: Mathematical Engineering

Specialization: Applied Mathematical-Stochastic Methods

year 3

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Dynamic Decision Making	01DYZ	Kárný	3 zk	-	3	-
Social Systems and Their Simulation	01SSS	Hrabák, Krbálek	2+1 zk	-	4	-
Optimization Methods and Algorithms	01OPT	Hanousková, Kůs	2+1 zk	-	3	-
Design of Experiments	01NEX	Hobza	0+3 kz	-	4	-
Heuristic Algorithms	18HEUR	Kukal	-	2+2 kz	-	4
Image Processing and Pattern Recognition 2	01ROZ2	Flusser	2+1 zk	-	3	-
Diploma Seminar	01DSEM	Ambrož	-	0+2 z	-	2
Master Thesis 1, 2	01DPAM12	Ambrož	0+10 z	0+20 z	10	20
<i>Optional courses:</i>						
Stochastic Systems	01STOS	Janžura	2 zk	-	2	-
Neural Computers and Their Applications	01NSAP	Hakl, Holeňa	3 zk	-	4	-
Foundations of Fuzzy Logic	01ZFL	Hájek	2 zk	-	2	-
Mathematical Modelling of Non-linear Systems	01MMNS	Beneš	2 zk	-	3	-
Signal and Data Processing	12ZSD	Klimo, Klír, Procházka	2+1 kz	-	4	-

Master Study Program

Field of Study: Engineering Informatics

Specialization: Software Engineering and Mathematical Informatics year 1

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Probability and Mathematical Statistics 1, 2	01PRA12	Kůs	4+2 z, zk	2+0 zk	6	2
Algebra	01ALG	Mareš	4+0 zk	-	4	-
Theory of Codes	01TKO	Mareš	-	2 zk	-	2
Windows Programming	01PW	Čulík	2 z	-	2	-
Object Oriented Programming	18OOP	Virus	2 z	-	2	-
Numerical Mathematics 2	01NUM2	Beneš	-	2+1 z, zk	-	3
Introduction to Operating Systems	01ZOS	Čulík	-	2 z	-	2
Linear Programming	01LIP	Pytlíček	-	2+1 z, zk	-	3
Search Project 1, 2	01RPSI12	Kůs	0+5 z	0+10 z	5	10
<i>Optional courses:</i>						
Theory of Dynamic Systems	01DYSY	Augustová	-	3 zk	-	3
Functional Analysis 1	01FA1	Havlíček	2+1 z, zk	-	3	-
Methods of Mathematical Physics	01MMF	Šťovíček	-	4+2 z, zk	-	6
Programming of Peripherals Devices	01PERI	Čulík	2 z	-	2	-
Simple Compilers	01JEPR	Čulík	-	2 z	-	2
Computer Graphics 1, 2	01POGR12	Oberhuber, Štrachota	2 z	2 z	2	2
Computer Networks 1, 2 ⁽¹⁾	01SITE12	Minárik	1+1 z	1+1 z	2	2
Functions of Complex Variable	01FKP	Pošta	2 zk	-	2	-
Computers and Natural Language 1, 2	01POPJ12	Bojar, Zeman	0+2 z	0+2 z	2	2
Statistical Decision Theory	01STR	Kůs	-	2 zk	-	2
Geometric Theory of Ordinary Differential Equations	01GTDR	Beneš	0+2 z	-	2	-
Topology	01TOP	Burdík	2 zk	-	2	-
LaTeX - Publication Instrument	01PSL	Ambrož	-	0+2 z	-	2
History of Mathematics	01DEM	Balková	-	0+2 z	-	1
Programming in MATLAB	18MTL	Kukal	2+2 z, zk	-	5	-

(1) Both semesters must be subscribed.

Master Study Program

Field of Study: Engineering Informatics

Specialization: Software Engineering and Mathematical Informatics year 2

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Complexity Theory	01TSLO	Majerech	3 zk	-	3	-
Number Theory	01TC	Masáková, Pelantová	-	4+0 zk	-	4
Matrix Theory	01TEMA	Pelantová	-	2 z	-	3
Introduction to Graph Theory A	01ZTGA	Ambrož	4 zk	-	4	-
Computability and Mathematical Logic	01VYML	Mareš	4 zk	-	4	-
Languages and Automata	01JAA	Mareš	-	2 zk	-	2
Information Theory	01TIN	Hobza	2 zk	-	2	-
Parallel Algorithms and Architectures	01PAA	Oberhuber	-	0+3 kz	-	4
Image Processing and Pattern Recognition 1	01ROZ1	Flusser, Zitová	-	2+2 zk	-	4
Research Project 1, 2	01VUSI12	Hobza	0+6 z	0+8 kz	6	8
<i>Optional courses:</i>						
Software Project 1, 2	01SWP12	Minárik	0+2 z	0+2 z	4	4
Introduction to Mainframe ⁽¹⁾	01UMF	Oberhuber	2 z	-	2	-
Mainframe Maintenance ⁽²⁾	01SMF	Oberhuber	-	0+2 z	-	2
Mainframe Programming ⁽²⁾	01PMF	Oberhuber	-	0+2 z	-	2
Introduction to Bioinformatics	01UBIO	Oberhuber	2 kz	-	2	-
Asymptotical Methods	01ASY	Míkyška	2+1 z, zk	-	3	-
Signal Analysis	01ASIG	Převorovský	-	3 zk	-	4
Random Processes	01NAH	Michálek	3 zk	-	3	-
Monte Carlo Method	18MOCA	Virus	2+1 z	-	3	-
Regression Data Analysis	01REGA	Víšek	2 zk	-	2	-
Methods for Sparse Matrices	01MRM	Míkyška	-	2 zk	-	3
Probabilistic Models of Artificial Intelligence	01UMIN	Vejnarová	2 kz	-	2	-
Statistical Methods with Applications	01SM	Hobza	-	2 zk	-	2
Differential Equations on Computer	12DRP	Liska	2+2 z, zk	-	5	-
Variational Methods	01VAM	Beneš	2 zk	-	3	-
Finite Element Method	01MKP	Beneš	-	2 zk	-	3
Advanced Methods of Numerical Linear Algebra	01PNLA	Míkyška	2 zk	-	3	-
Relational Databases	01REDA	Loupal	3 zk	-	3	-
Aperiodic Structures	01APST	Masáková	2 z	-	2	-
Introduction to Cryptology	01UKRY	Balková	-	2+0 z	-	2
Financial and Insurance Mathematics	01FIMA	Hora	2 zk	-	2	-
Application of Nonclassical Logic	01ANL	Cintula	-	2 zk	-	2
Assistive Technology	01ASTE	Seifert	0+1 z	-	2	-

(1) Taught in cooperation with Computer Associates, ČR.

(2) Taught in cooperation with IBM, ČR.

(3) Another optional courses can be A4M33AU Automated Decision, A4M33BIA Biologically Inspired Algorithms, A4B33FLP Functional and Logical Programming, A4M33SAD Machine Learning and Data Analysis, A3B33KUI Cybernetics and Artificial Intelligence, A4M33MAS Multi-Agent Systems taught at the FEL ČVUT v Praze.

Master Study Program

Field of Study: Engineering Informatics

Specialization: Software Engineering and Mathematical Informatics year 3

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Numerical Software	01NUSO	Fürst	2 z	-	3	-
Image Processing and Pattern Recognition 2	01ROZ2	Flusser	2+1 zk	-	3	-
Neural Computers and Their Applications	01NSAP	Hakl, Holeňa	3 zk	-	4	-
Diploma Seminar	01DSEM	Ambrož	-	0+2 z	-	2
Master Thesis 1, 2	01DPSI12	Ambrož	0+10 z	0+20 z	10	20
<i>Optional courses:</i>						
Nonlinear Programming	01NELI	Burdík	3 zk	-	4	-
Mathematical Modelling of Non-linear Systems	01MMNS	Beneš	2 zk	-	3	-
Dynamic Decision Making	01DYR	Kárný	3 zk	-	3	-
Foundations of Fuzzy Logic	01ZFL	Hájek	2 zk	-	2	-
Probabilistic Learning Models	01PMU	Hakl	2 zk	-	2	-
Stochastic Systems	01STOS	Janžura	2 zk	-	2	-
Special Functions and Transformations in Image Analysis	01SFTO	Flusser	-	2 zk	-	2

Master Study Program

Field of Study: Engineering Informatics

Specialization: Software Design

year 1

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Algebra	01ALG	Mareš	4+0 zk	-	4	-
Linear Programming B	01LIPB	Burdík	2+2 z, zk	-	4	-
Theory of Codes	01TKO	Mareš	-	2 zk	-	2
Simple Compilers	01JEPR	Čulík	-	2 z	-	2
Programming of Peripherals Devices	01PERI	Čulík	2 z	-	2	-
Probability and Statistics	01PRST	Hobza	3+1 z, zk	-	4	-
Windows Programming	01PW	Čulík	2 z	-	2	-
Object Oriented Programming	18OOP	Virus	2 z	-	2	-
Introduction to Operating Systems	01ZOS	Čulík	-	2 z	-	2
Computer Graphics 1, 2	01POGR12	Oberhuber, Strachota	2 z	2 z	2	2
Computers and Natural Language 1, 2	01POPJ12	Bojar, Zeman	0+2 z	0+2 z	2	2
Computer Networks 1, 2	01SITE12	Minárik	1+1 z	1+1 z	2	2
Project Management of Software Projects ⁽¹⁾	01RSWP	Rozsypal	0+2 kz	-	2	-
Search Project 1, 2	01RPTS12	Kůs	0+5 z	0+10 z	5	10
<i>Optional courses:</i>						
Statistical Decision Theory	01STR	Kůs	-	2 zk	-	2
Theory of Dynamic Systems	01DYSY	Augustová	-	3 zk	-	3
Programmer's Practicum	01PROP	Bauer	0+2 z	-	2	-
Numerical Mathematics 2	01NUM2	Beneš	-	2+1 z, zk	-	3
Programming in Java	18PJ	Virus	2+2 z, zk	-	5	-
Computer Algebra	12POAL	Liska	2 kz	-	2	-
CAD Systems in Electronics	12CAD	Pavel	-	4 z, zk	-	4
LaTeX - Publication Instrument	01PSL	Ambrož	-	0+2 z	-	2
Computer Circuits and Architecture	12ARCH	Voltr	-	2+1 z	-	3
Generation of Internet Applications	18INTA	Majerová, Nerad	-	2+2 kz	-	4
Programming in MATLAB	18MTL	Kukal	2+2 z, zk	-	5	-
History of Mathematics	01DEM	Balková	-	0+2 z	-	1

(1) Taught in cooperation with IBM, ČR.

Master Study Program

Field of Study: Engineering Informatics

Specialization: Software Design

year 2

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Introduction to Graph Theory B	01ZTGB	Ambrož	2+2 z, zk	-	4	-
Computability and Mathematical Logic	01VYML	Mareš	4 zk	-	4	-
Languages and Automata	01JAA	Mareš	-	2 zk	-	2
Image Processing and Pattern Recognition 1	01ROZ1	Flusser, Zitová	-	2+2 zk	-	4
Signal Analysis	01ASIG	Převorovský	-	3 zk	-	4
Information Theory	01TIN	Hobza	2 zk	-	2	-
Parallel Algorithms and Architectures	01PAA	Oberhuber	-	0+3 kz	-	4
Monte Carlo Method	18MOCA	Virius	2+1 z	-	3	-
Relational Databases	01REDA	Loupal	3 zk	-	3	-
Software Project 1, 2	01SWP12	Minárik	0+2 z	0+2 z	4	4
Research Project 1, 2	01VUTS12	Hobza	0+6 z	0+8 kz	6	8
<i>Optional courses:</i>						
Complexity Theory	01TSLO	Majerech	3 zk	-	3	-
Introduction to Mainframe ⁽²⁾	01UMF	Oberhuber	2 z	-	2	-
Mainframe Programming ⁽¹⁾	01PMF	Oberhuber	-	0+2 z	-	2
Mainframe Maintenance ⁽¹⁾	01SMF	Oberhuber	-	0+2 z	-	2
Introduction to Bioinformatics	01UBIO	Oberhuber	2 kz	-	2	-
Financial and Insurance Mathematics	01FIMA	Hora	2 zk	-	2	-
Number Theory	01TC	Masáková, Pelantová	-	4+0 zk	-	4
Matrix Theory	01TEMA	Pelantová	-	2 z	-	3
Random Processes	01NAH	Michálek	3 zk	-	3	-
Regression Data Analysis	01REGA	Víšek	2 zk	-	2	-
Advanced Methods of Numerical Linear Algebra	01PNLA	Mikyška	2 zk	-	3	-
Probabilistic Models of Artificial Intelligence	01UMIN	Vejnarová	2 kz	-	2	-
Statistical Methods with Applications	01SM	Hobza	-	2 zk	-	2
Methods for Sparse Matrices	01MRM	Mikyška	-	2 zk	-	3
Introduction to Cryptology	01UKRY	Balková	-	2+0 z	-	2
Software Testing and Verification ⁽³⁾	01TVS	Mařík	2+2 z, zk	-	6	-
Application of Nonclassical Logic	01ANL	Cintula	-	2 zk	-	2
Assistive Technology	01ASTE	Seifert	0+1 z	-	2	-

(1) Taught in cooperation with IBM, ČR.

(2) Taught in cooperation with Computer Associates, ČR.

(3) Taught at the FEL ČVUT v Praze.

Master Study Program

Field of Study: Engineering Informatics

Specialization: Software Design

year 3

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Numerical Software	01NUSO	Fürst	2 z	-	3	-
Image Processing and Pattern Recognition 2	01ROZ2	Flusser	2+1 zk	-	3	-
Neural Computers and Their Applications	01NSAP	Hakl, Holeňa	3 zk	-	4	-
Diploma Seminar	01DSEM	Ambrož	-	0+2 z	-	2
Master Thesis 1, 2	01DPTS12	Ambrož	0+10 z	0+20 z	10	20
<i>Optional courses:</i>						
Software Project 3	01SWP3	Minárik	0+2 z	-	4	-
Nonlinear Programming	01NELI	Burdík	3 zk	-	4	-
Probabilistic Learning Models	01PMU	Hakl	2 zk	-	2	-
Dynamic Decision Making	01DYR	Kárný	3 zk	-	3	-
Stochastic Systems	01STOS	Janžura	2 zk	-	2	-
Special Functions and Transformations in Image Analysis	01SFTO	Flusser	-	2 zk	-	2

Master Study Program

Field of Study: Physical Engineering

Specialization: Computational Physics

year 1

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Methods of Computational Physics 1, 2	12MPF12	Klimo, Kuchařík	2 z, zk	2 z, zk	2	2
Computer Algebra	12POAL	Liska	2 kz	-	2	-
Methods of Mathematical Physics	01MMF	Šťovíček	-	4+2 z, zk	-	6
Quantum Mechanics	02KVAN	Hlavatý	4+2 z, zk	-	6	-
Electrodynamics	12ELDN	Kálal	4 z, zk	-	4	-
Principles of Plasma Physics	12ZFP	Limpouch	-	3+1 z, zk	-	4
Search Project 1, 2	12RPIF12	Šiňor	0+5 z	0+10 z	5	10
<i>Optional courses:</i>						
Probability and Statistics	01PRST	Hobza	3+1 z, zk	-	4	-
Functions of Complex Variable B	01FKPB	Pošta	2 z	-	2	-
Molecular Physics	12MOF	Michl, Proška	-	2 zk	-	2
Solid State Physics	11FPL	Kraus	-	4 zk	-	4
Fundamentals of Optics	12ZOPT	Fiala	4 z, zk	-	4	-
Nanotechnology	12NT	Hulicius	2 zk	-	2	-
Nuclear Physics B	02ZJFB	Wagner	3+0 kz	-	3	-
Measurement and Data Processing	12ZMD	Procházka	1+1 kz	-	2	-

