412 APLA Laser Applications, W, 2+0, Jelínková, Jančárek, credits: 2

412 APP Computer Applications, W, 3, Procházka, credits: 3

412 DRP Differential equations on computer, W, 2+1, Liska, credits: 3
Course will be opened for 4 or more students. Ordinary differential equations, analytical methods; Ordinary differential equations, numerical methods, Runge-Kutta methods, stability; Partial differential equations, analysis, hyperbolic, parabolic and elliptic equations, posedness of differential equations; Partial differential equations, numerical solution, finite difference methods, difference schemes, order of approximation, stability, convergence, modified equation, diffusion, dispersion, conservation laws, 1D problems, example of 2D problem, practical computation in Matlab system for numerics and Maple for analysis of schemes.

412 ELD1 Electrodynamics 1, W, 4, Kálal, credits: 4

412 ELD2 Electrodynamics 2, S, 4, Čtyroký, credits: 4

412 EP12 Electronics laboratory 1,2, W+S, 2, Procházka, Blažej, credits: 2
Electronics lab exercise, basic electronic instruments operation, simple circuits wiring and debugging, semiconductor components properties, power supply, transistor amplifier, operational amplifier, trigger circuits, logical circuits. Individual work on problem guidelines, protocol formatting.

412 FDET Detection and Detectors, W, 2+1, Pína, credits: 3
412 INF Informatics, W, 2, Hamal, credits: 2
Introduction, basic computer technology, office environment, computer science terminology, academic environment, software engineering terminology, product development environment, miscellaneous, hardware, software terminology, system integration environment.

412 INF2 Informatics 2, S, 2, Hamal, credits: 2
Principles, construction and future development trends of hardware for information technology, processors, memories, optical and magnetic storage media, printers, scanners, data networks.

412 INS1 Information Systems 1, W, 1+1, Novotný, credits: 2
Information technologies and their mutual binding, principles of database information services, principles of information management, introduction to project of management systems, economical aspects of the information systems, e-commerce, new and upgraded information technologies, mutual binding of the office and database software into Intranet and Internet.

412 INS2 Information Systems 2, S, 2, Novotný, credits: 2
Advanced topics of Information Systems 1, fresh upgrades, additional topics chosen by students to support their university projects.

412 INTO Integrated optics, W, 2, Čtyroký, credits: 2

412 KSFP Quantum and statistical physics via computers, S, 2, Drška, Šiňor, credits: 2
A supplementary course to the courses "Modern Physics Using Computers" and "Quantum Physics" devoted to application of information technology in quantum mechanics and physical kinetics. Education software based on integrated computing systems is strongly used in the course.

412 KVE1 Quantum electronics 1, S, 3, Vrbová, Richter, credits: 3

412 KVE2 Quantum electronics 2, W, 2+1, Richter, Vrbová, credits: 3

412 KVE3 Quantum electronics 3, S, 2+1, Vrbová, Richter, credits: 3

412 LAPT Seminar of laser, plasma and beam technology, W, 4, Jelínková, Král, Jančárek, credits: 4

412 LAS Laser systems, S, 4, Vrbová, Kubeček, credits: 4

412 LT1 Laser Technique 1, W, 2+2, Kubeček, Vrbová, credits: 4

412 LT2 Laser Technique 2, S, 2, Jelínková, credits: 2

412 MEME Measurements Methods of Physical Electronics and Optics, S, 2+2, Pína, credits: 4

412 MFP Modern Physics Using the Computer, W, 4, Drška, credits: 4
Scientific computing as a language of modern physics, numerical computing and computer algebra, numerical simulation, integrated computing system, intensive computing, theoretical modern physics, non-linear systems, algorithmic physics and the study of complex systems, principles of quantum physics, analytic and numerical quantum mechanics, physical kinetics, numerical kinetics, molecular dynamics, stochastic particle simulation. * Comment: Computerised course.

