Errata, 8th February 2004

European Credit Transfer System

A Guide for Visiting Students

Charles University in Prague
Faculty of Mathematics and Physics
2003/2004

PREFACE

This guide is intended for foreign students who wish to participate in the *Erasmus/Socrates* exchange program between a student's home University and the Faculty[1] of Mathematics and Physics (MFF) of Charles University in Prague, Czech Republic. It provides the list of available courses, and describes the system of awarding an academic degree (the system of study) at the MFF as well as additional useful information. This guide also contains a short history of the University and the Faculty.

The Faculty of Mathematics and Physics hopes that this guide will help the prospective candidate to become a part of the exchange program at the MFF of Charles University. Students will find a stimulating academic environment in beautiful historic Prague located in the heart of Central Europe.

[1] *It is significant to note that the term Faculty in MFF refers to the teaching staff, offices, laboratories and all other related entities, as opposed to a more restricted usage of the term Faculty when applied solely to the teaching staff.*

I. About Charles University and the MFF

A short history of Charles University

Charles University, the oldest university in Central Europe, was founded on April 7th, 1348 by Charles IV, the Holy Roman Emperor and King of Bohemia. In its early days, this University had four faculties – Theology, Law, Medicine and Arts, and was endowed by the emperor with all the privileges enjoyed by older medieval universities. At the beginning of the 15th century the Prague University became a centre for religious and political disputes. One of its first rectors was the religious reformer Jan Hus (in office from 1409 to 1410), who was later tried for heresy at the Council of Constance and then burnt at the stake in 1415. The defeat of the Czech anti-Habsburg uprising at the famous Battle of White Mountain in 1620 and the consequences of the Thirty-Years-War were followed by the period of violent re-catholicisation. In 1654, the Faculty of Arts of Prague University (the only faculty surviving after the period of the Hussite Wars) was merged with the Clementine Academy of Jesuits into a single institution called Charles-Ferdinand University, of which the Jesuit Fr. Molitor was the first rector.

The gradual introduction of enlightened reforms soon followed, which culminated at the end of the 18th century when Protestants and then Jews were granted the right to study. At the same time, German replaced Latin as the language of instruction. Despite the increasing role of the German language, the University continued to shape the Czech national culture, and its Czech scholars contributed considerably to the cultivation of the Czech language. In 1848, radical Czech students were involved in revolutionary upheavals, the bloody repression of which ended liberal efforts in Prague to win constitutional reform and equal educational rights for Czech and German speaking students. In 1882, the continuing upsurge in Czech national consciousness and political activity forced the Vienna government to split the University into two parts based on the language of instruction, Czech or German. These operated in parallel even after 1918 when Czechoslovakia was established (the Czech institution has been called Charles University since 1920). In 1939, Charles University was closed by Nazi occupation, and many of its students and teachers were persecuted. After the Second World War, the German institution was proclaimed the university of the Reich, and as such it was abolished in 1945.

The academic activities at Charles University were again disrupted and distorted after the Communist putsch in February 1948. The official ideology interfered severely with academic life especially after 1968 (the year of Russian invasion), but obviously much less in the area of mathematics, physics or sciences and medicine than in social sciences, law or humanities. After the political changes at the end of 1989, the strict adherence of Charles University to the state ideology was abolished. An academic freedom and a high degree of autonomy from the state became the goals of the new era, during which Charles University again became a member of the family of top European universities. Charles University is now a multi-faculty institution with 17 faculties and some 40,000 students, occupying a leading position in higher education in the Czech Republic and enjoying a world-wide reputation for both teaching and research.

About the Faculty of Mathematics and Physics

Mathematics and physics were traditionally taught in the frame of the Faculty of Philosophy and Arts. In 1920 separated from this faculty the Faculty of Natural Sciences. The Faculty of Mathematics and Physics has been an individual faculty since 1952.