Master Study Program

Field of Study: Physical Engineering

Specialization: Computational Physics

year 2

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Concepts of Information Physics 1, 2	12KOF12	Drška, Šiňor	2 z	2 zk	3	3
Differential Equations on Computer	12DRP	Liska	2+2 z, zk	-	5	-
Numerical Methods 2	01NME2	Beneš	-	2+0 kz	-	2
Atomic Physics	12AF	Šiňor	4 z, zk	-	4	-
Basics of Artificial Intelligence	12ZUMI	Kléma, Pěchouček, Štěpánková	-	2+2 z, zk	-	5
Image Processing and Pattern Recognition 1	01ROZ1	Flusser, Zitová	-	2+2 zk	-	4
Research Project 1, 2	12VUIF12	Liska	0+6 z	0+8 kz	6	8
<i>Optional courses:</i>						
Variational Methods	01VAM	Beneš	2 zk	-	3	-
Finite Element Method	01MKP	Beneš	-	2 zk	-	3
Robust Numerical Algorithms	12RNA	Váchal	-	1+1 z	-	2
Solid State Physics	11FPL	Kraus	-	4 zk	-	4
Physics of High Energy Density	12FVHE	Drška	2 zk	-	2	-
Astrophysics	12ASF	Kulhánek	-	2+2 zk	-	4
Object Oriented Programming	18OOP	Virus	2 z	-	2	-
Computer Simulations in Physics of Many Particles 1, 2	12PEMC12	Kotrla, Předota	2 zk	2 zk	2	2
Evolutional Computing Systems	12EVS	Lažanský	2+1 zk	-	3	-
Parallel Algorithms and Architectures	01PAA	Oberhuber	-	0+3 kz	-	4
Administration of UNIX System	12AUX	Šiňor	-	2 kz	-	2
Inertial Fusion Physics	02FIF	Klimo, Limpouch	3+1 z, zk	-	4	-
INtroduction to Laser-Plasma Physics	12UFLP	Klimo, Pšikal	2 zk	-	2	-

Master Study Program

Field of Study: Physical Engineering

Specialization: Computational Physics

year 3

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Introduction to Management	12UM	Malát	2 zk	-	2	-
Computer Graphics 1, 2	01POGR12	Oberhuber, Strachota	2 z	2 z	2	2
Diploma Seminar 1, 2	12DSIF12	Limpouch	0+2 z	0+2 z	2	2
Master Thesis 1, 2	12DPIF12	Limpouch	0+10 z	0+20 z	10	20
<i>Optional courses:</i>						
Physics and Human Cognition	12FLP	Langer	-	2 z	-	2
Mathematical Modelling of Non-linear Systems	01MMNS	Beneš	2 zk	-	3	-
Robust Numerical Algorithms	12RNA	Váchal	-	1+1 z	-	2
Monte Carlo Method	18MOCA	Virus	2+1 z	-	3	-
Low Temperature Plasmas and Discharges	12NIPL	Král	4 z, zk	-	4	-
Physics of High Energy Density Astrophysics	12FVHE 12ASF	Drška Kulhánek	2 zk -	- 2+2 zk	2 -	- 4
X-ray Photonics	12RFO	Přina	2 zk	-	2	-
Computer Simulations in Physics of Many Particles 1, 2	12PEMC12	Kotrla, Předota	2 zk	2 zk	2	2
Neural Computers and Their Applications	01NSAP	Hakl, Holeňa	3 zk	-	4	-
Evolutional Computing Systems	12EVS	Lažanský	2+1 zk	-	3	-
Foundations of Fuzzy Logic	01ZFL	Hájek	2 zk	-	2	-

Master Study Program

Field of Study: Engineering Informatics

Specialization: Information Technologies

year 1

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Probability and Statistics	01PRST	Hobza	3+1 z, zk	-	4	-
Introduction to Graph Theory B	01ZTGB	Ambrož	2+2 z, zk	-	4	-
Image Processing and Pattern Recognition 1	01ROZ1	Flusser, Zitová	-	2+2 zk	-	4
Waves, Optics and Atomic Physics	02VOAF	Tolar	4+2 z, zk	-	6	-
Physics 3	12BFY3	Šiňor	3+1 z, zk	-	4	-
Practical Informatics for Technics 3	12PIN3	Šiňor	-	1+1 z	-	2
Informatics 2	12INFA2	Blažej	-	2 kz	-	2
Information Systems 1, 2	12INS12	Novotný	2 z, zk	2 z, zk	2	2
Windows Programming	01PW	Čulík	2 z	-	2	-
Programming in Java	18PJ	Virus	2+2 z, zk	-	5	-
Programming of Peripherals Devices	01PERI	Čulík	2 z	-	2	-
Computer Control of Experiments	12POEX	Čech	-	2 z	-	2
Scientific and Technical Computing	12VTV	Procházka	-	1+1 z	-	2
Measurements Methods in Electronics and Optics	12MMEO	Přina	-	2 zk	-	2
Search Project 1, 2	12RPIT12	Procházka	0+5 z	0+10 z	5	10
<i>Optional courses:</i>						
Electronics 3	12EL3	Pavel	2 zk	-	2	-
High Frequency and Impulse Circuitry	12VFT	Pavel	-	2 z, zk	-	2
Microprocessors 1, 2	12MPR12	Čech	4 zk	2 zk	4	2
Introduction to Laser Technique	12ULAT	Jelínková, Šulc	2 kz	-	2	-

Master Study Program

Field of Study: Engineering Informatics

Specialization: Information Technologies

year 2

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Image Processing and Pattern Recognition 2	01ROZ2	Flusser	2+1 zk	-	3	-
Special Functions and Transformations in Image Analysis	01SFTO	Flusser	-	2 zk	-	2
Computer Graphics 1, 2	01POGR12	Oberhuber, Strachota	2 z	2 z	2	2
Optics Communications	12OPK	Kuchár	2 zk	-	2	-
Optoelectronics	12OPEL	Čtyroký	-	2 z, zk	-	2
Operating Systems	12OSY	Čech	3 zk	-	3	-
CAD Systems in Electronics	12CAD	Pavel	-	4 z, zk	-	4
Relational Databases	01REDA	Loupal	3 zk	-	3	-
Control Systems and Sensors	12RSEN	Hiršl	4 z, zk	-	4	-
Real Time Software	11RTSW	Jiroušek	-	2 z	-	3
English Graduate Standard 2	12EGS2	Procházka	6 kz	-	6	-
Research Project Seminar 1, 2	12VSIT12	Blažej	0+2 z	0+2 z	2	2
Research Project 1, 2	12VUIT12	Blažej	0+6 z	0+8 kz	6	8
<i>Optional courses:</i>						
Theoretical Physics 1, 2	02TEF12	Jex, Tolar	2+2 z, zk	2+2 z, zk	4	4
Integrated Optics	12INTO	Čtyroký	2 z, zk	-	2	-
Optical Sensors	12OSE	Homola	-	2 zk	-	2
Web for Coders	12WBK	Blažej	-	2+0 kz	-	2

Master Study Program

Field of Study: Engineering Informatics

Specialization: Information Technologies

year 3

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Signal and Data Processing	12ZSD	Klimo, Klír, Procházka	2+1 kz	-	4	-
Programmable Logic Arrays	17PLP	Kropík	-	2 zk	-	2
Introduction to Management	12UM	Malát	2 zk	-	2	-
Physics and Human Cognition	12FLP	Langer	-	2 z	-	2
Diploma Seminar 1, 2	12DSIT12	Blažej	0+2 z	0+2 z	2	2
Master Thesis 1, 2	12DPIT12	Blažej	0+10 z	0+20 z	10	20

Master Study Program

Field of Study: Engineering Informatics

Specialization: Software Engineering in Economics

year 1

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Econometrics ⁽¹⁾	18EKONS	Fiala	-	2+2 z, zk	-	5
Econometrics ⁽¹⁾	818EKON	Fiala, Kalčevová	-	2+2 z, zk	-	5
Numerical Methods 1 ⁽¹⁾	12NME1	Limpouch	-	2+2 z, zk	-	4
Numeric Methods ⁽¹⁾	818NME	Kubera	2+2 z, zk	-	5	-
Markup Languages for WWW ⁽¹⁾	18WEB	Liška	0+2 kz	-	3	-
Markup Languages for WWW ⁽¹⁾	818WEB	Liška	0+2 kz	-	3	-
Programming in MATLAB ⁽¹⁾	18MTL	Kukal	2+2 z, zk	-	5	-
Programming in the MATLAB System ⁽¹⁾	818MTL	Majerová	2+2 z, zk	-	5	-
Knowledge Economics ⁽²⁾	18ZNEK	Šrédľ	2+0 kz	-	3	-
Project Management ⁽²⁾	818PR	Kučera	-	2+1 kz	-	3
Finances and Banking ⁽²⁾	818FINB	Petrášek	2+1 zk	-	3	-
Marketing ⁽²⁾	818MARK	Petrášek	-	2+2 kz	-	4
Theory of Codes B ⁽¹⁾	01TKOB	Mareš	-	2+0 zk	-	2
Code Theory B ⁽¹⁾	818KOD	Horaisová	-	2+0 zk	-	2
Search Project 1, 2 ⁽³⁾	18RPSE12	Kukal	0+5 z	0+10 z	5	10
<i>Optional courses:</i>						
Team Development of Software 1, 2	818TVS12	Majerová, Moc	0+3 kz	0+3 kz	3	3
Data Processing for Publishing	12ZDP	Novotný	2 z	-	2	-
Software Seminar	818SOS	Fišer	-	0+2 z	-	2
Physics and Human Cognition	12FLP	Langer	-	2 z	-	2
Rhetoric ⁽⁴⁾	00RET	Kovářová	-	0+2 z	-	1
Introduction to Psychology ⁽⁴⁾	00UPSY	Oudová	-	0+2 z	-	1
Modeling of Traffic Systems	01MDS	Krbálek	-	2+1 z, zk	-	3
Computer Graphics 1, 2	01POGR12	Oberhuber, Strachota	2 z	2 z	2	2
History of Mathematics	01DEM	Balková	-	0+2 z	-	1
LaTeX - Publication Instrument	01PSL	Ambrož	-	0+2 z	-	2

(1) One course of the same title must be passed.

(2) One course of the same title must be passed.

(3) Bachelor project can be accepted as an alternative.

(4) Only one course in the indicated pair can be subscribed simultaneously.

Master Study Program

Field of Study: Engineering Informatics

Specialization: Software Engineering in Economics

year 2

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Probability and Applied Statistics	18AST	Fabian	1+1 z, zk	-	3	-
Models and Methods for Economic Decisions	18MEK	Fiala	2+2 z, zk	-	5	-
Monte Carlo Method	18MOCA	Virus	2+1 z	-	3	-
Object Oriented Programming	18OOP	Virus	2 z	-	2	-
Soft Computing	18SOFC	Kukal	2+2 kz	-	4	-
Applied Econometrics and Time Series Theory	18AEK	Kalčevová	2+2 z, zk	-	4	-
Software Engineering	18SWI	Merunka	2+2 kz	-	4	-
Modeling in UML	18MUML	Merunka	-	2+2 z, zk	-	4
Project Management of Economic Systems	18REK	Fiala	-	2+2 z, zk	-	4
Numerical Methods 2	01NME2	Beneš	-	2+0 kz	-	2
Fulltext Systems	18FULS	Liška	-	2+2 kz	-	4
Research Project 1, 2	18VUSE12	Kukal	0+6 z	0+8 kz	6	8
<i>Optional courses:</i>						
Programming for the .NET Framework	18NET	Virus	1+1 z, zk	-	2	-
Computers and Natural Language 1, 2	01POPJ12	Bojar, Zeman	0+2 z	0+2 z	2	2
Computer Graphics 1, 2	01POGR12	Oberhuber, Strachota	2 z	2 z	2	2
Advanced Methods of Numerical Linear Algebra	01PNLA	Mikyška	2 zk	-	3	-
Matlab Applications	18AMTL	Kukal	-	2+2 kz	-	4
Database System Decomposition	18DATS	Kukal	-	2+2 kz	-	4
Resolution of Physical Issues	18RFP	Novotný	-	1+2 kz	-	3
Parallel Algorithms and Architectures	01PAA	Oberhuber	-	0+3 kz	-	4
Languages and Automata	01JAA	Mareš	-	2 zk	-	2

Master Study Program

Field of Study: Engineering Informatics

Specialization: Software Engineering in Economics

year 3

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Modeling of Production Systems in Economy	18MOPR	Fiala	2+2 z, zk	-	5	-
Statistical Pattern Recognition and Decision Making Methods	18SROZ	Flusser	2+0 zk	-	3	-
Variational Methods B	01VAMB	Beneš	2 kz	-	2	-
Heuristic Algorithms	18HEUR	Kukal	-	2+2 kz	-	4
Background of Information Theory	18ZTI	Fabian	-	2+0 kz	-	2
Diploma Seminar 1, 2	18SD12	Kukal	0+2 z	0+2 z	2	2
Master thesis 1, 2	18DPSE12	Kukal	0+10 z	0+20 z	10	20
<i>Optional courses:</i>						
SQL Applications	18SQL	Kukal	0+2 z	-	2	-
Introduction to Graph Theory B	01ZTGB	Ambrož	2+2 z, zk	-	4	-
Methods for Sparse Matrices	01MRM	Mikyška	-	2 zk	-	3
Complexity Theory	01TSLO	Majerech	3 zk	-	3	-
Financial and Insurance Mathematics	01FIMA	Hora	2 zk	-	2	-
Nonlinear Programming	01NELI	Burdík	3 zk	-	4	-
Probabilistic Learning Models	01PMU	Hakl	2 zk	-	2	-
Dynamic Decision Making	01DYR	Kárný	3 zk	-	3	-
Introduction to Management	12UM	Malát	2 zk	-	2	-
Random Processes	01NAH	Michálek	3 zk	-	3	-
Number Theory	01TC	Masáková, Pelantová	-	4+0 zk	-	4
Image Processing and Pattern Recognition 1	01ROZ1	Flusser, Zitová	-	2+2 zk	-	4

Master Study Program

Field of Study: Physical Engineering

Specialization: Theory and Technology of Nuclear-Reactors

year 1

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Předměty povinné:</i>						
The Equations of Mathematical Physics ⁽¹⁾	01RMF	Krbálek	2+4 z, zk	-	6	-
Quantum Physics ⁽²⁾	02KF	Jizba	2+1 z, zk	-	3	-
Numerical Methods 2	01NME2	Beneš	-	2+0 kz	-	2
Nuclear Physics	02ZJF	Wagner	3+2 z, zk	-	6	-
Materials Science	14NMA	Haušild	2+1 kz	-	3	-
Materials Science for Reactors	14NMR	Haušild	-	2+0 zk	-	2
Introduction to Nuclear Reactor Physics	17ZAF	Frýbort, Zeman	4+2 z, zk	-	6	-
Thermohydraulic Design of Nuclear Devices	17THN12	Heřmanský, Kobyłka	2+0 z	4+2 z, zk	2	6
Basics of Electronics	17ZEL	Kropík	2+2 kz	-	3	-
Experimental Neutron Physics ⁽³⁾	17ENF	Kolros, Rataj	-	2+1 kz	-	2
Nuclear Reactors	17JARE	Heřmanský	-	2 zk	-	2
Introduction to Radiation Protection of Nuclear Facilities	17URO	Kolros	-	2+0 kz	-	2
Control Systems of Nuclear Reactors	17BES	Kropík	-	2+0 z, zk	-	2
Excursion ⁽⁴⁾	17EXK	Kobyłka	-	1 week z	-	1
Search Project 1, 2	17RPJR 12	Kobyłka	0+5 z	0+10 z	5	10
<i>Předměty volitelné:</i>						
Chemistry ⁽⁵⁾	15CHB	Silber, Štamberg	-	3+1 z, zk	-	4
Quantum Mechanics ⁽²⁾	02KVAN	Hlavatý	4+2 z, zk	-	6	-

(1) Grading in 01RMF requires grading in Calculus and Linear Algebra.

(2) One course obligatory - either 02KVAN, or 02KF.

(3) Subscription possible after grading in 17ZAF1.

(4) Course restricted to students of this specialization only.

(5) Course recommended - deals with chemistry of nuclear facilities.