412 MODO Selected Topics From Modern Optics, W, 2 zk, Kálal, Kubeček, credits: 2
412 MPF Methods of Computational Physics, S, 4, Drška, credits: 4
Computer as a tool for study physical systems, compact systems for scientific computing (CSSC), examples of CSSC, numerical simulation as a research method, numerical physical libraries, examples of simulation programs, integrated computing systems (ICS), examples of ICS, intensive computing (IC) as a new methodology for physical sciences, examples of the use of IC, prospects of information physics. *Comment: Computerised course.

412 MPP Microprocessor Laboratory, W+S, 0+3, Voltr, credits: 3
Arithmetic-logic unit, modular system on basis Z80, its programming, peripheral devices, data transfer IBM PC, analogue input and output, assembler and high-level programming.

412 MP1 Microprocessors 1, W, 4, Čech, credits: 4
Microprocessor and microcomputer, microprocessor classes, CPU, memory, Input output. Code and data, addressing modes( direct, indirect, register, relative,..., stack memory, procedure calls, IO devices - program control, interrupt. Microprocessor Intel 8080, Z80, 16-bit microprocessor 8086-486.

412 MP2 Microprocessors 2, S, 2, Čech, credits: 2
Instruction codes, differences, programming languages Assembler and Macroassembler, memory segmentation and paging, math coprocessor, IO coprocessor. IBM PC technical description, MS-DOS operating system and services, resident programs and drivers, applications.

412 NME Numerical Methods, S, 2+2, Limpouch, credits: 4
Mathematical and numerical problems, correctness of problem, condition number, truncation error, floating point representation of numbers, roundoff error, stability of algorithms, numerical methods of linear algebra, sorting, interpolation and splines, integration of functions, evaluation of functions, root finding of nonlinear equations, optimisation, integration of ordinary differential equations, initial and boundary value problems.

412 OPEL Optoelectronics, S, 4, Čtyroký, Schroefel, credits: 4

412 OPS Optical spectroscopy, S, 4, Fidler, credits: 4

412 ORP Microwave Circuits, W, 4, Pavel, credits: 4
Fourier and Laplace transformation, sampling, digital signal processing, negative and positive feedback, sensitivity, step response, zeros and poles, power gain and stability consideration, negative resistance, equivalent models of semiconductor elements, switching, pulse circuits, scattering parameters, transmission lines, Smith chart, filter networks, dielectric resonators, microstrip matching networks, microwave oscillators and amplifiers design, microwave measurements.

412 OS Optical Signal Processing, S, 2+2, Fiala, credits: 4
Fourier transform and its physical interpretation, analysis of optical linear transfer (espec. imaging) systems; optical wave and diffraction in Fourier optics, diffraction gratings; coherent and incoherent transfer systems, Optical Transfer Function for diffraction limited systems and systems
with aberrations, coherent and incoherent optical information recording, holographical transfer of information; applications of Fourier optics - spatial filtering, image restoration, image recognition; optical processors.

412 OSY Operating Systems, W, 3, Čech, credits: 3
Operating systems kernel, memory management, process, multitasking systems interprocess communication, input/output, queues, client-server, internet communication, multilanguage environment, multitasking, user interface, system security, open systems. OS DOS: files CONFIG.SYS and AUTOEXEC.BAT, UMB,XMS,EMS,HMA memory management and using. OS Novell Netware: Disc organisation, NLM installation, Novell and TCP/IP, network printers, system administration, user environment configuration, backup, optimisation. UNIX: File system, introduction to system programming, shells, maintenance and backup, system administration, X-windows

412 PIN1 Practical informatics for technics 1, W, 1+1, Liska, credits: 2

412 PIN2 Practical informatics for technics 2, S, 1+1, Šiňor, credits: 2

412 PIN3 Practical informatics for technics 3, W, 1+1 z, Šiňor, credits: 2
Visualisation and multimedia, computer graphics, software for computer graphics, animation and virtual reality in science and technology, graphics formats, data compression. Scientific documents and computer presentations, text processors for scientific documents, mathematics and graphics in documents, DTP tools, typography system TeX, language PostScript, tools for computer presentations, hypertext, WWW as a publishing environment, language HTML, HTML editors, document conversion into HTML. Databases in science and technology, character of scientific and technical data, data structures and architecture of scientific databases, user interface, data mining, sources on the Internet.