Among the scholars who worked at and/or co-operated with the university and its faculties when staying in Prague were Tycho Brahe, Johannes Kepler and Bernard Bolzano. Ernst Mach educated a number of outstanding Czech and German physicists and influenced the development of experimental physics at the Prague University during the last decades of the 19th century. Albert Einstein was the professor of physics at German University in Prague from 1911 to 1912. Jaroslav Heyrovský, a physical chemist, invented polarography in 1922, for which he was awarded Nobel Prize in 1959. In 1924 August Žáček, a physicist, was granted a patent on a magnetron – later a basis for radar detection. The mathematician Václav Hlavatý, Charles University (from 1930 to 1948) and the University of Indiana since 1948, dealt with differential geometry and relativity theory and collaborated with Einstein, publishing a series of papers on Einstein's Unified Field Theory. Another notable mathematician Vojtěch Jarník contributed to several topics of number theory. Eduard Čech, the famous topologist and geometer, had a significant influence on the development of algebraic and general topology and differential geometry.

The Faculty Today

The Faculty of Mathematics and Physics is divided into three sections: the School of Mathematics, the School of Physics, and the School of Computer Science. A characteristic feature of this Faculty is the close interconnection of teaching activities and research work. The students benefit from being taught by those at the forefront of scholarship and research in their fields. The scientific reputation of the Faculty is reflected in the high success rate of domestic and international grant proposals. For example, in 2002 faculty experts have participated in 239 projects of Czech grant agencies and 67 international projects. The total of all grant funds in 2002 was 3.75 millions US$. A part of the research has an applied aspect.

There are more than 300 teachers presently at the faculty. In addition, 150 of our 2500 students are from abroad and 1/4 of the students are women. In 2002, there were 549 Ph.D. students at the Faculty of Mathematics and Physics studying in 29 fields of study; 52 Ph.D. theses were successfully defended.

II. Study Programmes and Degree Requirements at MFF

The MFF offers courses of study in the following three disciplines:

- Mathematics
- Physics
- Computer Science

which branch off into more narrow specializations, see Sections VI to VIII.

The following academic degrees are awarded in each of the above disciplines upon successful completion of the relevant course of study:

- Bachelor of Science — **Bc.** (an equivalent to BSc., or B.S.)
- Master of Science — **Mgr.** (an equivalent to MSc., or M.S.)
- Doctor of Philosophy — **Ph.D.**

The Bc. Study Programme usually takes 3 years; the maximum duration allowed for Bc. studies is 6 years. At the end of Bc. studies a student takes a state examination, which includes a defence of his/her Bc. thesis. Upon successful graduation the student takes his/her Bc. degree.

The Mgr. Study Programme is intended for those applicants who have already taken their Bc. degrees. This study programme takes 2 years; the maximum duration of Mgr. study is 5 years. This programme is devoted to more specialised study and supervised research in one of the specializations listed in Sections VI to VIII. It ends with the defence of a Mgr. thesis and with a state examination. A wide selection of accredited elective courses allows students to study in depth within their chosen specialization.

Ph.D. Study Programme is designed for students who have already gained their Mgr., or another equivalent degree at any university. The study comprises course work and supervised research in one of the specializations listed in Sections VI to VIII (for detailed information on related courses see http://www.mff.cuni.cz/studium/phd/). Ph.D. studies take usually three years. The maximum duration of Ph.D. study is 8 years, but no financial support from the Faculty can be expected when the length of study exceeds four years. Note that this financial support is available for those students only who enrolled study programs offered in Czech language.

III. The MFF Academic Calendar in 2003/2004

	Start Date	End Date
Fall Semester (FS)	September 29, 2003	January 9, 2004
Examination Session	January 12, 2004	February 13, 2004
Spring Semester (SS)	February 16, 2004	May 21, 2004
Examination Session	May 24, 2004	June 25, 2004

IV. The ECTS Credit System

The ECTS credit system allows courses successfully completed at "home University" to be counted toward a degree at MFF and vice-versa. Typically, each course of 2 hours of lectures/seminars per week represents 3 ECTS credits. For details on any particular course students are expected to consult the actual list of courses that is available on-line, see http://www.cuni.cz/cuni/anotace .

An ECTS study programme must be approved by both the home and the host institutions before the student leaves for the study period abroad. If the programme of study agreed upon is then satisfactorily completed by the student, the credits earned at MFF will be fully recognized by the home institution.

Notes on using http://www.cuni.cz/cuni/anotace **:** Select the **Subject Group** and semester you are interested in, and begin your search. Then choose your course of interest under the **Subject Name** and click a particular code under the **Subject Code**. A remark **Recommended Year of Study**, if available, indicates the year of study, in which the particular course is presented to regular MFF students. Information that the course is not taught in a foreign language results from the fact that regular courses at the MFF faculty are presented in Czech only. Ask following coordinators for information about the possibility of an individual study plan in English.