Master Study Program

Field of Study: Physical Engineering

Specialization: Theory and Technology of Nuclear-Reactors

year 2

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Předměty povinné:</i>						
Nuclear Reactor Physics ⁽¹⁾	17FAR	Katovský, Zeman	2+2 z, zk	-	5	-
Core Physics and Fuel Management ⁽¹⁾	17PRF	Kropík, Sklenka	-	2+0 z, zk	-	3
Reactor Dynamics ⁽¹⁾	17DYR	Heřmanský, Huml	-	2+2 z, zk	-	4
Reactor Thermomechanics ^(1,2)	17TERR	Bílý, Heřmanský	2+2 z, zk	-	4	-
Experimental Reactor Physics ^(1,3)	17ERF	Rataj, Sklenka	-	4 kz	-	4
Nuclear Fuel Cycle	17JPC	Sklenka, Zeman	-	2+0 kz	-	2
Thermohydraulic Design of Nuclear Devices ⁽²⁾	17THN3	Kobylka	3+0 z, zk	-	3	-
Machines and Equipment of Nuclear Power Plants ⁽²⁾	17SAZ	Kobylka	-	2+1 z, zk	-	3
Foreign Short-Term Internship ⁽⁴⁾	17PEXZ	Kolros	-	2 weeks z	-	2
Research Project 1, 2	17VUJR12	Kolros	0+6 z	0+8 kz	6	8
<i>Předměty volitelné:</i>						
Engineering Mechanics	14TM	Kunz, Oliva	2+2 z, zk	-	4	-
Nuclear Technology Devices	17PRJT	Kolros	2+0 zk	-	2	-
Computer Control of Experiments	17PRE	Kropík	2+1 z, zk	-	3	-
New Nuclear Sources	17NJZ	Bílý	3 zk	-	3	-
Computer Modelling in Nuclear Reactor Physics	17MORF1	Katovský	-	2+2 kz	-	4
Digital Safety Systems of Nuclear Reactors	17CIBS	Kropík	2+0 z, zk	-	2	-
Economic Evaluation of Nuclear Power Plants	17EHJE	Starý	2 zk	-	2	-
Exploration of Research Reactors	17VYRR	Sklenka	-	2+0 zk	-	2
Selected Parts of Legislation	17VPL	Bílková, Fuchsová	-	2 z	-	2
Energy Sector and Energy Sources	17EEZ	Kobylka	-	2+1 z, zk	-	3

(1) Subscription possible only after grading in 17ZAF.

(2) Subscription possible only after grading in 17THN12.

(3) Subscription possible only after grading in 17ENF.

(4) Subscription possible only for students of this specialization.

Master Study Program

Field of Study: Physical Engineering

Specialization: Theory and Technology of Nuclear-Reactors

year 3

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Předměty povinné:</i>						
Radioactive Waste Management	17RAO	Konopásková	-	2 zk	-	2
Operational Course at VR-1 Reactor ⁽¹⁾	17OPK	Kropík, Rataj	4 z, zk	-	4	-
Nuclear Safety	17JBEZ	Heřmanský, Kříž	4 zk	-	4	-
Electrical Equipment of Nuclear Power Plants	17ELZ	Bouček, Kropík	2+1 z, zk	-	3	-
Professional Practice ⁽²⁾	17PRAX	Kropík	2 weeks z	-	4	-
Seminar	17SEMI	Kropík	-	0+2 z	-	2
Master Thesis 1, 2	17DPJR12	Kropík	0+10 z	0+20 z	10	20
<i>Předměty volitelné:</i>						
Computer Modelling in Nuclear Reactor Physics 2	17MORF2	Katovský	2+2 kz	-	4	-
Reliability of Nuclear Power Plants ⁽⁴⁾	17SPJE	Dušek, Matějka	2 zk	-	2	-
Simulation of NPP Operational States	17SIPS	Kobylka	0+3 kz	-	3	-
Control of Nuclear Power Plants ⁽⁴⁾	17RJE	Rubek	2 zk	-	2	-
Thermomechanics of Nuclear Fuel	17TMP	Kobylka, Valach	-	2+1 z, zk	-	3
Alternative Energy Resources ⁽³⁾	17AEZ	Škorpil	-	1 week z	-	3
Radiation Protection of Nuclear Facilities	17ROJ	Kolros	-	2+0 zk	-	2
Advanced Methods in Spent Fuel Reprocessing and Salt Reactor Technologies ⁽⁴⁾	17PPSR	Uhlíř	-	2+1 zk	-	3

(1) Subscription possible only after grading in 17ERF and 17DYR.

(2) Subscription possible only for students of this specialization.

(3) Classes at the ZČU 1 week in the semester. Předmět Subscription possible only for students of this specialization.

(4) Course open at least for 3 students. Subscription required no later than 3 workdays prior to the semester beginning.

Master Study Program

Field of Study: Nuclear Chemical Engineering

Specialization: Nuclear Energy and Environment

year 1

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
The Equations of Mathematical Physics ⁽¹⁾	01RMF	Krbálek	2+4 z, zk	-	6	-
Quantum Physics ⁽²⁾	02KF	Jizba	2+1 z, zk	-	3	-
Numerical Methods 2	01NME2	Beneš	-	2+0 kz	-	2
Nuclear Physics	02ZJF	Wagner	3+2 z, zk	-	6	-
Materials Science	14NMA	Haušild	2+1 kz	-	3	-
Materials Science for Reactors	14NMR	Haušild	-	2+0 zk	-	2
Introduction to Nuclear Reactor Physics	17ZAF	Frýbort, Zeman	4+2 z, zk	-	6	-
Thermohydraulic Design of Nuclear Devices	17THN12	Heřmanský, Kobyłka	2+0 z	4+2 z, zk	2	6
Basics of Electronics	17ZEL	Kropík	2+2 kz	-	3	-
Nuclear Reactors	17JARE	Heřmanský	-	2 zk	-	2
Experimental Neutron Physics ⁽³⁾	17ENF	Kolros, Rataj	-	2+1 kz	-	2
Introduction to Radiation Protection of Nuclear Facilities	17URO	Kolros	-	2+0 kz	-	2
Control Systems of Nuclear Reactors	17BES	Kropík	-	2+0 z, zk	-	2
Excursion ⁽⁴⁾	17EXK	Kobyłka	-	1 week z	-	1
Search Project 1, 2	17RPJE12	Kobyłka	0+5 z	0+10 z	5	10
<i>Optional courses:</i>						
Introduction to Environment	16ZIVO	Čechák, Thinová	2+0 kz	-	2	-
Chemistry ⁽⁵⁾	15CHB	Silber, Štamberg	-	3+1 z, zk	-	4
Quantum Mechanics ⁽²⁾	02KVAN	Hlavatý	4+2 z, zk	-	6	-

(1) Examination in 01RMF only after grading in Calculus and Linear Algebra.

(2) One exam obligatory - either 02KVAN, or 02KF.

(3) Subscription after grading in 17ZAF1.

(4) Open for students of this specialization only.

(5) Course recommended - deals with chemistry of nuclear facilities.

Master Study Program

Field of Study: Nuclear Chemical Engineering

Specialization: Nuclear Energy and Environment

year 2

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Nuclear Reactor Physics ⁽¹⁾	17FAR	Katovský, Zeman	2+2 z, zk	-	5	-
Thermohydraulic Design of Nuclear Devices ⁽²⁾	17THN3	Kobylka	3+0 z, zk	-	3	-
Reactor Thermomechanics ^(1,2)	17TERR	Bílý, Heřmanský	2+2 z, zk	-	4	-
Nuclear Fuel Cycle	17JPC	Sklenka, Zeman	-	2+0 kz	-	2
Core Physics and Fuel Management ⁽¹⁾	17PRF	Kropík, Sklenka	-	2+0 z, zk	-	3
Reactor Dynamics ⁽¹⁾	17DYR	Heřmanský, Huml	-	2+2 z, zk	-	4
Experimental Reactor Physics ^(1,3)	17ERF	Rataj, Sklenka	-	4 kz	-	4
Energy Sector and Energy Sources	17EEZ	Kobylka	-	2+1 z, zk	-	3
Foreign Short-Term Internship ⁽⁴⁾	17PEXZ	Kolros	-	2 weeks z	-	2
Research Project 1, 2	17VUJE12	Kolros	0+6 z	0+8 kz	6	8
<i>Optional courses:</i>						
Experimental Methods of Nuclear Physics	02EMJFB	Vrba	2 kz	-	2	-
Nuclear Technology Devices	17PRJT	Kolros	2+0 zk	-	2	-
Applied Nuclear Physics	02UJF	Bielčík	-	4 kz	-	4
Machines and Equipment of Nuclear Power Plants ⁽²⁾	17SAZ	Kobylka	-	2+1 z, zk	-	3
Control Systems of Nuclear Reactors	17BES	Kropík	-	2+0 z, zk	-	2
Computer Control of Experiments	17PRE	Kropík	2+1 z, zk	-	3	-
Economic Evaluation of Nuclear Power Plants	17EHJE	Starý	2 zk	-	2	-
Selected Parts of Legislation	17VPL	Bílková, Fuchsová	-	2 z	-	2
Computer Modelling in Nuclear Reactor Physics	17MORF1	Katovský	-	2+2 kz	-	4

(1) Subscription after grading in 17ZAF12.

(2) Subscription after grading in 17THN12.

(3) Subscription after grading in 17EXNF.

(4) The course applies for students of this specialization only.

Master Study Program

Field of Study: Nuclear Chemical Engineering

Specialization: Nuclear Energy and Environment

year 3

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Operational Course at VR-1 Reactor ⁽¹⁾	17OPK	Kropík, Rataj	4 z, zk	-	4	-
Nuclear Safety	17JBEZ	Heřmanský, Kříž	4 zk	-	4	-
Electrical Equipment of Nuclear Power Plants	17ELZ	Bouček, Kropík	2+1 z, zk	-	3	-
Alternative Energy Resources ⁽²⁾	17AEZ	Škorpil	-	1 week z	-	3
Professional Practice ⁽³⁾	17PRAX	Kropík	2 weeks z	-	4	-
Master Thesis 1, 2	17DPJE12	Kropík	0+10 z	0+20 z	10	20
<i>Optional courses:</i>						
Radioactive Waste Management	17RAO	Konopásková	-	2 zk	-	2
Reliability of Nuclear Power Plants ⁽⁴⁾	17SPJE	Dušek, Matějka	2 zk	-	2	-
Computer Control of Experiments	17PRE	Kropík	2+1 z, zk	-	3	-
Simulation of NPP Operational States	17SIPS	Kobylka	0+3 kz	-	3	-
Control of Nuclear Power Plants ⁽⁴⁾	17RJE	Rubek	2 zk	-	2	-
Economic Evaluation of Nuclear Power Plants	17EHJE	Starý	2 zk	-	2	-

(1) Subscription possible after grading in 17EXRF and 17DYR.

(2) Taught at the Westernbohemian University in Pilsen 1 week in the semester. The course applies for students of this specialization only.

(3) The course applies for students of this specialization only.

(4) Open for minimum 3 students subscribed 3 days prior the semester beginning.

Master Study Program

Field of Study: Nuclear Engineering

Specialization: Dosimetry and Application of Ionising Radiation

year 1

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
The Equations of Mathematical Physics ⁽¹⁾	01RMF	Krbálek	2+4 z, zk	-	6	-
Probability and Statistics	01PRST	Hobza	3+1 z, zk	-	4	-
Quantum Physics ⁽²⁾	02KF	Jizba	2+1 z, zk	-	3	-
Numerical Methods 2	01NME2	Beneš	-	2+0 kz	-	2
Nuclear and Radiation Physics 1, 2	16JRF12	Musílek, Urban	4+2 z, zk	2+2 z, zk	6	4
Fundamentals of Radiation Dosimetry 1, 2	16ZDOZ12	Trojek	2+2 z, zk	2+0 zk	4	2
Detectors of Ionizing Radiation	16DETE	Průša	-	4+0 zk	-	4
Elementary Labs	16ZPRA	Průša	-	0+2 kz	-	2
Search Project 1, 2	16RPDZ12	Vávru	0+5 z	0+10 z	5	10
<i>Optional courses:</i>						
Quantum Mechanics ⁽²⁾	02KVAN	Hlavatý	4+2 z, zk	-	6	-
Basic to Solid State Physics	11ZFPL	Kraus	2 kz	-	2	-
Experimental Neutron Physics	17ENF	Kolros, Rataj	-	2+1 kz	-	2
Nuclear Reactors	17JARE	Heřmanský	-	2 zk	-	2
Fundamentals of Human Biology, Anatomy and Physiology 1, 2	16ZBAF12	Doubková	2+2 z, zk	2+2 z, zk	4	4
Clinical Propaedeutic	16KPR	Votrubová	2+0 zk	-	2	-
Basic Electronics 1, 2	12ZEL12	Pavel	2+1 z, zk	2+1 z, zk	3	3

(1) Grading in 01RMF requires grading in all previous mathematical courses.

(2) Obligatory one of 02KVAN, 02KF

Master Study Program

Field of Study: Nuclear Engineering

Specialization: Dosimetry and Application of Ionising Radiation

year 2

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Monte Carlo Method	18MOCA	Virus	2+1 z	-	3	-
Nuclear Technology Devices	16ZJT	Čechák	2+0 zk	-	2	-
Labs from Detection and Dosimetry of Ionizing Radiation	16PDDZ	Průša	0+4 kz	-	5	-
Radiation Protection	16RAO	Vrba	4+0 zk	-	4	-
Instrumentation for Radiation Measurements	16MER	Voltr	2+0 zk	-	2	-
Introduction to Environment	16ZIVO	Čechák, Thinová	2+0 kz	-	2	-
Principles of Ionizing Radiation Application	16UAZ	Musílek	2+0 zk	-	2	-
Integral Dosimetry Methods	16IDOZ	Ambrožová, Musílek	-	2+0 zk	-	2
Applications of Ionizing Radiation in Science and Industry	16APL	Čechák	-	4+0 zk	-	5
Monte Carlo Method in Radiation Physics	16MCRF	Klusoň	-	2+2 z, zk	-	4
Methods of Analytical Measurement	16AMM	Spěváček	-	2+0 zk	-	2
Dosimetry and Radioactivity of the Environment	16DRZP	Čechák, Thinová	-	2+0 zk	-	2
Excursion	16EXK	Thinová	-	1 week z	-	2
Seminar	16SEMA	Vávrů	-	0+2 z	-	2
Research Project 1, 2	16VUDZ12	Trojek	0+6 z	0+8 kz	6	8
<i>Optional courses:</i>						
Radiation Effects in Matter	16REL	Spěváček	2+0 zk	-	2	-
Treatment of Experimental Data	16ZED	Spěváček	2+0 zk	-	2	-
Experimental Methods of Nuclear Physics	02EMJF	Vrba	2+0 zk	-	3	-
Practicum from Dosimetry of the Ionizing Radiation	16PDIZ	Thinová	-	0+4 kz	-	4

Master Study Program

Field of Study: Nuclear Engineering

Specialization: Dosimetry and Application of Ionising Radiation

year 3

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Medical Application of Ionizing Radiation	16AIZM	Novák	2+1 z, zk	-	3	-
Metrology of Ionizing Radiation	16MIOZ	Čechák	2+1 z, zk	-	4	-
Ionizing Radiation Spectrometry	16SPEK	Čechák	2+0 zk	-	3	-
Mathematical Methods and Modelling	16MMM	Klusoň	0+2 z	-	2	-
Microdosimetry	16MDOZ	Davídková	2+0 zk	-	2	-
Physics and Technic of the Nonionizing Radiation	16FNEI	Klusoň, Thinová	2+0 zk	-	2	-
Introduction to Particle Physics	16UCF	Smolík	2+0 zk	-	2	-
Seminar 1, 2	16SEM12	Vávřů	0+2 z	0+2 z	2	2
Master Thesis 1, 2	16DPDZ12	Vávřů	0+10 z	0+20 z	10	20
<i>Optional courses:</i>						
Neutron Dosimetry	16DNEU	Ploc	2+0 zk	-	2	-
Clinical Dosimetry	16KLD	Novotný	-	2+0 zk	-	2
Dosimetry of Internal Radiation Sources	16DZAR	Musílek	-	2+0 zk	-	2
Radiobiology	16RBIO	Davídková	-	2+0 zk	-	2
Practicum from Dosimetry of the Ionizing Radiation	16PDIZ	Thinová	-	0+4 kz	-	4
Experimental Methods of Nuclear Physics	02EMJF	Vrba	2+0 zk	-	3	-
Nuclear Reactors	17JARE	Heřmanský	-	2 zk	-	2
Ionizing Radiation Dosimetry-Special Excercises	16SPRA	Průša	0+2 kz	-	2	-
Radionuclides in the Environment	16RZP	Matolín, Thinová	-	2+0 zk	-	2
Mathematical Methods in Dosimetry and Spectrometry	16MMS	Klusoň	-	2+0 zk	-	2
Radiation Field and Shielding in Radiation Protection	16PZS	Trojek	-	1+1 z, zk	-	2

Master Study Program

Field of Study: Nuclear Engineering

Specialization: Experimental Nuclear Physics

year 1

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Subatomic Physics	02SF	Petráček	4+2 z, zk	-	6	-
Subatomic Physics 2	02SF2	Pachr, Petráček	-	4+2 z, zk	-	6
Quantum Mechanics	02KVAN	Hlavatý	4+2 z, zk	-	6	-
Quantum Mechanics 2	02KVA2B	Adam	-	4+2 z, zk	-	6
The Equations of Mathematical Physics ⁽¹⁾	01RMF	Krbálek	2+4 z, zk	-	6	-
Interaction of Ionisation Radiation	02IJZ	Vorobel	2+2 z, zk	-	4	-
Detectors of Ionizing Radiation	16DETE	Průša	-	4+0 zk	-	4
Workshop on Experimental Nuclear Physics 1 ⁽²⁾	02EJFS1	Petráček	5 days z	-	1	-
Search Project 1, 2	02RPEF12	Petráček	0+5 z	0+10 z	5	10
<i>Optional courses:</i>						
Probability and Statistics	01PRST	Hobza	3+1 z, zk	-	4	-
Numerical Methods 2	01NME2	Beneš	-	2+0 kz	-	2
Atomic and Molecular Physics	02AMF	Břeň	2+2 z, zk	-	4	-
Basics of Electronics	17ZEL	Kropík	2+2 kz	-	3	-
Functional Analysis 1	01FA1	Havlíček	2+1 z, zk	-	3	-
Functional Analysis 2	01FA2	Šťovíček	-	2+2 z, zk	-	4
Methods of Mathematical Physics ⁽¹⁾	01MMF	Šťovíček	-	4+2 z, zk	-	6
Object Oriented Programming	18OOP	Virus	2 z	-	2	-
Monte Carlo Method	18MOCA	Virus	2+1 z	-	3	-
Elementary Particle Physics - Models and Experiments	02EMEC	Chudoba	-	2 z	-	2
Functions of Complex Variable B	01FKPB	Pošta	2 z	-	2	-
Scientific and Technical Computing	12VTV	Procházka	-	1+1 z	-	2
Vacuum Physics and Technology	12VAK	Král, Voltr	2+2 kz	-	4	-

(1) One course obligatory - either 01RMF, or 01MMF.