412 PLT Laser Technique Laboratory, S, 0+4 kz, Kubeček, Gavrilov, Blažej, credits: 4
412 POAL Computer Algebra, W, 1+1, Liska, credits: 2
Course will be opened for 4 or more students. Lisp, representation of basic objects (integers, rational and algebraic numbers, polynomials, rational functions, radicals, algebraic functions), arithmetic, simplification, greatest common divisor, resultant, derivation, series summation, integration, ordinary differential equations, factorisation, equations solving, quantifier elimination, substitution and pattern matching, algebraic programming, graphics, Reduce - detailed introduction and solving of practical examples, applications, overview of other systems (Axiom, Macsyma, Maple, Mathematica), miniproject.

412 PROP Optics and Optoelectronics Classes, S, 4, Richter, Jančárek, credits: 4

412 RSEN Automatic Control And Sensors, W, 4+0, Hiršl, credits: 4
Automatic control, analogue signals, modulation, demodulation, digitalisation, discrete systems, continuous automatic control, system function, poles and zeros, stability, discontinuous automatic control, Z-transform, sensors, characteristics of sensors, principles of sensors, measurement with sensors.

412 SIG Signal and Data Processing, W, 2+1, Limpouch, Procházka, credits: 3
Measurement accuracy and errors, random errors, foundations of probability theory, characteristics of probability distributions, transfer of errors, measures of association between random variables, point and interval estimation, testing of statistical hypotheses, modelling of data, linear and nonlinear fits, Fourier transform spectral methods, small signal detection against noise, introduction into stochastic processes.

412 SIO Circuit Simulation and Analysis, S, 4, Pavel, credits: 4
Simulation for: alternating and direct current, poles and zeros, steady state, transient, time and frequency analysis, optimisation loops, sensitivities and worst case. Solution: system of algebraic differential equations - corrector predictor, fast Fourier transform, LU factorisation, pivoting etc. Models: Gummel - Poon for bipolar junction transistor, Dang for MOSFET etc. Programs: Circuit Interactive Analyser + OrCAD, PSpice for Windows, PUFF for microwave applications.

412 TEXT Computer Aided Publishing, W, 1+1, Novotný, credits: 2
Text coding standards, Czech coding norms. Optical character recognition. Interactive DTP tools vs. typographical languages (TeX, LaTeX, HTML, XML, MS WORD). Basic concepts of typography, features specific for the computer typography. Demonstrating the concepts on typesetting system. Fonts, tables, mathematical equations, document styles. Floating bodies, crossreferences,... HTML -- the name of the game. Graphical formats, output formatting (PDF, PS, DOC, RTF), multimedia presentation.

412 UINF Introduction to Informatics, S, 1+1, Novotný, credits: 2
Introduction to terminology (both Czech and English), information technologies overview. Computer as a basic instrument for information society. Operating systems, their theoretical background. LAN, WAN (hardware, net software), information resources. Network operation systems, network application programs. On line information systems (DIALOG). The goal of this course is to gain skills and experience in networking.

412 ULAT Introduction to laser technique, W, 1+1, Jelínková, Vrbová, credits: 2

412 ULT Introduction to laser technique, W, 2+1, Jelínková, Vrbová, credits: 3

412 UMF Introduction to Modern Physics, S, 2+1, Drška, credits: 3
The course is intended to be a concise introduction to concepts of modern physics for students who have already had basic classical physics course. The course is mandatory for students who plan to study the study branch "Information Physics".

412 UPP Introduction to Computers, W, 0+2, Novotný, credits: 2
Internet and NetWare network services and their applications. Microsoft Windows 2000 operating system. Historical review, binary representation, basic operations, computer architecture, operating systems. Personal Computer: characteristics, configuration, main components. DOS: main characteristics, performance and limitations, peripherals, files, file structures, DOS commands and their applications. Practical training: networking, operating systems, application software (e.g. Office2000).