Mathematics:	**Prof. Jana Stará**, jana.stara@mff.cuni.cz
Physics:	**Prof. Lubomír Skála**, lubomir.skala@mff.cuni.cz
Computer Science:	**Prof. Pavel Töpfer**, pavel.topfer@mff.cuni.cz

Furthermore, we would like to suggest that Erasmus students do a part of their MSc thesis research at MFF. For information on promising areas of research visit the home pages of the MFF departments, see links at http://www.mff.cuni.cz/fakulta/struktura/pracoviste.htm and contact the teachers who you intend study with during your stay at MFF.

V. Structure of Studies toward Mgr. Degree at MFF

Bc. studies: Bc. studies are divided into two parts. The first is the core of required courses. Students must successfully pass all rated exams and complete all related "credits without grade" before starting the second part of their Bc. studies. In the second part of their Bc. studies, students have got an option to choose some courses according to their future specializations. They are expected to acquire 186 ECTS credits before graduating.

Mgr. study programmes: Within a chosen study programme, students are expected to select their specializations. This allows them to gain deep knowledge in several areas of mathematics, physics and computer science. A substantial part of Mgr. studies is the preparation of Mgr. thesis that is based on a individual student's research performed under the supervision of an experienced teacher. The students must acquire a defined number of credits during each year of their Mgr. studies. Finally, students must pass state examinations, which include a defence of the Mgr. thesis.

VI. Mathematics Curricula at MFF

The MFF allows a Mgr. student to specialize in one or more of the following eight fields in the discipline of Mathematics:

- Financial and Insurance Mathematics
- Mathematical Analysis
- Mathematical Methods of Information Security
- Mathematical and Computer Modelling in Physics and Engineering
- Mathematical Structures
- Numerical and Computational Mathematics
- Probability Theory, Mathematical Statistics and Econometrics
- Teacher Education: Mathematics, Descriptive Geometry and Computer Science

Brief summaries of the main topics covered by each of above mathematics specializations follow. A complete list of corresponding courses can be found at http://www.cuni.cz/cuni/anotace together with the course annotation and the number of credits related to the course. This list is intended to allow prospective Erasmus students to search for courses cutting across different MFF specializations, in order to fit their activities at MFF to their requirements at their home universities.

Financial and Insurance Mathematics
Applied probability, actuarial mathematics, theory of finance, banking and insurance, accounting, mathematical modelling and computational methods, financial management, risk theory, pension systems.

Mathematical Analysis
Theory of functions of real and complex variable, measure and integral, functional analysis and topology, ordinary and partial differential equations, potential theory.

Mathematical Methods of Information Security
Algebraic fundamentals, coding theory, theoretical and applied cryptography, protocols, data structures, complexity theory, algebraic geometry over positive characteristics, elliptic curves.

Mathematical and Computer Modelling in Physics and Engineering
A field of interdisciplinary study connecting applied mathematics and physics. Partial differential equations, mechanics of continuum, thermodynamics, solid-phase and fluid mechanics, plasma physics and optimisation. Related numerical methods. Engineering applications.

Mathematical Structures
Algebra in computer science and natural sciences, discrete mathematics, dynamics, mathematical logic and set theory, Riemann geometry and harmonic analysis, topology and category theory.

Numerical and Computational Mathematics
Mathematical modelling using computational technique. Computational processes, algorithms, computational modelling, simulation, process control, solution of complex industrial problems, numerical analysis.

Probability Theory, Mathematical Statistics and Econometrics
Application of probability theory to problems in natural sciences, technology and economy. The curriculum comprises courses on advanced probability theory, stochastic analysis and differential equations, reliability theory, quality control.
Theory of mathematical statistics and applications to biology, medicine and industry. Classical statistics, multivariate statistical analysis, nonparametric and sequential methods, robust methods, time series analysis.
Stochastic modelling of complex economic and socio-economic phenomena, systems and processes including those from finance and insurance. Stochastic analysis, econometrics, stochastic optimisation, time series analysis, implementation and verification of models.

Teacher Education: Mathematics, Descriptive Geometry and Computer Science
Courses and training on the theory of mathematical education. Courses and training on computer science. Didactics of computer science.