(2) Course is open for students of this specialization only.

Master Study Program

Field of Study: Nuclear Engineering

Specialization: Experimental Nuclear Physics

year 2

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Quantum Field Theory 1, 2	02KTPE12	Adam, Tolar	3+1 z	3+1 z, zk	5	5
Experimental Methods of Nuclear Physics	02EMJF	Vrba	2+0 zk	-	3	-
Experimental Methods of Subnuclear Physics	02EMSF	Hladký	-	2+0 zk	-	2
Project Practicum 1, 2	02PPRA12	Čepila, Krůs	0+2 z	0+4 kz	2	4
Physics of Atomic Nuclei	02FAJ	Adam, Mareš, Petráček	-	4+0 zk	-	4
Neutron Physics	02NF	Šaroun, Vacík	-	2+2 z, zk	-	4
Excursion	02EXK	Petráček	-	1 week z	-	1
Research Project 1, 2	02VUEF12	Petráček	0+6 z	0+8 kz	6	8
<i>Optional courses:</i>						
Workshop on Experimental Nuclear Physics 2 ⁽¹⁾	02EJFS2	Petráček	5 days z	-	1	-
Physics of Ultra-Relativistic Nuclear Collisions	02RFTI	Petráček	2+1 z, zk	-	3	-
Nuclear Technology Devices	16ZJT	Čechák	2+0 zk	-	2	-
Groups and Representations	02GR	Chadzitaskos	2+1 z, zk	-	3	-
General Relativity	02OR	Semerák	-	3+0 zk	-	3
Nuclear Technology Devices	17PRJT	Kolros	2+0 zk	-	2	-
Numerical Calculations in Quantum Mechanics 1, 2	02NVKM12	Novotný	0+3 z	0+3 z	3	3
Introduction to Materials for Experimental Nuclear Physics	02UMAT	Škoda	2+0 zk	-	2	-
Embedded Systems in Nuclear Experiments	02EMBS	Kushpil	2+2 z	-	2	-
Charged Particles Accelerators	02UNC	Doležal	2+0 zk	-	2	-
Informatics for Experimental Nuclear Physicists	02FINF	Adamová, Petráček	-	2+0 z	-	2
Extreme States of Matter	02ESH	Šumbera	-	2+0 z	-	2
Seminar on Quark-Gluon Plasma	02RQGP	Bielčík, Tomášik	-	2+0 z	-	2
Statistical Physics in Nucleus-Nucleus Collisions	02SFHIC	Bielčík, Jex	2+1 z, zk	-	2	-
Lie Algebras and Lie Groups	02LIAG	Šnobl	-	3+2 z, zk	-	6
Differential Equations, Symmetries and Groups	02DRG	Šnobl	2+2 z	-	4	-
Programmable Logic Arrays	17PLP	Kropík	-	2 zk	-	2
Nuclear Astrophysics	02JAS	Nosek	2+0 zk	-	2	-
Path Integral	02DRI	Jizba	2+1 z, zk	-	3	-

(1) Course is open for students of this specialization only.

Master Study Program

Field of Study: Nuclear Engineering

Specialization: Experimental Nuclear Physics

year 3

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Quantum Chromodynamics	02ZQCD	Bielčíková, Němčík, Tomášik	3+2 z, zk	-	6	-
Nuclear Spectroscopy	02JSP	Wagner	-	2+2 z, zk	-	5
Seminar 1, 2	02SEM12	Petráček	0+2 z	0+2 z	2	2
Master Thesis 1, 2	02DPEF12	Petráček	0+10 z	0+20 z	10	20
<i>Optional courses:</i>						
Atomic and Molecular Spectroscopy	02AMS	Civiš	2+2 z, zk	-	4	-
Workshop on Experimental Nuclear Physics 3 ⁽¹⁾	02EJFS3	Petráček	5 days z	-	1	-
Advanced Seminar on Quark-Gluon Plasma	02SQGP	Bielčík, Bielčíková, Tomášik	0+2 z	-	2	-
Experimental Probes of Quark-Gluon Plasma	02ETQGP	Bielčík, Bielčíková, Tomášik	-	0+2 z	-	2
Fundamentals of Electroweak Theory	02ZESI	Hořejší	-	2+2 z, zk	-	4
Computer Control of Experiments	17PRE	Kropík	2+1 z, zk	-	3	-
Experimental Tests of the Standard Model	02ETSM	Leitner, Žáček	2+0 zk	-	2	-
Functional Integral 1, 2	02FCI12	Jizba	2+0 z	2+0 z	2	2
Instrumentation for Radiation Measurements	16MER	Voltr	2+0 zk	-	2	-

(1) Course is open for students of this specialization only.

Master Study Program

Field of Study: Radiological Physics

year 1

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
The Equations of Mathematical Physics	01RMF	Krbálek	2+4 z, zk	-	6	-
Probability and Statistics	01PRST	Hobza	3+1 z, zk	-	4	-
Numerical Methods 2	01NME2	Beneš	-	2+0 kz	-	2
Quantum Physics	02KF	Jizba	2+1 z, zk	-	3	-
Nuclear and Radiation Physics 1, 2	16JRF12	Musílek, Urban	4+2 z, zk	2+2 z, zk	6	4
Fundamentals of Human Biology, Anatomy and Physiology 1, 2	16ZBAF12	Doubková	2+2 z, zk	2+2 z, zk	4	4
Fundamentals of Radiation Dosimetry 1, 2	16ZDOZ12	Trojek	2+2 z, zk	2+0 zk	4	2
Detectors of Ionizing Radiation	16DETE	Průša	-	4+0 zk	-	4
Clinical Propaedeutic	16KPR	Votrubová	2+0 zk	-	2	-
Elementary Labs	16ZPRA	Průša	-	0+2 kz	-	2
Search Project 1, 2	16RPRF12	Vávru	0+5 z	0+10 z	5	10
<i>Optional courses:</i>						
Basic to Solid State Physics	11ZFPL	Kraus	2 kz	-	2	-
Quantum Mechanics ⁽¹⁾	02KVAN	Hlavatý	4+2 z, zk	-	6	-

(1) Can replace 02KF

Master Study Program

Field of Study: Radiological Physics

year 2

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Nuclear Technology Devices	16ZJT	Čechák	2+0 zk	-	2	-
Integral Dosimetry Methods	16IDOZ	Ambrožová, Musílek	-	2+0 zk	-	2
Instrumentation for Radiation Measurements	16MER	Voltr	2+0 zk	-	2	-
Monte Carlo Method in Radiation Physics	16MCRF	Klusoň	-	2+2 z, zk	-	4
Image Processing and Pattern Recognition 1	01ROZ1	Flusser, Zitová	-	2+2 zk	-	4
Introduction to Quality Management in Health Care	16USRJ	Pešek	1+1 z	-	2	-
Ethics in Health Care	16EZ	Příhoda	1+0 z	-	1	-
Hygiene a Epidemiology	16HE	Lohynská	1+0 z	-	1	-
Biochemistry and Pharmacology	16BAF	Kovář	2+0 zk	-	2	-
Radiation Protection	16RAO	Vrba	4+0 zk	-	4	-
Medical Informatics	16INZ	Klusoň	1+1 kz	-	2	-
Basics of First Aid	16ZPP	Málek	0+2 z	-	2	-
Treatment of Experimental Data	16ZED	Spěváček	2+0 zk	-	2	-
Radiological Physics - Diagnostic Radiology	16RFRD	Novák	2+1 z, zk	-	3	-
Radiological Physics - Nuclear Medicine	16RFNM	Trnka	-	2+1 z, zk	-	3
Radiobiology	16RBIO	Davídková	-	2+0 zk	-	2
Radiological Physics - Radiotherapy 1	16RFRT1	Koniarová	-	2+1 z, zk	-	3
Pathology, Anatomy, and Physiology in Imaging Techniques 1	16PAFZ1	Válek	-	2+0 zk	-	2
Seminar	16SEMA	Vávrů	-	0+2 z	-	2
Excursion	16EXK	Thinová	-	1 týden z	-	2
Research Project 1, 2	16VURF12	Trojek	0+6 z	0+8 kz	6	8
<i>Optional courses:</i>						
Principles of Ionizing Radiation Application	16UAZ	Musílek	2+0 zk	-	2	-
Methods of Analytical Measurement	16AMM	Spěváček	-	2+0 zk	-	2
Applications of Ionizing Radiation in Science and Industry	16APL	Čechák	-	4+0 zk	-	5

Master Study Program

Field of Study: Radiological Physics

year 3

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Radiological Physics - Radiotherapy 2	16RFRT2	Koniarová	2+1 z, zk	-	3	-
Pathology, Anatomy, and Physiology in Imaging Techniques 2	16PAFZ2	Válek	2+0 zk	-	2	-
Clinical Dosimetry	16KLD	Novotný	-	2+0 zk	-	2
Nuclear Medicine - Clinical Training	16NMKP	Čechák	2 týd z	-	4	-
X-Ray Diagnostics - Clinical Training	16RDKP	Čechák	2 týd z	-	4	-
Radiotherapy- Clinical Training	16RTKP	Čechák	-	2 týd z	-	4
Labs from Detection and Dosimetry of Ionizing Radiation	16PDDZ	Průša	0+4 kz	-	5	-
Metrology of Ionizing Radiation	16MIOZ	Čechák	2+1 z, zk	-	4	-
Technical and Health-Care Regulations	16TZP	Závoda	-	2+0 z	-	2
Seminar 1, 2	16SEM12	Vávrů	0+2 z	0+2 z	2	2
Master Thesis 1, 2	16DPRF12	Vávrů	0+10 z	0+20 z	10	20
<i>Optional courses:</i>						
Image Processing and Pattern Recognition 2	01ROZ2	Flusser	2+1 zk	-	3	-
Ionizing Radiation Spectrometry	16SPEK	Čechák	2+0 zk	-	3	-
Dosimetry of Internal Radiation Sources	16DZAR	Musílek	-	2+0 zk	-	2
Microdosimetry	16MDOZ	Davídková	2+0 zk	-	2	-
Radiation Effects in Matter	16REL	Špěváček	2+0 zk	-	2	-
Neutron Dosimetry	16DNEU	Ploc	2+0 zk	-	2	-
Monte Carlo Method	18MOCA	Virus	2+1 z	-	3	-

Master Study Program

Field of Study: Physical Engineering

Specialization: Solid State Engineering

year 1

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
The Equations of Mathematical Physics	01RMF	Krbálek	2+4 z, zk	-	6	-
Probability and Statistics	01PRST	Hobza	3+1 z, zk	-	4	-
Numerical Methods 2	01NME2	Beneš	-	2+0 kz	-	2
Quantum Mechanics	02KVAN	Hlavatý	4+2 z, zk	-	6	-
Structure of Solid State 1	11SPL1	Kraus	2 zk	-	3	-
Structure of Solid State 2	11SPL2	Ganev	-	2 zk	-	3
Introduction to Physics of Condensed Matter	11ZFKL	Zajac	-	4 zk	-	4
Search Project 1, 2	11RPIP12	Vratislav	0+5 z	0+10 z	5	10
<i>Optional courses:</i>						
Linear Circuit Analysis	11ANEL	Jiroušek	4 z, zk	-	4	-
Logical Circuits and Microprocessors	11MIK	Jiroušek	-	4 z, zk	-	4
Applications of Group Theory in Solid State Physics	11APLG	Potůček	2 zk	-	2	-
Computability and Mathematical Logic	01VYML	Mareš	4 zk	-	4	-
Languages and Automata	01JAA	Mareš	-	2 zk	-	2

Master Study Program

Field of Study: Physical Engineering

Specialization: Solid State Engineering

year 2

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Semiconductor Physics 1	11POL1	Potůček	4 zk	-	6	-
Physics of Magnetic Materials	11MAGN	Zajac	-	2 zk	-	3
Physics of Metals	11KOV	Lejček	2 zk	-	3	-
Physics of Dielectrics	11DIEL	Bryknar	-	2 zk	-	3
Diploma Seminar 1, 2	11SEM12	Kraus, Vratislav	0+2 z	0+2 z	3	3
Solid State Theory 1	11TPL1	Zajac	4 zk	-	6	-
Solid State Theory 2	11TPL2	Zajac	-	2 zk	-	3
Research Project 1, 2	11VUIP12	Vratislav	0+6 z	0+8 kz	6	8
<i>Optional courses:</i>						
Real Time Software	11RTSW	Jiroušek	-	2 z	-	3
Practical Exercises from Solid State Structure Analysis	11PSPL	Ganev, Vratislav	0+4 kz	-	4	-
Semiconductor Physics 2	11POL2	Aubrecht	-	2 zk	-	2
Practical Training of Semiconductors	11PPOL	Aubrecht, Klepáček, Potůček	-	0+4 kz	-	4
Superconductivity and Low Temperature	11SUPR	Janů, Středa	4 zk	-	4	-
Measuring Methods of Semiconductors	11MMPV	Aubrecht, Klepáček	2 z	-	2	-
Construction of Semiconductor Devices	11KPS	Sopko	-	2 zk	-	2
Chemical Aspects of Solids	11CHA	Hejtmánek	-	2 zk	-	2
Technology of Microwave and Optoelectronic Devices	11TVOS	Sopko	-	2 zk	-	2
Practical Training in Electronics	11EP	Jiroušek	0+4 kz	-	4	-
Metallic Oxides	11KO	Hejtmánek	2 zk	-	2	-
Physics of Solid State Phase Transitions	11FPPL	Hlinka	-	2 zk	-	2
Applied Neutron Diffractometry	11AND	Vratislav	2 zk	-	2	-
Diffraction Methods of Structural Biology	11DMSB	Dohnálek	-	3 z, zk	-	3
Quantum Computation	11KVAP	Čerňanský	-	2 zk	-	2
Molecular Nanosystems	11MONA	Kratochvílová	2 zk	-	2	-
Optical Spectroscopy of Inorganic Solids	11OSAL	Potůček	-	2 zk	-	2