412 UZP Users Programs, W, 2, Jelínková, credits: 2
Text and graphics program for laboratory exercises, projects and diploma work. Word, Excel -- writing text by help of the computer -- principle, writing of equations; preparation of figures and tables; headers and footers; contents; numbering pages. Origin -- image processing information. PowerPoint -- preparation of project's presentation.

412 VEL Selected Topics from Electronics, W, 2, Pavel, credits: 2
Computer automation, data acquisition, data analysis, basic of programmable languages -- Delphi, C++ Builder and Visual Basic, optoelectronic devices, electronics sensors, stepper motors, special digital and analogue circuits for computer communication.

412 VTV Scientific Calculations, S, 2, Procházka, credits: 2
Main goals, characterisation of calculation for science and technology, requirements on speed, code compatibility, scientific libraries. Fortran language: historical review, main characteristics, language structure, line format, variables, commands, input output formatting, subprograms, code commenting.

412 ZEL1 Introduction to electronics 1, W, 2+1, Resl, Pavel, credits: 3
Law of electrical circuits, elements of passive type, solution of linear circuits in time domain, harmonics regime, power in electrical circuits, transmission and frequency characteristics in linear circuits, theory of semiconductors, PN junction, semiconductor diodes, bipolar and unijunction transistors, nonharmonics periodical signals, Fourier and Laplace transformation, feedback, sensitivity and stability of feedback circuits, sampling, transformation of time depended signals, electrical rotating machines.

412 ZEL2 Introduction to electronics 2, S, 2+1, Resl, Pavel, credits: 3
Impulse signals in linear circuits, bipolar and unijunction transistors switching, thyristor, operational amplifiers, harmonic and nonharmonic signal generation, guidelines, digital analogue convertors and analogue digital convertors, logic digital circuits, microcomputers.

412 ZFP Principles of Plasma Physics, S, 4, Limpouch, credits: 4
Basic plasma parameters, Debye screening, astrophysical and laboratory plasmas, motion of charged particles in external fields, kinetic description of particle systems, Vlasov equation, Boltzmann equation, Fokker-Planck equation and Landau collision integral, fluid equations, transport processes, waves in plasmas, plasma and ion sound waves, CMA diagram, high parameter plasma, fusion reaction, computational experiments.
412 ROP12 Class work 1,2, W+S, 4, Procházka, credits: 4
Individual work on a scientific project, review in winter semester, problem solving contribution in summer semester. Individual work on project guidelines, public presentation of results, presentation in foreign language, protocol formatting.

412 BAP12 Bachelor work 1,2, W+S, W 2, S 20, credits: W 2, S 20
Bc degree closing work, individual supervisors.

412 SBA12 Seminar to bachelor work 1,2, W+S, 2, Hamal, credits: 2
Individual work on a Bc degree closing project, periodic checks of the progress, foreign language presentation, protocol formatting.

412 RESE Review work, S, 0+2, credits: 2
Individual review work on a scientific project.

412 VYZ12 Research Project 1,2, W+S, 4, Král, credits: 4
Introduction to the methods of scientific work for undergraduate students. Every student works for one year in some of laboratories at the faculty or at the academy of sciences. He is considered as a member of research team and he participates on research connected to a selected project of the laboratory. At the end of his work he writes a report (paper) about methods and results which he presented at a seminar.

412 DIP12 Diploma work 1,2, W+S, W 2, S 10, credits: W 2, S 10
Master degree closing work, individual supervisors.

412 DSEM Diploma seminar, S, 2, Hamal, credits: 2
Individual work on a Bc degree closing project, periodic checks of the progress, foreign language presentation, protocol formatting.

412 SEM Seminar, W+S, 2, Jelínková, credits: 2
Individual work on Master degree project. Periodic checks of the progress, protocol formatting, detail preparation of the master theses defence.