VII. Physics Curricula at MFF

The MFF allows a Mgr. student to specialize in one or more of the following eleven fields in the discipline of Physics:

- Astronomy and Astrophysics
- Biophysics and Chemical Physics
- Geophysics
- Mathematical and Computer Modelling in Physics and Technology
- Meteorology and Climatology
- Nuclear and Sub-Nuclear Physics
- Optics and Optoelectronics
- Physics of Condensed and Macromolecular Matter
- Physics of Surfaces and Ionised Media
- Theoretical Physics
- Teacher Education: Mathematics and Physics

Brief summaries of the main topics covered by each of the above physics specializations follow. A complete list of corresponding courses can be

found at http://www.cuni.cz/cuni/anotace together with the course annotation and the number of credits related to the course. This list is intended to allow prospective Erasmus students to search for courses cutting across different MFF specializations, in order to fit their activities at MFF to their requirements at their home universities.

Astronomy and Astrophysics
Theoretical lectures on fundamental astronomy, celestial mechanics, astrophysics (stellar interior and atmospheres, interstellar matter), solar system astrophysics, solar physics, galactic and extragalactic astronomy, relativistic astrophysics and cosmology. Practical training in photometry, spectroscopy, positional and ephemeris astronomy, computing orbits.

Biophysics and Chemical Physics
Biophysics, chemical physics, polymer physics. Lectures on experimental physics, theoretical physics and mathematical modelling. Basic education in chemistry and biology.

Geophysics
New methods in the theory of seismic wave propagation, physics of earthquakes and ground motions, structural studies with possible applications to the oil and coal prospecting. Geodynamics and physical geodesy concentrate on convective processes and physical parameters of the globe, with a close relation to gravimetry, geothermics, and geomagnetism.

Mathematical and Computer Modelling in Physics and Technology
Basic education in classical and quantum physics (mechanics of continuum, quantum mechanics, thermodynamics and statistical physics). Lectures on modern parts of mathematics (differential equations, numerical methods), and classical and quantum physics. Students are expected to master the methods of mathematical modelling and computer simulations and their applications to both the static and dynamic problems.

Meteorology and Climatology
Dynamical and synoptic meteorology, numerical modelling of atmospheric processes, meteorological forecasts. Air pollution problems, spreading and modelling air-pollution, atmospheric chemistry. Boundary layer meteorology, atmospheric turbulence. Climatology, modelling of climate, climatic changes, statistical methods in climatology. Stratospheric ozone.

Nuclear and Sub-Nuclear Physics
Fundamental elements of matter, elementary particles and their interactions. Properties of atomic nuclei, their structure and reactions. Laws governing forces acting between the nucleons. Experimental subnuclear and nuclear physics, quantum theory of particles and nuclei.

Optics and Optoelectronics
Quantum optics, non-linear optical properties of matter, coherence and statistic properties of light, lasers, methods of optical communications and information processing, material research, fundamentals of semiconductor and opto-electronic elements and structures, integrated optics and photonics. Mathematical modelling and computational physics.

Physics of Condensed and Macromolecular Matter
Structure and microphysical interpretation of properties of condensed matter as a base for electronics and material science and optoelectronics. Lectures on theoretical and experimental physics of semiconductors, metals, superconductors, magnetic and dielectric materials, and ionic crystals. Macromolecular physics.

Physics of Surfaces and Ionised Media
Motion and interactions of electrically charged particles in vacuum, in gases, in solid materials, and on the boundaries between two materials. Mutual interactions of neutral atoms or molecules with each other and with the surface of the condensed matter. Physics of surfaces and thin films, plasma physics, vacuum physics, computer modelling.

Theoretical Physics
Classical and modern physics, mathematics, mathematical modelling. Special lectures on modern quantum mechanics and field theory, astrophysics and cosmology, condensed matter theory, mathematical physics, computer physics.

Teacher Education: Mathematics and Physics
Courses and training on the theory of mathematical education. Courses and training on the theory of physics education. Physics experiments for high schools. Applications of computers in physics teaching.