Master Study Program

Field of Study: Physical Engineering

Specialization: Solid State Engineering

year 3

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Optical Properties of Solids	11OPT	Bryknar	2 zk	-	3	-
Professional Practice	11PRAK	Vratislav	2 týdny z	-	5	-
Diploma Seminar 3, 4	11SEM34	Kraus, Vratislav	0+2 z	0+2 z	2	2
Master Thesis 1, 2	11DPIP12	Vratislav	0+10 z	0+20 z	10	20
<i>Optional courses:</i>						
Special Semiconductor Materials and Devices	11SMAT	Sopko	2 zk	-	2	-
Modern Measuring Methods in Physics	11MMM	Vratislav	4 z	-	4	-
Surface Physics 1, 2	11FYPO12	Kalvoda	2 zk	2 zk	2	2
Semiconductor Detectors	11DETE	Sopko	-	2 zk	-	2
Theory and Construction of Photovoltaic Cells	11PCPC	Pfleger	2 zk	-	2	-
Neutronography in Material Research	11NMV	Vratislav	-	2 zk	-	2
Diffraction Analysis of Mechanical Stress	11DAN	Ganev, Kraus	2 zk	-	2	-
Introduction into the Chemistry and Physics of Polymer Materials	11CFPL	Lukáš	-	2 zk	-	2
Smart Materials and Their Applications	11SMAM	Potůček, Sedlák	2 zk	-	2	-
Computer Simulation of Condensed Matter	11SIPL	Kalvoda, Sedlák	-	2 zk	-	2
Principles and Applications of Optical Sensors with Practical Trainings	11PAO	Aubrecht, Klepáček	2+0 zk	-	2	-
Seminar in Theory of Solid State	11STPL	Štěpánková	-	0+2 kz	-	2

Master Study Program

Field of Study: Physical Engineering

Specialization: Material Sciences and Engineering

year 1

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
The Equations of Mathematical Physics	01RMF	Krbálek	2+4 z, zk	-	6	-
Numerical Methods 2	01NME2	Beneš	-	2+0 kz	-	2
Quantum Mechanics	02KVAN	Hlavatý	4+2 z, zk	-	6	-
Engineering Mechanics	14TEM	Kunz	4 z, zk	-	6	-
Dynamics of Linear Systems	14DYLS	Kunz	-	2+0 z, zk	-	2
Physics of Metals 1	11FKO1	Kraus	2 zk	-	3	-
Metal Physics 2	14FKO2	Haušild, Karlík, Kraus	-	6 z, zk	-	6
Elasticity 1	14EME1	Materna, Oliva	-	4 z, zk	-	4
Testing and Processing of Metals and Alloys	14ZZKS	Dalíková, Lausmann	-	4 kz	-	4
Search Project 1, 2	14RPSM12	Kunz	0+5 z	0+10 z	5	10
<i>Optional courses:</i>						
Probability and Statistics	01PRST	Hobza	3+1 z, zk	-	4	-
Instrumentation and Measurement	11ELEA	Jiroušek	-	2 z, zk	-	2

Master Study Program

Field of Study: Physical Engineering

Specialization: Material Sciences and Engineering

year 2

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Dynamics of Continuum	14DYKO	Horáček	2+0 z, zk	-	3	-
Fracture Mechanics 1, 2	14LME12	Kunz	2+0 z, zk	2+0 z, zk	3	3
Analysis of Experimental Data 1, 2	14AED12	Kopřiva	2 z, zk	2 z, zk	3	3
Experimental Methods 1, 2	14EXM12	Jaroš, Kovářík, Nedbal, Siegl	4 kz	4 kz	4	4
Physical Metallurgy 1, 2	14FYM12	Chráska, Karlík	4 z, zk	2+0 z, zk	6	3
Plasticity 1	14PLAS1	Oliva	-	2+0 z, zk	-	3
Fatigue of Materials	14UNMA	Lauschmann	-	2+0 kz	-	3
Research Project 1, 2	14VUSM12	Kopřiva	0+6 z	0+8 kz	6	8
<i>Optional courses:</i>						
Variational Methods B	01VAMB	Beneš	2 kz	-	2	-
Elasticity 2	14EME2	Materna, Oliva	4 z, zk	-	6	-
Computational Mechanics	14PME	Okrouhlík	-	3 kz	-	4

Master Study Program

Field of Study: Physical Engineering

Specialization: Material Sciences and Engineering

year 3

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Non-Metallic Materials	14NEKO	Haušild, Karlík	2+0 z, zk	-	3	-
Plasticity 2	14PLAS2	Oliva	2+0 z, zk	-	4	-
Theory of Reliability	14TSPO	Kopřiva	2+0 z, zk	-	3	-
Practicum in Finite Elements Methods	14PMKP	Materna	0+2 kz	-	3	-
Nondestructive Diagnostics	14NEDI	Převorovský	2 z	-	3	-
Intrinsic Dynamics of Materials	14VDYM	Seiner	2+0 z	-	3	-
Pre-diploma Practice	14PRAX	Oliva	2 týdny z	-	3	-
Master Thesis 1, 2	14DPSM12	Oliva	0+10 z	0+20 z	10	20
<i>Optional courses:</i>						
Wave Phenomena in Solids	14VLN	Červ	2+0 z	-	3	-
Seminar	14SEM	Siegl	-	0+4 z	-	8
Fractography and Failure Analysis	14FAP	Siegl	-	2+0 z	-	3

Master Study Program

Field of Study: Physical Engineering

Specialization: Laser Technology and Electronics

year 1

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
The Equations of Mathematical Physics	01RMF	Krbálek	2+4 z, zk	-	6	-
Solid State Physics	11FPL	Kraus	-	4 zk	-	4
Quantum Mechanics	02KVAN	Hlavatý	4+2 z, zk	-	6	-
Optical Physics 1	12FOPT1	Fiala	3 z, zk	-	3	-
Electrodynamics	12ELDN	Kálal	4 z, zk	-	4	-
Guided Electromagnetic Waves ⁽¹⁾	12VED	Čtyroký	-	4 z, zk	-	4
Optical Spectroscopy	12OPS	Michl	-	2 zk	-	2
Application of Lasers	12APL	Jančárek, Jelínková	2 z, zk	-	2	-
Laser Systems	12LAS	Kubeček	-	2+1 z, zk	-	3
Electronics 3	12EL3	Pavel	2 zk	-	2	-
Electronics Practicum 1, 2	12EP12	Pavel	0+2 kz	0+2 kz	3	3
Search Project 1, 2	12RPLT12	Jelínková	0+5 z	0+10 z	5	10
<i>Optional courses:</i>						
Statistical Optics	12SOP	Richter	2 z, zk	-	2	-
Microprocessors 1, 2	12MPR12	Čech	4 zk	2 zk	4	2
Preparation of Semiconductor Nanostructures	12PN	Hulicius	-	2 zk	-	2
Optical Physics 2	12FOPT2	Škereň	-	2 z, zk	-	2
Optics Communications	12OPK	Kuchár	2 zk	-	2	-
Geometrical Optics	12GEOP	Fiala	-	3+1 z, zk	-	4
Introduction to Laser Technique	12ULAT	Jelínková, Šulc	2 kz	-	2	-
Vacuum Physics and Technology	12VAK	Král, Voltr	2+2 kz	-	4	-
Basic Optical Laboratory	12ZPOP	Bodnár, Škereň	-	0+4 kz	-	6
Basic Laser Technique Laboratory ⁽²⁾	12ZPLT	Blažej, Gavrilov, Kubeček	-	0+4 kz	-	6
Nanotechnology	12NT	Hulicius	2 zk	-	2	-
Selected Nanoelectronic Chapters	12VKN	Hulicius	-	2 kz	-	2
Signal and Data Processing	12ZSD	Klímo, Klír, Procházka	2+1 kz	-	4	-
Computer Control of Experiments	12POEX	Čech	-	2 z	-	2
Low Temperature Plasmas and Discharges	12NIPL	Král	4 z, zk	-	4	-
Principles of Plasma Physics	12ZFP	Limpouch	-	3+1 z, zk	-	4
Ion Beam Techniques and Applications	12TAIS	Král	-	3 zk	-	3
Functions of Complex Variable B	01FKPB	Pošta	2 z	-	2	-
Numerical Methods 2	01NME2	Beneš	-	2+0 kz	-	2

(1) Grading in 12VED requires grading in 12ELDN.

(2) Grading in 12ZPLT requires grading in 12ULT or in 12ULAT.

Master Study Program

Field of Study: Physical Engineering

Specialization: Laser Technology and Electronics

year 2

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Quantum Electronics ⁽¹⁾	12KVEN	Richter	3+1 z, zk	-	5	-
Laser Physics	12FLA	Šulc	-	4 z, zk	-	4
Nonlinear Optics ⁽²⁾	12NLOP	Bodnár, Fiala, Richter	-	3+1 z, zk	-	5
Solid-state, Diode and Dye lasers	12PDBL	Jelínková, Kubeček	2 z, zk	-	2	-
Gas and X-ray Lasers	12RTGL	Jančárek, Vrbová	-	2 z, zk	-	2
Open Resonators	12ORE	Kubeček	2+1 z, zk	-	3	-
Physics of Detection and Detectors of Optical Radiation	12FDD	Pína	2 zk	-	2	-
Measurements Methods in Electronics and Optics	12MMEO	Pína	-	2 zk	-	2
Advanced Laser Technique Laboratory	12PPLT	Kubeček, Němec	0+4 kz	-	6	-
Seminar of Laser, Plasma and Beam Technologies	12LAPT	Jančárek, Jelínková, Král	-	0+4 z	-	4
Research Project 1, 2	12VULT12	Jelínková	0+6 z	0+8 kz	6	8
<i>Optional courses:</i>						
X-ray Photonics	12RFO	Pína	2 zk	-	2	-
Quantum Optics ⁽³⁾	12KVO	Richter	-	3+1 z, zk	-	4
Advanced Laser Spectroscopy ⁽⁵⁾	12PLS	Michl	2 zk	-	2	-
Optics Communications	12OPK	Kuchár	2 zk	-	2	-
Optical Sensors	12OSE	Homola	-	2 zk	-	2
Laser in Medicine Practice	12PLM	Jelínková, Němec	-	0+4 kz	-	6
Nanoelectronics	12NAE	Voves	2 zk	-	2	-
Preparation of Semiconductor Nanostructures	12PN	Hulicius	-	2 zk	-	2
Fourier Optics and Optical Signal Processing ⁽⁴⁾	12OZS	Škereň	3 z, zk	-	3	-
Semiconductor Physics 1	11POL1	Potůček	4 zk	-	6	-
Physics of Dielectrics	11DIEL	Bryknar	-	2 zk	-	3
Operating Systems	12OSY	Čech	3 zk	-	3	-

(1) Grading in 12KVEN requires grading in 02KVAN.

(2) Grading in 12NLOP requires grading in 12FOPT1.

(3) Grading in 12KVO requires grading in 12KVEN.

(4) Grading in 12OZS requires grading in 12FOPT2.

(5) Grading in 12PLS requires grading in 12OPS.

Master Study Program

Field of Study: Physical Engineering

Specialization: Laser Technology and Electronics

year 3

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Fiber Lasers and Amplifiers	12VLA	Kubeček, Peterka	3 zk	-	3	-
Ultra-short Pulse Generation	12UKP	Kubeček	2 zk	-	2	-
Electronics for Lasers	12ELA	Čech, Pavel	2 zk	-	2	-
Physics and Human Cognition	12FLP	Langer	-	2 z	-	2
Diploma Seminar 1, 2	12DSL12	Jelínková	0+2 z	0+2 z	2	2
Master Thesis 1, 2	12DPL12	Jelínková	0+10 z	0+20 z	10	20
<i>Optional courses:</i>						
Advanced Optical Laboratory ⁽¹⁾	12PPOP	Škereň	0+4 kz	-	6	-
Control Systems and Sensors	12RSEN	Hiršl	4 z, zk	-	4	-
Chemical Aspects of Solids	11CHA	Hejtmánek	-	2 zk	-	2
Introduction to Management	12UM	Malát	2 zk	-	2	-

(1) Subscription of 12PPOP possible after grading in 12FOPT1 and 12FOPT2.

Master Study Program

Field of Study: Physical Engineering

Specialization: Optical Physics

year 1

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
The Equations of Mathematical Physics	01RMF	Krbálek	2+4 z, zk	-	6	-
Solid State Physics	11FPL	Kraus	-	4 zk	-	4
Quantum Mechanics	02KVAN	Hlavatý	4+2 z, zk	-	6	-
Optical Physics 1, 2	12FOPT12	Fiala, Škereň	3 z, zk	2 z, zk	3	2
Electrodynamics	12ELDN	Kálal	4 z, zk	-	4	-
Guided Electromagnetic Waves ⁽¹⁾	12VED	Čtyrokový	-	4 z, zk	-	4
Statistical Optics	12SOP	Richter	2 z, zk	-	2	-
Optical Spectroscopy	12OPS	Michl	-	2 zk	-	2
Geometrical Optics	12GEOP	Fiala	-	3+1 z, zk	-	4
Search Project 1, 2	12RPOF12	Škereň	0+5 z	0+10 z	5	10
<i>Optional courses:</i>						
Electronics 3	12EL3	Pavel	2 zk	-	2	-
Electronics Practicum 1, 2	12EP12	Pavel	0+2 kz	0+2 kz	3	3
Introduction to Laser Technique	12ULAT	Jelínková, Šulc	2 kz	-	2	-
Vacuum Physics and Technology	12VAK	Král, Voltr	2+2 kz	-	4	-
Basic Optical Laboratory	12ZPOP	Bodnár, Škereň	-	0+4 kz	-	6
Basic Laser Technique Laboratory ⁽²⁾	12ZPLT	Blažej, Gavrilov, Kubeček	-	0+4 kz	-	6
Nanotechnology	12NT	Hulicius	2 zk	-	2	-
Selected Nanoelectronic Chapters	12VKN	Hulicius	-	2 kz	-	2
Signal and Data Processing	12ZSD	Klimo, Klír, Procházka	2+1 kz	-	4	-
Computer Control of Experiments	12POEX	Čech	-	2 z	-	2
Low Temperature Plasmas and Discharges	12NIPL	Král	4 z, zk	-	4	-
Principles of Plasma Physics	12ZFP	Limpouch	-	3+1 z, zk	-	4
Functions of Complex Variable B	01FKPB	Pošta	2 z	-	2	-
Numerical Methods 2	01NME2	Beneš	-	2+0 kz	-	2

(1) Grading in 12VED possible after grading in 12ELDN.

(2) Subscription of 12ZPLT possible after grading in 12ULT or in 12ULAT.

Master Study Program

Field of Study: Physical Engineering

Specialization: Optical Physics

year 2

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Quantum Electronics ⁽¹⁾	12KVEN	Richter	3+1 z, zk	-	5	-
Quantum Optics ⁽²⁾	12KVO	Richter	-	3+1 z, zk	-	4
Fourier Optics and Optical Signal Processing ⁽³⁾	12OZS	Škereň	3 z, zk	-	3	-
Nonlinear Optics ⁽⁴⁾	12NLOP	Bodnár, Fiala, Richter	-	3+1 z, zk	-	5
Integrated Optics	12INTO	Čtyrokový	2 z, zk	-	2	-
Optical Sensors	12OSE	Homola	-	2 zk	-	2
X-ray Photonics	12RFO	Přina	2 zk	-	2	-
Advanced Optical Laboratory ⁽⁵⁾	12PPOP	Škereň	0+4 kz	-	6	-
Research Project 1, 2	12VUOF12	Škereň	0+6 z	0+8 kz	6	8
<i>Optional courses:</i>						
Physics of Detection and Detectors of Optical Radiation	12FDD	Přina	2 zk	-	2	-
Application of Lasers	12APL	Jančárek, Jelínková	2 z, zk	-	2	-
Laser Physics	12FLA	Šulc	-	4 z, zk	-	4
Advanced Laser Spectroscopy ⁽⁶⁾	12PLS	Michl	2 zk	-	2	-
Optics Communications	12OPK	Kuchár	2 zk	-	2	-
Measurements Methods in Electronics and Optics	12MMEO	Přina	-	2 zk	-	2
Nanoscopy and Nanocharacterization	12NAN	Fejfar	2 zk	-	2	-
Preparation of Semiconductor Nanostructures	12PN	Hulicius	-	2 zk	-	2
Ion Beam Techniques and Applications	12TAIS	Král	-	3 zk	-	3
Computer Algebra	12POAL	Liska	2 kz	-	2	-

(1) Grading in 12KVEN requires grading in 02KVAN.

(2) Grading in 12KVO requires grading in 12KVEN.

(3) Grading in 12OZS requires grading in 12FOPT2.

(4) Grading in 12NLOP requires grading in 12FOPT1.

(5) Subscription of 12PPOP requires grading in 12FOPT1 and 12FOPT2.

(6) Grading in 12PLS requires grading in 12OPS.