VIII. Computer Science Curricula at MFF

The MFF allows a Mgr. student to specialize in one or more of the following five fields in the discipline of Computer Science:

- Theoretical Computer Science
- Software Engineering
- Mathematical Linguistics
- Discrete Models and Algorithms
- Teacher Education: Computer Science

Brief summaries of the main topics covered by each of above computer science specializations follow. A complete list of corresponding courses can be found at http://www.cuni.cz/cuni/anotace together with the course annotation and the number of credits related to the course. This list is intended to allow prospective Erasmus students to search for courses cutting across different MFF specializations, in order to fit their activities at MFF to their requirements at their home universities.

Theoretical Computer Science
Algorithms and Computational Complexity theory. Data structures. Computability theory and an introduction to recursion theory. Analysis of computational complexity of particular algorithms. Non-procedural Programming and Artificial Intelligence. Artificial intelligence, methods, algorithms, and data representation. Non-procedural programming languages, logic and functional programming, theory, implementation methods and applications. Neural nets, theory and applications.

Software Engineering
Distributed systems, operating systems, software engineering, real-time systems, computer graphics, neural networks. Object-oriented paradigm in programming languages, distributed systems and databases. Programming languages (theory of translation, typing models, semantics models). Formal specification methods. Structured and object methods of analysis and design, data and process modelling, UpperCASE, LowerCASE. Software life cycle, prototyping, software maintenance, quality assurance. Software management, project planning and scheduling.

Mathematical Linguistics
Theoretical background of computational linguistics and a formal description of language on all its levels (phonology, morphology, syntax, semantics, discourse). Methods of analysis (automata, grammars, statistical methods). Text corpora. Applications (error correction, information extraction, machine translation, speech). Languages: Czech, English, other according to interest.

Discrete Models and Algorithms
Study of discrete structures and processes. The main subjects are combinatorics, graph theory, algorithms, computational complexity, computational and discrete geometry and probabilistic and algebraic methods in discrete mathematics.
Theory and methods of optimisation and applications of optimisation methods. Operations research problems, finding optimal decisions with respect to a given optimality criterion, compromise decisions.
Mathematical Economics. Applications of mathematical methods in economics, both on microeconomic and on macroeconomic level. Building appropriate mathematical models of real economic structures and situations.

Computer Science Teacher Education
Courses and training on computer science. Didactics of computer science.

IX. Additional Information for ERASMUS Grant Recipients

Application

When you are nominated as an ERASMUS student, please fill in the **Application Form, Learning Agreement**, and **Incoming Student Form**, available online at
http://www.cuni.cz/erasmus/welcome.html.en
Send them to the Faculty coordinator Professor **Jarolím Bureš**. After receiving these documents, Charles University will send them back to you together with the **Letter of Acceptance** and information about your accommodation.

Prof. J. Bureš
Mathematical Institute of Charles university
Faculty of Mathematics and Physics of Charles University
Sokolovská 83, 186 75 Prague 8, Czech Republic
Tel.: (+420) 221 913 210, Fax: (+420) 222 323 394
E-mail: jarolim.bures@mff.cuni.cz

Deadlines for submissions

For winter semester: **June 15**
For summer semester: **October 31**

Things to be done before you come to Prague

The Czech Republic will not join EU until 2004, thus you still need a **visa for long-term study purposes.** Detailed information on visa regulations and other steps necessary for registration can be found at the address: http://www.cuni.cz/erasmus/welcome.html.en . **Do not forget about your health insurance.** Although the Czech Republic recognizes most health insurance valid within the EU, we recommend that you check with your insurance office whether your particular health insurance is one of those recognised.

When you arrive to Prague

After your arrival in Prague, you should go to the student residence assigned to you. You should then visit the Study and Students Affairs Department of the Faculty and contact **Mgr. Dagmar Zádrapová** (on work days only), who will provide you with important documents required, e.g., for obtaining a student transport pass, access to cafeterias and libraries, etc.

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Your should then to contact your study programme co-ordinator, and arrange for a meeting to discuss your study programme. We strongly recommend that you contact him/her before your arrival in Prague, preferably by e-mail. If you don't know who your study programme co-ordinator is, you can contact the faculty Erasmus co-ordinator Prof. J. Bureš, who will supply you with the information needed**.**

Basic information on housing, city transportation and meals

For the students who are participating in the Erasmus programme or involved in other international agreements, university housing is partly available in well appointed traditional residence halls. At present, the price for foreign students is approximately 2300 CZK a month, i.e., about 73 EUR.

Enrolled students have the right to buy a Transportation Card valid for all means of city transportation at a discounted rate (at present 210 CZK per month, i.e., about 7 EUR). Discounted meals are available in any of the university canteens (called Menza in Czech) throughout the town (price from 1 to 2 EUR for a meal). Due to the present ratio of the Czech crown to western currencies, food is relatively inexpensive for foreigners from Western countries.

For detailed information concerning your accommodation and the arranging visas and other documents do not hesitate to contact the university Erasmus co-ordinator.

X. Samples of Recommended Study Plans

Following model plans of study are presented as a suggested paths towards earning a Mgr. Degree in five years. Of course, students may encounter situations that cause them to deviate somewhat from these plans; however, they are urged to consider carefully before doing so.

Substantial parts of these recommended study plans consist of required courses (marked with bold letters) which every student must take. In particular, course menus for the first and second years of study are almost completely fixed, with only moderate room left for the selection of electives.

Mathematical Analysis Major

Year 1

Course	FS (hours)	SS (hours)	Credits	Code[2]
Mathematical analysis 1a **Tutorial**	4 2	—	9	MAA001
Mathematical analysis 1b **Tutorial**	—	4 2	9	MAA002
Linear algebra and geometry I **Tutorial**	4 2	—	9	ALG001
Linear algebra and geometry II **Tutorial**	—	4 2	9	ALG002
Programming **Tutorial**	2 2	2 2	12	PRM001
Discrete mathematics	2	—	3	DMA005
Pro-seminar from Calculus	2	2	3	MAA005
Elective course (by individual choice)[1]	2	4	9	

[1] Any course available at the Faculty of Mathematics and Physics.
[2] A course code as used at http://www.cuni.cz/cuni/anotace/

Year 2

Course	FS (hours)	SS (hours)	Credits	Code
Mathematical analysis 2a **Tutorial**	4 2	—	9	MAA003
Mathematical analysis 2b **Tutorial**	—	2 2	6	MAA004
Algebra I **Tutorial**	2 2	—	6	ALG026
Algebra II	—	2	3	ALG027
Measure and integral I	2	—	3	MAA069
Measure and integral II **Tutorial**	—	2 2	6	MAA070
Probability and mathem. statistics **Tutorial**	—	4 2	9	STP022
Introduction to numerical analysis **Tutorial**	4 2	—	9	NUM105
Differential geometry of curves and surfaces	—	2	3	GEM012
Ordinary differential equations I **Tutorial**		2 2	6	DIR020
Elective course (by individual choice)	2	4	9	

Year 3

Course	FS (hours)	SS (hours)	Credits	Code
Introduction to functional analysis **Tutorial**	2 2	—	6	RFA006
Introduction to complex analysis **Tutorial**	2 2	—	6	MAA021
Functional analysis I **Tutorial**	—	2 2	6	RFA050
Complex analysis I **Tutorial**	—	2 2	6	MAA016
Ordinary differential equations II **Tutorial**	2 2	—	6	DIR021
Partial differential equations I **Tutorial**	2 2	—	6	DIR044
Partial differential equations II **Tutorial**	—	2 2	6	DIR045
General topology I Tutorial	2 2	—	6	MAT039

Year 4

Course	FS (hours)	SS (hours)	Credits	Code
Functional analysis II **Tutorial**	2 2	—	6	RFA051
Functional analysis III **Tutorial**	—	2 2	6	RFA054
Complex analysis II **Tutorial**	2 2	—	6	MAA067
Potential theory I	2	—	3	DIR008
Potential theory II	—	2	3	DIR055
Calculus of variations	2	2	3	DIR009
Theory of real functions I	2	—	3	RFA013
Theory of real functions II	—	2	3	RFA014
Advanced differential equations Tutorial	2 2	—	6	DIR051
Differential geometry	—	2	3	GEM010

Year 5

Course	FS (hours)	SS (hours)	Credits	Code
Introduction to analysis on manifolds **Tutorial**	2 2	—	6	GEM002
Mgr. thesis research				