Master Study Program

Field of Study: Physical Engineering

Specialization: Optical Physics

year 3

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Selected Chapters of Modern Optics	12MODO	Květoň	2 z	-	2	-
Excursions to Optical Workplaces	12EOP	Najdek	0+4 z	-	4	-
Physics and Human Cognition	12FLP	Langer	-	2 z	-	2
Diploma Seminar 1, 2	12DSOF12	Jelínková	0+2 z	0+2 z	2	2
Master Thesis 1, 2	12DPOF12	Škereň	0+10 z	0+20 z	10	20
<i>Optional courses:</i>						
Nanoelectronics	12NAE	Voves	2 zk	-	2	-
Fiber Lasers and Amplifiers	12VLA	Kubeček, Peterka	3 zk	-	3	-
Advanced Laser Spectroscopy (1)	12PLS	Michl	2 zk	-	2	-
Spontaneously-grown Structures of Selected Nanomaterials	12SRS	Bouda	2 kz	-	2	-
Chemical Aspects of Solids	11CHA	Hejtmánek	-	2 zk	-	2
Introduction to Management	12UM	Malát	2 zk	-	2	-

(1) Grading in 12PLS after grading in 12OPS.

Master Study Program

Field of Study: Physical Engineering

Specialization: Physics of Nanostructures

year 1

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
The Equations of Mathematical Physics	01RMF	Krbálek	2+4 z, zk	-	6	-
Solid State Physics	11FPL	Kraus	-	4 zk	-	4
Quantum Mechanics	02KVAN	Hlavatý	4+2 z, zk	-	6	-
Optical Physics 1, 2	12FOPT12	Fiala, Škereň	3 z, zk	2 z, zk	3	2
Electrodynamics	12ELDN	Kálal	4 z, zk	-	4	-
Guided Electromagnetic Waves ⁽¹⁾	12VED	Čtyroký	-	4 z, zk	-	4
Statistical Optics	12SOP	Richter	2 z, zk	-	2	-
Optical Spectroscopy	12OPS	Michl	-	2 zk	-	2
Nanochemistry	12NCH	Proška	2 zk	-	2	-
Search Project 1, 2	12RPFN12	Richter	0+5 z	0+10 z	5	10
<i>Optional courses:</i>						
Electronics 3	12EL3	Pavel	2 zk	-	2	-
Measurements Methods in Electronics and Optics	12MMEO	Pína	-	2 zk	-	2
Geometrical Optics	12GEOP	Fiala	-	3+1 z, zk	-	4
Introduction to Laser Technique	12ULAT	Jelínková, Šulc	2 kz	-	2	-
Vacuum Physics and Technology	12VAK	Král, Voltr	2+2 kz	-	4	-
Basic Optical Laboratory	12ZPOP	Bodnár, Škereň	-	0+4 kz	-	6
Basic Laser Technique Laboratory ⁽²⁾	12ZPLT	Blažej, Gavrilov, Kubeček	-	0+4 kz	-	6
Physics of Detection and Detectors of Optical Radiation	12FDD	Pína	2 zk	-	2	-
Nanotechnology	12NT	Hulicius	2 zk	-	2	-
Selected Nanoelectronic Chapters	12VKN	Hulicius	-	2 kz	-	2
Signal and Data Processing	12ZSD	Klimo, Klír, Procházka	2+1 kz	-	4	-
Computer Control of Experiments	12POEX	Čech	-	2 z	-	2
Low Temperature Plasmas and Discharges	12NIPL	Král	4 z, zk	-	4	-
Principles of Plasma Physics	12ZFP	Limpouch	-	3+1 z, zk	-	4
Functions of Complex Variable	01FKPB	Pošta	2 z	-	2	-
B Numerical Methods 2	01NME2	Beneš	-	2+0 kz	-	2

(1) Grading in 12VED requires grading in 12ELDN.

(2) Subscription of 12ZPLT possible after grading in 12ULT or in 12ULAT.

Master Study Program

Field of Study: Physical Engineering

Specialization: Physics of Nanostructures

year 2

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Quantum Electronics ⁽¹⁾	12KVEN	Richter	3+1 z, zk	-	5	-
Nonlinear Optics ⁽²⁾	12NLOP	Bodnár, Fiala, Richter	-	3+1 z, zk	-	5
Integrated Optics	12INTO	Čtyroký	2 z, zk	-	2	-
Optical Sensors	12OSE	Homola	-	2 zk	-	2
Nanophysics	12NF	Richter, Šiňor	2 zk	-	2	-
Surface and Surface-boundaries Properties	12PR	Cháb	-	2 zk	-	2
Optical Semiconductors Properties	12OVP	Pelant	2 zk	-	2	-
Preparation of Semiconductor Nanostructures	12PN	Hulicius	-	2 zk	-	2
Nanoscopy and Nanocharacterization	12NAN	Fejfar	2 zk	-	2	-
Research Project 1, 2	12VUFN12	Richter	0+6 z	0+8 kz	6	8
<i>Optional courses:</i>						
Measurements Methods in Electronics and Optics	12MMEO	Přina	-	2 zk	-	2
Optics Communications	12OPK	Kuchár	2 zk	-	2	-
X-ray Photonics	12RFO	Přina	2 zk	-	2	-
Quantum Optics ⁽³⁾	12KVO	Richter	-	3+1 z, zk	-	4
Advanced Optical Laboratory ⁽⁴⁾	12PPOP	Škereň	0+4 kz	-	6	-
Modern Measuring Methods in Physics	11MMM	Vratislav	4 z	-	4	-
Physics of Detection and Detectors of Optical Radiation	12FDD	Přina	2 zk	-	2	-
Fourier Optics and Optical Signal Processing ⁽⁵⁾	12OZS	Škereň	3 z, zk	-	3	-
Fiber Lasers and Amplifiers	12VLA	Kubeček, Peterka	3 zk	-	3	-
Ion Beam Techniques and Applications	12TAIS	Král	-	3 zk	-	3
Physics of Magnetic Materials	11MAGN	Zajac	-	2 zk	-	3
Physics of Dielectrics	11DIEL	Brykнар	-	2 zk	-	3
Computer Algebra	12POAL	Liska	2 kz	-	2	-

(1) Grading in 12KVEN requires grading in 02KVAN.

(2) Grading in 12NLOP requires grading in 12FOPT1.

(3) Grading in 12KVO requires grading in 12KVEN.

(4) Subscription of 12PPOP requires grading in 12FOPT1 a 12FOPT2.

(5) Grading in 12OZS requires grading in 12FOPT2.

Master Study Program

Field of Study: Physical Engineering

Specialization: Physics of Nanostructures

year 3

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Nanoelectronics	12NAE	Voves	2 zk	-	2	-
Spontaneously-grown Structures of Selected Nanomaterials	12SRS	Bouda	2 kz	-	2	-
Excursions to Optical Workplaces	12EOP	Najdek	0+4 z	-	4	-
Physics and Human Cognition	12FLP	Langer	-	2 z	-	2
Diploma Seminar 1, 2	12DSFN12	Jelínková	0+2 z	0+2 z	2	2
Master Thesis 1, 2	12DPFN12	Richter	0+10 z	0+20 z	10	20
<i>Optional courses:</i>						
Modern Measuring Methods in Physics	11MMM	Vratislav	4 z	-	4	-
Physics of Magnetic Materials	11MAGN	Zajac	-	2 zk	-	3
Applications of Group Theory in Solid State Physics	11APLG	Potůček	2 zk	-	2	-
Introduction to Management	12UM	Malát	2 zk	-	2	-

Master Study Program

Field of Study: Physical Engineering

Specialization: Physics and Technology of Thermonuclear Fusion

year 1

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Předměty povinné:</i>						
Probability and Statistics	01PRST	Hobza	3+1 z, zk	-	4	-
Quantum Physics ⁽¹⁾	02KF	Jizba	2+1 z, zk	-	3	-
Vacuum Physics and Technology ⁽¹⁾	12VAK	Král, Voltr	2+2 kz	-	4	-
Fundamentals of Electrodynamics	12ZELD	Kálal	2+0 z, zk	-	2	-
Nuclear Physics B	02ZJFB	Wagner	3+0 kz	-	3	-
The Equations of Mathematical Physics ⁽²⁾	01RMF	Krbálek	2+4 z, zk	-	6	-
Numerical Methods 2	01NME2	Beneš	-	2+0 kz	-	2
Introduction to Nuclear Fusion	02UFU	Mlynář	-	2+2 z, zk	-	4
Principles of Plasma Physics	12ZFP	Limpouch	-	3+1 z, zk	-	4
Materials Science	14NMA	Haušild	2+1 kz	-	3	-
Introduction to Power Engineering	17UEN	Kobyłka	-	2+0 zk	-	2
Search Project 1, 2	02RPTF12	Svoboda	0+5 z	0+10 z	5	10
<i>Předměty volitelné:</i>						
Quantum Mechanics ⁽¹⁾	02KVAN	Hlavatý	4+2 z, zk	-	6	-
Transport Phenomena/Nonequilibrium Systems ⁽¹⁾	02TJNS	Jex	-	2 kz	-	2
Basic to Solid State Physics	11ZFPL	Kraus	2 kz	-	2	-
Basic Optical Laboratory	12ZPOP	Bodnár, Škereň	-	0+4 kz	-	6
Introduction to Laser Technique	12ULT	Jelínková, Šulc	2+1 z, zk	-	3	-
Basic Laser Technique Laboratory ⁽³⁾	12ZPLT	Blažej, Gavrilov, Kubeček	-	0+4 kz	-	6
Measurement and Data Processing	12ZMD	Procházka	1+1 kz	-	2	-
High Frequency and Impulse Circuitry	12VFT	Pavel	-	2 z, zk	-	2
Methods of Mathematical Physics ⁽²⁾	01MMF	Šťovíček	-	4+2 z, zk	-	6
Elasticity	14EMECH	Materna, Oliva	-	4 z, zk	-	4
Engineering Mechanics	14TEM	Kunz	4 z, zk	-	6	-
Laboratory Practice in Instrumental Methods	15INPR	Pospíšil, Silber	-	0+4 kz	-	4
Fundamentals of Radiation Dosimetry 1, 2	16ZDOZ12	Trojek	2+2 z, zk	2+0 zk	4	2
Basics of Electronics	17ZEL	Kropík	2+2 kz	-	3	-

(1) Obligatory pairs KF and VAK, or KVAN and TJNS.

(2) One course obligatory - either RMF or MMF.

(3) Subscription of 12ZPLT possible after grading in 12ULT or in 12ULAT.

Master Study Program

Field of Study: Physical Engineering

Specialization: Physics and Technology of Thermonuclear Fusion

year 2

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Předměty povinné:</i>						
Plasma Theory 1, 2	02TPLA12	Kulhánek	2+2 z, zk	3+1 z, zk	5	5
Plasma Diagnostics	02DPLA	Kubeš	-	2+1 z, zk	-	3
Computer Modelling of Plasma	02PMPL	Plašil	-	2+1 z, zk	-	3
Technology of Thermonuclear Facilities	02TTJZ	Đuran , Žáček	-	3+0 zk	-	3
Inertial Fusion Physics ⁽¹⁾	02FIF	Klimo, Limpouch	3+1 z, zk	-	4	-
Physics of Tokamaks ⁽¹⁾	02FT	Mlynář	3+1 z, zk	-	4	-
Atomic and Molecular Physics	02AMF	Břeň	2+2 z, zk	-	4	-
Materials Science for Reactors	14NMR	Haušild	-	2+0 zk	-	2
Laboratory Work in Plasma Physics 1, 2	02PRPL12	Đuran	0+2 z	0+2 kz	2	2
Research Project 1, 2	02VUTF12	Svoboda	0+6 z	0+8 kz	6	8
<i>Předměty volitelné:</i>						
Topics in Magnetic Confinement Fusion	02PMCF	Mlynář	-	2 kz	-	2
Inertial Confinement Fusion	12PICF	Klír, Limpouch	-	2 kz	-	2
Superconductivity and Low Temperature	11SUPR	Janů, Středa	4 zk	-	4	-
Low Temperature Plasmas and Discharges	12NIPL	Král	4 z, zk	-	4	-
Differential Equations on Computer	12DRP	Liska	2+2 z, zk	-	5	-
Simulations of Collisionless Plasmas 1, 2	02NMP12	Trávníček	2 z	2 z	2	2
Computer Control of Experiments	12POEX	Čech	-	2 z	-	2
Neutron Physics	02NF	Šaroun, Vacík	-	2+2 z, zk	-	4
Optical Spectroscopy	12OPS	Michl	-	2 zk	-	2
Data Communication and Interfaces 1, 2	12PDR12	Blažej	2 z	2 z	2	2
Nuclear Technology Devices	16ZJT	Čechák	2+0 zk	-	2	-
Nuclear Technology Devices	17PRJT	Kolros	2+0 zk	-	2	-
Winter (Summer) School of Plasma Physics and Fusion Physics 1, 2 ⁽²⁾	02ZLSTF12	Svoboda	1 week z	1 week z	1	1

(1) Students choose at least one course indicated.

(2) Course for students of this specialization only.

Master Study Program

Field of Study: Physical Engineering

Specialization: Physics and Technology of Thermonuclear Fusion

year 3

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Předměty povinné:</i>						
Seminar 1, 2	02FTTF12	Limpouch, Mlynář	2 z	2 z	2	2
ITER and the Accompanying Programme ⁽¹⁾	02ITER	Mlynář	2 zk	-	3	-
Pinches ⁽¹⁾	02PINC	Kubeš	2 zk	-	3	-
Physics and Human Cognition	12FLP	Langer	-	2 z	-	2
Master Thesis 1, 2	02DPTF12	Svoboda	0+10 z	0+20 z	10	25
<i>Předměty volitelné:</i>						
Mathematical Modelling of Non-linear Systems ⁽¹⁾	01MMNS	Beneš	2 zk	-	3	-
History, Social and Economical Aspects of Fusion	02HSEF	Řípa	1+0 kz	-	2	-
Computer Simulations in Physics of Many Particles 1, 2	12PEMC12	Kotrla, Předota	2 zk	2 zk	2	2
Neutron Dosimetry	16DNEU	Ploc	2+0 zk	-	2	-
Introduction to Environment	16ZIVO	Čechák, Thinová	2+0 kz	-	2	-
Introduction to Management	12UM	Malát	2 zk	-	2	-
Radiation Effects in Matter	16REL	Spěváček	2+0 zk	-	2	-
Instrumentation for Radiation Measurements	16MER	Voltr	2+0 zk	-	2	-
Numerical simulations of Convection problems	01NSPP	Kozel	-	1+1 zk	-	2
Atomic and Molecular Spectroscopy	02AMS	Civiš	2+2 z, zk	-	4	-
Astrophysics	12ASF	Kulhánek	-	2+2 zk	-	4
Alternative Energy Resources	17AEZ	Škorpil	-	1 week z	-	3
Nuclear Reactors	17JARE	Heřmanský	-	2 zk	-	2

(1) Students choose at least one course indicated.