Theoretical Physics Major

Year 1

Course	FS (hours)	SS (hours)	Credits	Code[2]
Physics I **Tutorial**	4 2	—	9	OFY0211
Physics II **Tutorial**	—	4 2	9	OFY018
Introduction to the applied physics **Tutorial**	0 1	—	2	OFY055
Student Laboratory, part I **Tutorial**	—	0 3	5	OFY066
Mathematical analysis I **Tutorial**	4 2	—	9	MAF033
Mathematical analysis II **Tutorial**	—	4 2	9	MAF034
Linear algebra for physicists I **Tutorial**	2 2	—	6	MAF027
Linear algebra for physicists II **Tutorial**	—	2 2	6	MAF028
Mathematics for physicists I **Tutorial**	—	2 2	6	MAF041
Programming for Physicists **Tutorial**	2 2	—	6	OFY056
Elective Course (by individual choice)[1]	2	2	6	

[1] Any course available at the Faculty of Mathematics and Physics.
[2] A course code as used at http://www.cuni.cz/cuni/anotace/

Year 2

Course	FS (hours)	SS (hours)	Credits	Code
Physics III **Tutorial**	4 2	—	9	OFY022
Physics IV **Tutorial**	—	3 1	6	OFY025
Student Laboratory, part II **Tutorial**	3	—	5	OFY024
Student Laboratory, part III **Tutorial**	—	4	6	OFY028
Mathematics for physicists II **Tutorial**	3 2	—	8	MAF042
Mathematics for physicists III **Tutorial**	—	2 2	6	MAF043
Theoretical Mechanics **Tutorial**	3 2	—	8	OFY003
Special Theory of Relativity	2	—	3	OFY023
Classical Electrodynamics **Tutorial**	—	2 2	6	OFY026
Introduction to Quantum Mechanics **Tutorial**	—	2 2	6	OFY027
Elective Course (by individual choice)	2	2	6	

Year 3

Course	FS (hours)	SS (hours)	Credits	Code
Physics V **Tutorial**	3 1	—	6	OFY029
Student Laboratory, part IV **Tutorial**	3	—	5	OFY030
Mathematics for physicists IV **Tutorial**	4 2	—	9	MAF044
Thermodynamics and statistical physics I **Tutorial**	3 2	—	8	TMF043
Thermodynamics and statistical physics II **Tutorial**	—	3 2	8	TMF044
Quantum theory I **Tutorial**	4 2	—	9	JSF060
Quantum theory II **Tutorial**	—	4 2	9	JSF060
General relativity	—	3	5	TMF111
Elective Course (by individual choice)	2	2	6	

Year 4

Course	FS (hours)	SS (hours)	Credits	Code
Relativistic physics I **Tutorial**	4 2	—	9	TMF037
Relativistic physics II Tutorial	—	4 2	9	TMF038
Quantum field theory I **Tutorial**	4 2	—	9	JSF068
Quantum field theory II Tutorial	—	4 2	9	JSF069
Theory of condensed matter I	2	—	3	FPL108
Theory of condensed matter II	—	2	3	FPL109

Year 5

Course	FS (hours)	SS (hours)	Credits	Code
Seminar of mathematical physics **Tutorial**	2	2	6	TMF008
Mgr. thesis research				

Software Systems Major

Year 1

Course	FS (hours)	SS (hours)	Credits	Code
Mathematical analysis I **Tutorial**	4 2	—	9	MAI054
Mathematical analysis II **Tutorial**	—	2 2	6	MAI055
Linear algebra I **Tutorial**	2 2	—	6	MAI057
Linear algebra II and optimization **Tutorial**	—	2 2	6	MAI058
Discrete mathematics **Tutorial**	2 2	—	6	DMI002
Programming I **Tutorial**	3 2	—	7	PRG030
Programming II **Tutorial**	—	2 2	6	PRG031
Principles of computer architectures	2	—	3	SWI087
Programming in C and C++ **Tutorial**	—	2 2	6	PRG029
Algorithms and data structures I **Tutorial**	—	2 1	4	TIN060
Essentials of UNIX **Tutorial**	—	2 2	6	SWI095

Year 2

Course	FS (hours)	SS (hours)	Credits	Code
Mathematical analysis III **Tutorial**	2 2	—	6	MAI056
Graph Theory and Combinatorics I **Tutorial**	2 2	—	6	DMI011
Algorithms and data structures II **Tutorial**	2 2	—	6	TIN061
Nonprocedural programming **Tutorial**	2 2	—	6	PRG005
Object oriented programming **Tutorial**	2 2	—	6	PRG032
Internet **Tutorial**	—	2 1	4	SWI096
Propositional and predicate logic **Tutorial**	—	2 2	6	AIL062

Automata theory and formal grammars **Tutorial**	—	2 2	6	TIN071
Principles of operating systems	—	2	3	SWI097
Database systems **Tutorial**	—	2 2	6	DBI025
Software project	—	2	3	PRG033

Year 3

Course	FS (hours)	SS (hours)	Credits	Code
Algebra I **Tutorial**	2 2	—	6	MAI062
Probability and statistics **Tutorial**	2 2	—	6	MAI059
Data organization and processing I **Tutorial**	2 1	—	4	DBI007
Computer networks I	2	—	3	SWI090
Software project - implementation	2	—	3	PRG034
Computer networks II	—	2	3	SWI021
Mathematical structures Tutorial	—	2 2	6	MAI064
Computer graphics I Tutorial	2 1	—	4	PGR003
Unix Tutorial	2 1	—	4	SWI015
Numerical analysis Tutorial	—	2 2	6	MAI042
Linux	—	2	3	SWI043
MS Windows administration	—	2	3	SWI099
TCP/IP protocol suite	—	2	3	SWI045

Year 4

Course	FS (hours)	SS (hours)	Credits	Code
Complexity I **Tutorial**	2 1	—	4	TIN062
Complexity II **Tutorial**	—	2 1	4	TIN063
Computability I	2	—	3	TIN064
Computability II	—	2	3	TIN065
Data structures I	2	—	3	TIN066
Data structures II **Tutorial**	—	2 1	4	TIN067
Compiler principles **Tutorial**	2 1	—	4	SWI098
Operating systems I **Tutorial**	2 1	—	4	SWI088
Operating systems II **Tutorial**	—	2 1	4	SWI004
Probability methods	2	—	3	MAI060
Methods of mathematical statistics **Tutorial**	—	2 1	4	MAI061
Team software project	4	6	15	PRG023

Year 5

Course	FS (hours)	SS (hours)	Credits	Code
Protecting information I	2	—	3	SWI089
Protecting information II	—	2	3	SWI071
Information systems I Tutorial	2 2	—	6	SWI049
Information systems II Tutorial	—	2 2	6	SWI050
Advanced topics in operating systems and parallelism I	4	—	6	SWI057
Advanced topics in operating systems and parallelism II	—	4	6	SWI058
Distributed system principles	2	—	3	SWI035
Mgr. thesis research				

XI. MFF Departments and Facilities

At present, MFF occupies five buildings throughout Prague that house the following departments, see also http://www.mff.cuni.cz/fakulta/budovy/ .

Ke Karlovu 3 building
(Ke Karlovu 3, 121 16 Prague, Czech Republic)

- Dean's Office
- MFF Library - Physics Section
- Department of Chemical Physics and Optics
- Laboratory of General Physics Education
- Department of Physics Education
-

Ke Karlovu 5 building
(Ke Karlovu 5, 121 16 Prague, Czech Republic)

- The Institute of Physics of Charles University
- Department of Electronic Structures
- Department of Metal Physics

Malostranské náměstí building
(Malostranské nám. 25, 118 00 Prague, Czech Republic)

- MFF Library - Computer Science Section
- Department of Applied Mathematics
- Department of Software Engineering
- Department of Theoretical Computer Science and Mathematical Logic
- Institute of Formal and Applied Linguistics
- Department of Software and Computer Science Education
- Networks and Labs Management Center

Karlín building
(Sokolovská 83, 186 75 Prague 8, Czech Republic)

- MFF Library - Mathematics Section
- Department of Algebra
- Department of Mathematics Education
- Department of Mathematical Analysis
- Department of Numerical Mathematics
- Department of Probability and Mathematical Statistics
- Mathematical Institute of Charles University

Troja Campus
(V Holešovičkách 2, 182 00 Prague 8, Czech Republic)

- MFF Library - Textbook Section
- Astronomical Institute of Charles University
- Department of Electronics and Vacuum Physics
- Department of Low Temperature Physics
- Department of Macromolecular Physics
- Department of Meteorology and Environmental Protection
- Department of Geophysics
- Institute of Particle and Nuclear Physics
- Institute of Theoretical Physics