Master Study Program

Field of Study: Nuclear Chemical Engineering

Specialization: Applied Nuclear Chemistry

year 1

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Physical Chemistry 2	15FCH2	Drtinová, Silber	3+2 zk	-	5	-
Dosimetry and Radiation Protection	16DRH	Hobzová, Martinčík	2+1 z, zk	-	3	-
Nuclear Chemistry 2	15JCH2N	Čuba, John	2+3 z, zk	-	5	-
Detection of Ionizing Radiation	15DIZ	John	-	2+0 zk	-	2
Instrumental Methods 1	15INS1N	Pospíšil	-	3+0 z, zk	-	3
Nuclear Power Plants Design and Operation	15ZKJE	Otčenášek	-	2+0 zk	-	3
Numerical Methods for Scientists and Engineers	12NMEA	Limpouch, Vopálka	-	2+2 kz	-	3
Laboratory Practice in Instrumental Methods	15PINS	Pospíšil, Silber	-	0+3 kz	-	2
Practical Exercises in Radiochemical Technology	15RATEC	Čubová, John, Němec	0+2 kz	-	2	-
Practical Exercises in Detection of Ionizing Radiation	15DEIZ	John, Němec	-	0+3 kz	-	3
Practical Exercises in Physical Chemistry	15FYPRN	Zusková	0+6 z	-	6	-
Excursion 1	15EXK1	Čubová	-	5 days z	-	1
Search Project 1, 2	15RPCH12	Čuba	0+5 z	0+10 z	5	10
<i>Optional courses:</i>						
Quantum Physics	02KF	Jizba	2+1 z, zk	-	3	-
Nuclear Physics	02ZJF	Wagner	3+2 z, zk	-	6	-
Analytical Calculations and Chemometry Principals	15CHEM	Zima	2+0 zk	-	2	-
Exact Methods in Research of Historic Monuments	16EPAM	Musílek	2+0 zk	-	2	-
Fundamentals of Human Biology, Anatomy and Physiology 1, 2	16ZBAF12	Doubková	2+2 z, zk	2+2 z, zk	4	4

Master Study Program

Field of Study: Nuclear Chemical Engineering

Specialization: Applied Nuclear Chemistry

year 2

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Separation Methods in Nuclear Chemistry 1	15SMJ1	John, Němec	3+0 zk	-	3	-
Radiation Chemistry	15RACH	Motl	3+0 zk	-	4	-
Radioanalytical Methods	15RAM	John	3+0 zk	-	3	-
Environment Chemistry and Radioecology	15RAEK	Beneš	2+0 zk	-	2	-
Trace Radiochemistry	15STP	Beneš	-	3+0 zk	-	3
Physical Chemistry 3	15FCH3	Čuba	1+1 zk	-	2	-
Physical Chemistry 4	15FCH4	Můčka, Silber	-	3+2 zk	-	5
Practical Exercises in Separation Methods ⁽¹⁾	15SEPM	Čubová, John, Němec	-	0+3 kz	-	3
Practical Exercises in Radiation Chemistry ⁽²⁾	15PRACH	Bárta, Čuba	0+3 kz	-	3	-
Practical Exercises in Nuclear Chemistry	15PJCH	Čubová, Němec	0+4 kz	-	4	-
Practical Exercises in Radioanalytical Methods ⁽³⁾	15PRAM	John, Němec	-	0+4 kz	-	4
Internship	15PRAK	Čuba	-	2 weeks z	-	3
Excursion 2	15EXK2	Čubová	-	5 days z	-	1
Research Project 1, 2	15VUCH12	Čuba	0+6 z	0+8 kz	6	8
<i>Optional courses:</i>						
The Chemistry of Operation of Nuclear Power Plants	15CHJE	Silber, Štamberg	2+0 zk	-	2	-
Application of Radiation Methods	15APRM	Můčka	-	2+0 zk	-	2
Protection of Environment	15ZOCH	Filipská	-	2+0 zk	-	2
Modelling of Migration Processes in Environment	15MMPR	Štamberg	-	2+0 zk	-	2
Statistical Methods with Applications	01SM	Hobza	-	2 zk	-	2
Introduction to Photochemistry and Photobiology	15UFCB	Čubová, Juha, Můčka	2+0 zk	-	2	-
Physical Chemistry 5	15FCH5	Silber	-	2+0 zk	-	2
Radiation Methods in Biology and Medicine	15RMBM	Čuba, Můčka	-	2+0 zk	-	2
Instrumental Methods 2	15INS2	Pospíšil	-	2+0 zk	-	2

(1) Subscription of 15SEPM requires grading in 15SMJ1.

(2) Subscription of 15PRACH requires simultaneous subscription of 15RACH.

(3) Subscription of 15PRAM requires grading in 15RAM.

Master Study Program

Field of Study: Nuclear Chemical Engineering

Specialization: Applied Nuclear Chemistry

year 3

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Application of Radionuclides 1	15NUK1	Mizera	2+0 zk	-	3	-
Application of Radionuclides 2	15NUK2	Mizera	-	2+0 zk	-	3
Radionuclide Production	15PRN	Lebeda	2+0 zk	-	2	-
Chemistry of Radioactive Elements	15CHRP	John	2+0 zk	-	2	-
Technology of Fuel Cycles of Nuclear Power Stations	15TPC	Štamberg	-	2+0 zk	-	2
Seminar 1, 2	15SEM12	Čubová	0+4 z	0+4 z	4	4
Master Thesis 1, 2 ⁽¹⁾	15DPCH12	Beneš	0+10 z	0+20 z	10	20
<i>Optional courses:</i>						
The Chemistry of Operation of Nuclear Power Plants	15CHJE	Silber, Štamberg	2+0 zk	-	2	-
Waste Management and Treatment	15TZO	Kubal	2+0 zk	-	2	-
Nuclear Materials Technology	15TJM	Štamberg	2+0 zk	-	2	-
Hydrochemistry	15HCHE	Sýkora	2+0 zk	-	2	-
Waste Analysis	15AODP	Janků	2+0 zk	-	2	-
Numerical Simulation of Complex Environmental Processes	15VSBP	Vopálka	1+1 zk	-	2	-
Separation Methods in Nuclear Chemistry 2	15SMJ2	John, Němec	-	2+0 zk	-	2
Hydrology and Pedology	15HYPE	Pokorná	-	2+0 zk	-	2
Radiobiology	16RBIO	Davídková	-	2+0 zk	-	2
Determination of Radionuclides in Environment	15SRZP	Němec	-	2+0 zk	-	2

(1) Initiation of diploma project requires grading in 15VUCH2.

Master Study Program

Field of Study: Nuclear Chemical Engineering

Specialization: Nuclear Chemistry in Biology and Medicine

year 1

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Physical Chemistry 2	15FCH2	Drtinová, Silber	3+2 zk	-	5	-
Dosimetry and Radiation Protection	16DRH	Hobzová, Martinčík	2+1 z, zk	-	3	-
Nuclear Chemistry 2	15JCH2N	Čuba, John	2+3 z, zk	-	5	-
Detection of Ionizing Radiation	15DIZ	John	-	2+0 zk	-	2
Nuclear Power Plants Design and Operation	15ZKJE	Otčenášek	-	2+0 zk	-	3
Instrumental Methods 1	15INS1N	Pospíšil	-	3+0 z, zk	-	3
Numerical Methods for Scientists and Engineers	12NMEA	Limpouch, Vopálka	-	2+2 kz	-	3
Laboratory Practice in Instrumental Methods	15PINS	Pospíšil, Silber	-	0+3 kz	-	2
Practical Exercises in Radiochemical Technology	15RATEC	Čubová, John, Němec	0+2 kz	-	2	-
Practical Exercises in Detection of Ionizing Radiation	15DEIZ	John, Němec	-	0+3 kz	-	3
Practical Exercises in Physical Chemistry	15FYPRN	Zusková	0+6 z	-	6	-
Excursion 1	15EXK1	Čubová	-	5 days z	-	1
Search Project 1, 2	15RPCH12	Čuba	0+5 z	0+10 z	5	10
<i>Optional courses:</i>						
Quantum Physics	02KF	Jizba	2+1 z, zk	-	3	-
Nuclear Physics	02ZJF	Wagner	3+2 z, zk	-	6	-
Analytical Calculations and Chemometry Principals	15CHEM	Zima	2+0 zk	-	2	-
Exact Methods in Research of Historic Monuments	16EPAM	Musílek	2+0 zk	-	2	-
Fundamentals of Human Biology, Anatomy and Physiology 1, 2	16ZBAF12	Doubková	2+2 z, zk	2+2 z, zk	4	4

Master Study Program

Field of Study: Nuclear Chemical Engineering

Specialization: Nuclear Chemistry in Biology and Medicine

year 2

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Radioanalytical Methods	15RAM	John	3+0 zk	-	3	-
Separation Methods in Nuclear Chemistry 1	15SMJ1	John, Němec	3+0 zk	-	3	-
Radiation Chemistry	15RACH	Motl	3+0 zk	-	4	-
Physical Chemistry 3	15FCH3	Čuba	1+1 zk	-	2	-
Physical Chemistry 4	15FCH4	Múčka, Silber	-	3+2 zk	-	5
Radiation Methods in Biology and Medicine	15RMBM	Čuba, Múčka	-	2+0 zk	-	2
Radiopharmaceuticals 1	15RDFM	Lebeda	2+0 zk	-	2	-
Trace Radiochemistry	15STP	Beneš	-	3+0 zk	-	3
Practical Exercises in Separation Methods ⁽¹⁾	15SEPM	Čubová, John, Němec	-	0+3 kz	-	3
Practical Exercises in Radiation Chemistry ⁽²⁾	15PRACH	Bárta, Čuba	0+3 kz	-	3	-
Practical Exercises in Radiation Methods in Biology and Medicine ⁽³⁾	15PRMB	Čuba, Vlč	-	0+4 kz	-	4
Practical Exercises in Nuclear Chemistry	15PJCH	Čubová, Němec	0+4 kz	-	4	-
Internship	15PRAK	Čuba	-	2 weeks z	-	3
Excursion 2	15EXK2	Čubová	-	5 days z	-	1
Research Project 1, 2	15VUCH12	Čuba	0+6 z	0+8 kz	6	8
<i>Optional courses:</i>						
Radiation Protection	16RAO	Vrba	4+0 zk	-	4	-
Biochemistry and Pharmacology	16BAF	Kovář	2+0 zk	-	2	-
Separation Methods in Nuclear Chemistry 2 ⁽⁴⁾	15SMJ2	John, Němec	-	2+0 zk	-	2
Practical Exercises in Microbiology	15LMB	Demnerová	0+6 kz	-	4	-
Statistical Methods with Applications	01SM	Hobza	-	2 zk	-	2
Introduction to Photochemistry and Photobiology	15UFCB	Čubová, Juha, Múčka	2+0 zk	-	2	-
Chemistry of Radioactive Elements	15CHRP	John	2+0 zk	-	2	-
Physical Chemistry 5	15FCH5	Silber	-	2+0 zk	-	2

(1) Subscription of 15SEPM requires grading in 15SMJ1.

(2) Subscription of 15PRACH requires simultaneous subscription of 15RACH.

(3) Subscription of 15PRMB requires simultaneous subscription of 15RMBM.

(4) Grading in 15SMJ2 grading in 15SMJ1.

Master Study Program

Field of Study: Nuclear Chemical Engineering

Specialization: Nuclear Chemistry in Biology and Medicine

year 3

Course	code	lecturer	win. sem.	sum. sem.	cr	cr
<i>Compulsory courses:</i>						
Radionuclide Production	15PRN	Lebeda	2+0 zk	-	2	-
Immunochemistry	15IMCH	Bezouška	-	2+0 zk	-	3
Environment Chemistry and Radioecology	15RAEK	Beneš	2+0 zk	-	2	-
Chemistry of the Pharmaceuticals	15CHL1	Smrček	2+0 zk	-	3	-
Seminar 1, 2	15SEM12	Čubová	0+4 z	0+4 z	4	4
Master Thesis 1, 2 ⁽¹⁾	15DPCH12	Beneš	0+10 z	0+20 z	10	20
<i>Optional courses:</i>						
Radiobiology	16RBIO	Davídková	-	2+0 zk	-	2
General Pharmacology	15OFKL	Kršiak	2+0 zk	-	2	-
Immunopathology	15IMPL	Kučera	2+0 zk	-	2	-
Biochemistry and Pharmacology	16BAF	Kovář	2+0 zk	-	2	-
Radiation Protection	16RAO	Vrba	4+0 zk	-	4	-
Radiopharmaceuticals 2	15RFM2	Lešetický	2+0 zk	-	2	-
Instrumental Methods 2	15INS2	Pospíšil	-	2+0 zk	-	2

(1) Subscription possible after grading in 15VUCH2.

EXPLANATORY NOTES

for notations in the curriculum

The curriculum contains in each row

- course name
- shortcut used in the university database KOS
- name of the lecturer
- extent in the winter and summer semester
- credits in the winter and summer semester

In case the course spans over two semesters with different parts denoted by numbers, they can be contained in one row.

The extent of the course is indicated by number of teaching hours of the lecture + number of teaching hours of the exercise together with the indication of the grading (see later in this text). In case the teaching hours of the lecture and exercise are not distinguished, the course extent is indicated by one number.

POLICIES AND PROCEDURES FOR THE BACHELOR AND MASTER COURSES AT THE FACULTY OF NUCLEAR SCIENCES AND PHYSICAL ENGINEERING (FNSPE) OF THE CZECH TECHNICAL UNIVERSITY (CTU) IN PRAGUE

The Policies and Procedures of the FNSPE of the CTU in Prague represent the fundamental document for the study programmes offered by this institution, complementing and specifying the requirements of the CTU Academic and Examination Statute. This document is binding on all academics and students. Study programmes of FNSPE are structured, providing not only the established engineering (i.e. master) courses but also undergraduate (i.e., bachelor) training. The study programmes comprise various branches of study which may comprise various specializations.

Compliant with the CTU Academic and Examination Statute, Sec.7, Par.4, the undergraduate and master programmes study plans of branches and specialisations specify the required compulsory courses as well as optional courses recommended for the respective branch of study.

Section 1

Bachelor (undergraduate) Study Programme

1. The following specialisations comprise a package of core courses (ZS) running for 4 semesters, as recommended, and a package of specialisation courses (SZ) running for 2 semesters:

Bachelor Degree Programme: specialisation Mathematical Modelling (Matematické modelování, MM), Mathematical Physics (Matematická fyzika, MF), Software Engineering (Softwarové inženýrství, SI), Information Systems in Physical Engineering) (Informatická fyzika, IF), Software Development (Tvorba softwaru, TS), Theory nad Technology of Nuclear Reactors (Teorie a technika jaderných reaktorů, TTJR), Applied Mathematical and Stochastic Methods (Aplikované matematicko/stochastické metody, AMSM), Dosimetry and Application of Ionizing Radiation (Dozimetrie a aplikace ionizujícího záření, DAIZ), Experimental Nuclear Physics (Experimentální jaderná fyzika, EXJF), Solid State Engineering (Inženýrství pevných látek, IPL), Structure and Properties of Materials (Stavba vlastnosti materiálů, SVM), Physics and Technology of Thermonuclear Fusion (Fyzika a technika termojaderné fúze, FTTF), Physical Electronics (Fyzikální elektronika, FE).

2. The following branches of study and specialisations embark on their specific study plans from the first academic year; therefore, these specialisation courses (SZ) are identical with courses of the study plan.

Branches of study: Reactor Technology (Reaktorová technika, RT) and Nuclear Chemical Engineering (Jaderně chemické inženýrství, JCHI) .

Specialisations: Instruments and Informatics (Přístroje a informatika, PINF), Applied Information Technology (Praktická informatika, PRAK), Physical Technology (Fyzikální technika, FYT), Software Engineering in Economics (Softwarové inženýrství v ekonomii, SOFE), Nuclear Facilities (Jaderná zařízení, JZ), Radiation Protection and the Environment (Radiační ochrana a životní prostředí, ROŽP), and Laser Technology and Optoelectronics (Laserová techniky a optoelektronika, LASE).

Section 2

Master Continuation Study Programme (MCSP)

1. All branches and specialisations of the Master Continuation Degree Study Programme embark on their own study plans in the first academic year. If linked to the respective bachelor

programmes, MCSP study plans enable the student to complete the engineering (master) programme within 5 years.

2. To be eligible for the MCSP, (in terms of conditions set by law and the CTU Entrance Procedures), all applicants are required to have completed a bachelor programme in a related or identical branch of study as well as to have successfully passed the entrance examination. However, the student may be exempt from the examination on the Dean's recommendation.
3. If necessary, for the first two years, the student on the MCSP will have an individual schedule, so as to attain the competences required for the completed bachelor specialisation.
4. To transfer from the Bachelor Programme to the MCSP, the following rules are imposed:
 - a. student on the Bachelor Programme may not register for the recommended 3rd-year MCSP courses
 - b. provided the student has graduated from a bachelor course at FNSP and transfers to the MCSP, on application courses listed in the recommended 1st year MCSP study plan can be counted for up to 60 local credits if included in the 3-rd year recommended bachelor programme study plan. Also, courses listed in the recommended 1st and 2nd year MCSP study plan can be counted for up to 30 credits if obtained beyond the mandatory minimum of 180 credits as required for the bachelor programme by the CTU Academic and Examination Statute
 - c. the MCSP will not recognize courses taken within the bachelor programme beyond those recommended by the plan of a given specialisation
 - d. provided the MCSP student has registered on this programme before the academic year 2011-2012 and was not required to register for courses Research Project 1 and 2 in the academic year 2010-2011 or earlier, according to Par.4b., additional courses can be counted for up to 7 credits, if taken beyond the mandatory 180 credits as required for the bachelor courses by the CTU Academic and Examination Statute

Section 3

Registration

1. Bachelor and Master Degree student will register for the winter semester prior to its beginning. The prerequisite for passage to summer semester is the fulfilment of conditions given by the CTU Academic and Examination Statute, and upon doing so, student can register for the summer semester, prior to its beginning.
2. Student of higher Bachelor and Master Programmes will register for the following academic year courses upon having fulfilled conditions for passage to the following academic year, given by the CTU Academic and Examination Statute.
3. To be eligible for registration to the following academic year, student will have obtained all the required "zápočets" (i.e. recognition of the current semester coursework and responsibilities, for explanation see footnote below) and passed all examinations in the re-registered (i.e. registered a second time) obligatory courses.
4. Student will enter each course into their course record book (in Czech "index"), in order that it may function as their semester/year study plan according to Par.1 and 2, respectively, in agreement with these Policies and Procedures and the CTU Academic and Examination Statute. To register, the following rules are to be observed:
 - a. all students of respective branches, specialisations, or years of study will register for compulsory courses (See Sec. 4 and 5)

- b. student will register for optional courses according to their choice, taking into account the rules of the study plan, in particular the sequence of courses, sometimes subject to and required by the specialisation study plans. Student will not enter into the course record book courses not concluded by a “zápočet“ or examination
5. Student must not register for the same course a second time if they have concluded it by examination or obtained a “zápočet“, as the case may be.
6. The number of years at university will be counted from the first registration for a given programme, including any deferrals.

Section 4

Compulsory Courses

1. If in the course of their programme, a compulsory course is removed from the list, the student is not required to complete it; if, however, the respective course is replaced by another compulsory course (and its title or extent is changed, its contents remaining unaltered), the student is obliged to take the new course (unless they have completed its previous version).
2. When included into the core courses study plan, the new course must be completed only by 1st year students if it is listed for the 1st year, and by the 2nd year students, no higher, if it is listed for the 2nd year of the recommended study plan.

In the package of bachelor specialisation courses and MCSP, the decision as to which course to take and pass is made by the head of the respective department.

Section 5

Measuring and Assessing Student's Academic Attainment

1. The main means for assessing and measuring the student's academic attainment include: the “zápočet“, “klasifikovaný zápočet“, and examinations. The term “samostatný zápočet“ is used if the course is not concluded by an examination. Obtaining a “zápočet“ is a prerequisite to be admitted to an examination preceded by such a “zápočet“.
2. Examinations are usually administered during the respective semester examination period. Adequate number of evenly spread examination dates will be announced by the tutor in order that students may take the examination within the examination period. On agreement with the examiner, students can take examinations outside of the examination period, or even before the end of course (referred to as pre-term examination, in Czech “předtermín“).
3. Winter semester examinations and “zápočty“ may be administered during the summer semester or summer semester examination period. No examinations and tests for the “zápočet“ for the past academic year will be administered after commencement of the next academic year.
4. To take an examination, student will have registered for it and gained the “zápočet“ (if required by the study plan). If student has registered for an examination date and cannot be present for the examination on the chosen date, an apology must be made in advance. A belated apology is accepted for serious reasons of absence (mainly on health), but no later than 2 days after the examination date. The examiner will judge whether the excuse is legitimate.
5. If student has not registered for any examination in the respective course within the examination period and has not made any arrangements as to the examination term with the examiner, the examination is graded as “failure“.

6. The succession of courses is stated in the recommended time schedule of the study plan and student will adhere to it for course registrations. Provided the courses run for more semesters or in succession, student cannot obtain a “samostatný zápočet“ or take an examination in a course scheduled for a later semester unless they have satisfied the requirements of the previous course. The eligibility requirements are specified by the head of the department responsible for the course.
7. Courses marked A or B are understood to comprise one course, as given by the Academic and Examination Statute of the CTU.

Section 6

Languages

1. As part of the bachelor programme, student will register for and pass examinations in two of the foreign languages offered in the study plan. Foreign students – with the exception of Slovak students – will register for Czech as their second foreign language.
2. Language courses, according to Par.1 are offered in three to five semester cycles, the exception being specialisation PRAK (Applied Information Technology). The time schedule of these courses is part of the study plans.
3. According to Par.2, each semester is a self-contained unit concluded by a “zápočet“. If student is admitted to the bachelor programme again (i.e. registers for it a second time), the “zápočet“ is not recognized; however, the student does not have to register for the parts of cycle he had already passed successfully. Semesters of the cycle follow the course sequence stated in Section 5, Par.6. Each cycle is concluded by an examination.
4. Language courses can be offered in several groups according to language competence. The level of course to be chosen rests with the student and takes into account their previous language training and results achieved. Transfers between courses are possible solely on tutor’s recommendation or student’s application, within two weeks of language course commencement, but not later.
5. Specialisation Applied Information Technology follows an extended language programme targeted at professional oral and written communication and includes also a second foreign language course of student’s choice. The time schedule of these courses is part of the study plan of the specialisation. The Bachelor Project is submitted and defended in English. Upon choosing, and supposing they have satisfied criteria defined by the Department of Languages, after 5 semesters of the programme the student can register for a state language examination.
6. Exceptions to compulsory training in more than two foreign languages are judged on individual basis.
7. Details for language training are given in the Rules and Regulations for Language Courses issued by the Department of Languages.

Section 7

Courses in Calculus, Linear Algebra, and Mathematics

1. Fundamental courses in mathematics within the bachelor study programmes are offered at three levels of difficulty marked A, B, and C, their course structure being given by the bachelor programme study plans. Calculus plus/A and Linear Algebra plus/A are part of course group A;

Calculus /Calculus B and Linear Algebra/Linear Algebra B are part of group B, while level C offers the course Mathematics.

2. Transfers from course Calculus A to Calculus B, or from course Linear Algebra A to course Linear Algebra B will be possible according to the following rules:
 - a. Within the first week of the course commencement; as from the second week, transfers are subject to agreement of both tutors in charge of the courses.
 - b. Within the week the “zápočet“ is administered on the basis of satisfactory test results in the practical sessions related to the course in question. Student who obtained a “zápočet“ at level B is entitled to take a B-level examination only. Student who obtained a “zápočet“ at level A has a choice whether to take an examination at level A or B, and will register for the examination according to this choice. If student having a “zápočet“ at level A takes an examination at level B (either at the regular date or retake date), then they are not entitled to a retake in the same course at level A.
 - c. On recommendation of the examiner after examination at level A. After the first or second retake the examiner can inform student that their attainment satisfies the knowledge required for course B examination only. In such case, on student’s agreement with the offer, the examiner has the right to enter the grade for course level A instead of the grade for course level B into student’s course record (index).
3. On student’s application and the Dean’s consent, student can register for course A instead of course B.
4. If student attends courses Calculus and Linear Algebra, in the following semester they cannot take the examination at level A unless they have passed all examinations of the previous semester examinations of the course at level A.
5. Like for any other course, also for courses A or B student is allowed to register only two times. Student who has passed a course A examination may not register again for the same course at level B. After the first registration for and examination in course B, student may register for the same course at level A. If in such case student passes the examination at level A, both grades and both “zápočets“ count towards measuring their academic attainment.
6. In year 2 of the core course package study plan, student will have to register either for the whole package of A level courses or the whole package of B level courses.
7. Transfers from level A or B to a C level course on student’s application are granted only with permission of the Dean.

Section 8

Bachelor Project, Search, Research Project, and Master Thesis

1. A compulsory part of the Bachelor Degree Programme is the bachelor project defended by student as part of the Final State Examination. A compulsory part of the Master Degree Programme is a Search (in Czech “rešerše“), Research Project, and Master Thesis. Student may not register for them while still registered for the Bachelor Degree Programme. The Research Project is defended before the board nominated by the respective department. Defence of the Master Thesis is part of the Final State Examination. Research Project can be assigned only after student has defended their Bachelor Project and/or obtained a “zápočet“ for the Search. Master Thesis will be assigned only after the Research Project defence.

2. Departments will announce topics of bachelor projects, research projects, and master theses no later than end of the previous academic year. Bachelor projects and master theses are assigned to student by the Dean; search and research project are assigned to student by the head of the department.
3. The Bachelor Project, Search, Research Project as well as Master Thesis assignment will include the title (both in Czech and English), outline, recommended literature, the supervisor's name and affiliation, date of assignment, and date of submission.
4. The Bachelor Project, Search, Research Project, and Master Thesis are assigned to student at the beginning of winter and/or summer semester. It is the student's obligation to accept the work assignment within 30 days from the beginning of semester. If student fails to do so, the assignment is postponed until the next semester. Assignment of the Bachelor Project and Master Thesis at an extraordinary term is a prerogative of the Dean, whereas assignment of the Search and Research Project at an extraordinary term is a prerogative of the head of the department.
5. The Bachelor Project and Master Thesis will include items required for bibliography (the title in Czech, author's, name, branch of study, type of work, supervisor, consulting tutor, abstract, and key words; the title in English, author's name, abstract, key words), as well as work assignment in compliance with the principle of public access to Bachelor Projects and Master Theses according to the given model.
6. Student will submit the Bachelor Project or Master Thesis to the respective department in three hard copies as well as electronically. The language will be Czech or Slovak, the exception being specialisation Applied Information Technology (see Sec.6, Par.5). Exceptions are subject to decision by the head of the department.
7. Bachelor project and master thesis are assessed by their supervisor and at least one reviewer. The reviewers will also suggest a grade.
8. Bachelor projects and master theses are submitted by the date stated in the time schedule of the academic year, i.e. at least four weeks prior to the first day of final state examinations of the given branch or specialisation.
9. If student fails to submit their Bachelor Project or Master Thesis by the required date, validity of its assignment for the future is to be judged on the basis of their application. The judgement is made by the department. The assignment can be extended for no more than one year.
10. Supervisor's and reviewers' reports must be available to student at least 5 days prior to the date of final state examination.
11. Technicalities of submitting the Search and the Research Project and defending the Research Project as well as administering the "zápočet" are within responsibility of the head of the department, as well as defence of the research project, usually held at two dates, namely after the end of the winter and/or summer semester of academic year.
12. Courses Research Project and Master Thesis run for two semesters. Thus, student cannot register for courses Research Project 1 and Research Project 2 in the same semester, and, likewise, for Master Thesis 1 and Master Thesis 2.

Section 9

Study Visits Abroad

1. As part of their bachelor and master programme student may spend some time on a study visit or bilateral agreement exchange programme abroad. These activities are organized by the International Office at the CTU Rector's Office , as e.g. the LLP/ERASMUS programme, ATHENS, etc.
2. All study visits of bachelor and master programme students follow the rules and regulations of the CTU and are recorded by the Study Department of the FNSPE CTU in Prague. Part of the rules are also conditions for study visits to be satisfied by students of the FNSPE CTU:
 - a. weighted grade average as set by the CTU Academic and Examination Statute, but not below 2.3 (for bachelor student applicant taking into account all courses passed so far, for master student applicant taking into account the average of the completed bachelor course)
 - b. English course completed by examination at the FNSPE CTU with grade not below "good" (= C).
 - c. student is eligible for 1 sojourn abroad not exceeding 2 semesters
 - d. the last semester spent abroad must not be the last semester of student's standard length study programme (except for the visit given in Par. 2e. below)
 - e. MCSP student's intention to work on some part of the master thesis or complete it abroad within their sojourn is to be confirmed by their department's consent given in writing and including the name of the assigned deputy supervisor of the thesis from the respective host institution, a statement confirming that both parties agreed on details concerning thesis supervision, and a written consent of the supervisor to the procedures agreed
3. In compliance with the CTU's rules, arrangements for a study visit abroad comprise:
 - a. student's study plan approved of and recommended by the respective department and submitted to the Study Department of the FNSPE CTU prior to the stay
 - b. assessment and evaluation of the study visit and programme taken abroad, credit and course transfer approved by the respective department and Study Department of the FNSPE CTU in Prague
 - c. fulfilment of general requirements set by the CTU Academic and Examination Statute (i.e. gaining at least 20 credits transferred from the host university per semester).

Section 10

Completion of Study Programme

1. In compliance with the Academic and Examination Statute of the CTU in Prague, student will conclude their studies by having finished their study plan and passed the Final State Examination including defence of their master thesis or bachelor project.
2. To finish the bachelor degree study plan, student must have passed examinations in all compulsory courses of their respective plan (see Sections 4 and 5), having gained at least 180 credits.

3. To finish the master continuation study plan (MCSP), student must have passed examinations in all compulsory courses of the respective study plan (see Sec.4 and 5 and Sec.2, Par.1) and gained at least 180 credits.

Section 11

Final State examination

1. Student is eligible to take the Final State Examination only if they have completed their study plan, gained the required number of credits, and submitted by the given date their Bachelor Project or Master Thesis.
2. Final state examinations of the bachelor programme may be held at two terms (usually in February or September), which is in accordance with the time schedule of the academic year, or at an extraordinary date subject to the respective department's request. Each department will announce the subjects set for the final state examination in the bachelor programme by September 30th for the February term, and by January 31st for the September term, or no later than four months prior to an extraordinary examination term.
3. Final state examinations of the master programme are held at two terms (usually in February or September) according to the time schedule of the academic year, or on an extraordinary term subject to the respective department's request. Each department will announce the subjects set for the final state examination in the master programme by September 30th for the February term, and by January 31st for the September term, or no later than four months prior to an extraordinary term.
4. Student's application for admission to the final state examination will include the optional subjects chosen. Applications for the February term are accepted by the end of November, and for the September term by the end of May, or no later than two months prior to the extraordinary term of final state examinations. The examination terms are given in the time schedule of the academic year. Applications submitted after the given date will not be considered.
5. The examination follows the Rules of the Final State Examination issued by the Dean.
6. The oral part of the final state examination in the bachelor degree programme will consist of one subject out of the package of specialisation courses (with a possible option), and a subject of even more detailed specialisation (with a possible option).
7. The oral part of the final state examination in the master degree programme will consist of two subjects out of the package of specialisation courses (with a possible option) and a subject of even more detailed specialisation (with a possible option).
8. In accordance with the Academic and Examination Statute of the CTU in Prague, student must take the final state examination, and, if such is the case, retake it, within one year of the date they have satisfied all the other requirements of the study programme. The date is understood to be the last day of examination period of the last semester student was registered for courses other than master thesis course. Afterwards, this student still remains enrolled as a student until they have passed the last part of the final state examination; however, this period must not exceed one year.

Section 12

Termination of Studies

1. By virtue of Sec. 56, Par. 1, Letter 11 b) of Law Nr. 111/19898 of Collection of Laws, as ammended, and Sec.20, Par.5, Letter b) of the Academic and Examination Statute of CTU, these documents state the following conditions for terminating studies due to failure to satisfy the requirements and academic obligations following from the study programme and Academic and Examination Statute of the CTU in Prague:
 - failure to fulfill academic responsibilities and gain 15 credits after the first semester on bachelor programme and 20 credits after the first semester on master programme
 - failure to gain “zápočet“ after second registration for a compulsory course
 - failure to pass examination on second retake after second registration for a compulsory course
 - failure to pass examination after second registration for a compulsory course by the end of academic year
 - failure to satisfy eligibility conditions to register for the next academic year (semester)
 - failure to pass final state examination within one year of completing studies
 - failure to pass final state examination within the maximum study period
 - failure to pass retaken final state examination
2. Other reasons for terminating studies:
 - failure to register for academic year within given period without excuse
 - failure to register for courses after period of deferral
 - transfer to other faculty
 - withdrawal from studies
 - expulsion from the CTU

Doc. Ing.Miloslav Čech CSc.

Dean

Discussed by the Senate of the Faculty of Nuclear Sciences and Physical Engineering of the Czech Technical University in Prague on May 23rd 2011 and approved by the Scientific Council of the Faculty of Nuclear Sciences and Physical Engineering of the Czech Technical University in Prague on May 26th 2011.

Grading system at the Czech Technical University in Prague

The following system of assessing and grading academic attainment is in effect:

Non-graded assessment (in Czech “zápočet“) expressing recognition of satisfactory fulfilment of coursework, projects, assignments, tests, or research in the respective semester, often judging the student’s potential for registering for the succeeding semester course or for the respective examination

Graded assessment (in Czech „klasifikovaný zápočet“), as above, but a passing grade must be obtained for registration for a successive course

Self-contained non-graded assessment (in Czech “samostatný zápočet“), as above, awarded for attainment if the course is not scheduled to be concluded by an examination

Quality grades for “klasifikovaný zápočet“ and examinations:

- passing grades: A (Excellent, výborně), B (Very Good, velmi dobře), C (Good, dobře), D (Satisfactory, uspokojivě), E (Sufficient, dostatečně)
- failing grade: F (Failed, nedostatečně) – this grade is not entered into the student’s course record book, giving them thus a chance to retake the examination or “klasifikovaný zápočet“