Course descriptions

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COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBF-223/00	Application Programs in Biophysics

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 2 / 1 **per level/semester:** 28 / 14
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 1.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
1. Brief introduction to OS. 2. Procedural programming introduction. 3. Object oriented programming introduction. 4. Programming languages overview. 5. Linear algebraic equation solving. 6. Interpolation and extrapolation. 7. Fast Fourier Transform (FFT). 8. Fourier spectra applications. 9. Statistical data analysis. 10. A/D converters/transducers programming. 11. On-line control of experimental devices. 12. Data acquisition and evaluation.

Recommended literature:
Numerical Recipes in C (http://lib-www.lanl.gov/numerical/bookcpdf.html)
http://en.wikipedia.org/wiki/Object-oriented_programming
http://www.python.org/
http://www.scipy.org/

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 35

A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: RNDr. Peter Rybár, PhD.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBM-215/15	Applications of Ionising Radiation and Radionuclides in Medicine

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 3.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 24

A	B	C	D	E	FX
91,67	8,33	0,0	0,0	0,0	0,0

Lecturers: doc. RNDr. Karol Holý, CSc., RNDr. Radoslav Böhm, PhD., RNDr. Monika Müllerová, PhD.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBM-124/00	Basic Applications of Optical Spectrometry

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 2 / 1 **per level/semester:** 28 / 14
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 1.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
Electromagnetic radiation spectrum. Energetic states (levels) of molecules. Electronic transitions in molecules. Probabilities of absorption and emission, Einstein coefficients. Transition dipole moments. Absorption of UV VIS radiation, Lambert-Bear-Bouguer law. Information contained in absorption spectra, Frank-Condon principle. Techniques of absorption spectrophotometry. Preparation of samples for optical spectrophotometry. Chromophores. Effect of internal factors on absorption spectra. Effect of external factors on absorption spectra. Absorption of linearly polarized light. Applications of absorption spectroscopy. Fundamentals of formation of excited electronic states of molecules. Information contained in fluorescence spectra. Techniques of spectroflourimetry. Properties of electronically excited molecules. Effect of internal factors on fluorescence spectra. Stokes law, law of mirror symmetry. Quantum yield of fluorescence. Kinetics of luminiscence, lifetime of excited state. Fluorophores. Effect of external factors on fluorescence spectra. Fluorescence quenching, fluorescence anisotropy. Fluorescence probes and labels.

Recommended literature:
Nepraš M., Titz M.: Základy teórie elektrónových spekter. SNTL, Praha 1983
Kováč Š., Leško I., Spektrálne metódy v organickej chémii. Alfa, Bratislava 1980
Ferenčík M., Škárka B., a kol.: Biochemické laboratórne metódy. Alfa, Bratislava 1981
Lapčík Ľ., Pelikán P., Čeppan M.: Fotochemické procesy. Alfa, Bratislava 1989
Prosser V. a kol.: Experimentální metody biofyziky. Academia, Praha 1989

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 107

A	B	C	D	E	FX
85,05	11,21	1,87	0,93	0,93	0,0

Lecturers: prof. RNDr. Libuša Šikurová, CSc., RNDr. Marcela Morvová, PhD.
Last change: 02.06.2015
Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBM-121/00	Basics of MR Spektrometry and Tomography

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 1.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
General fundamentals of imaging in clinical practice. Basic terms and physical principles of NMR a EPR. NMR spectrum. Relaxation mechanisms. Relation between high resolution NMR spectra parameters and structure of compounds. Multipulse NMR spectroscopy. 2D NMR spectroscopy. Principles of MR imaging. Image parameters and image contrast. Special imaging techniques, artifacts. Hardware and specific requirements for in-vivo measurements on humans. Localized spectroscopy and spectroscopic imaging (CSI). Practical demonstration of MR imaging and localized spectroscopy.

Recommended literature:
Magnetická rezonančná spektroskopia, kol., Učebné texty k PGŠ, CHTF STU Bratislava, 1998
H. Weis, P. Bořuta, Úvod do magnetickej rezonancie, GOEN, Bratislava, 1998
H. Günther, NMR Spectroscopy: Basic Principles, Concepts, and Applications in Chemistry, 2nd edition. Wiley, Chichester, 1998.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 129

A	B	C	D	E	FX
66,67	20,16	10,08	0,78	2,33	0,0

Lecturers: Ing. Vladimír Mlynárik, DrSc.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBM-131/00	Biomedical Application of Magnetic Resonance

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 2.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
i) Basic terms, specific features of NMR in biological tissues and in vivo measurements. ii) Properties of NMR signals in biological tissues. iii) Information on a living tissue obtained by NMR methods. iv) Main issues of in vivo applications and their solutions. v) Degenerative brain diseases studied by 1H/31P NMRS and MRI. vi) Studies of energy processes – glucose transport and metabolism by 31P/13C/1H NMRS – Metabolic control analysis. vii) Degenerative changes in cartilage and bone. viii) Functional imaging of cerebral activity. ix) Studying cancer by 1H/31P NMRS – spectra classification. x) Assessment of tissue vitality in transplantation - relaxometry, NMR spectroscopy.

Recommended literature:
J. Weis, P. Bořuta, Úvod do magnetickej rezonancie, GOEN, Bratislava, 1998.
D. Gadian, Nuclear Magnetic Resonance and its Application to Living Systems, Oxford, 1996

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 69

A	B	C	D	E	FX
91,3	7,25	1,45	0,0	0,0	0,0

Lecturers: RNDr. Marek Chmelík, PhD.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBF-143/15	Biosensors and Nanotechnologies

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 2.

Educational level: II.

Prerequisites:

Recommended prerequisites:
,

Antirequisites: FMFI.KJFB/2-FBF-143/00

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 53

A	B	C	D	E	FX
79,25	15,09	5,66	0,0	0,0	0,0

Lecturers: prof. RNDr. Tibor Hianik, DrSc., Mgr. Veronika Šubjaková, PhD.

Last change: 29.04.2017

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBM-910/00	Diploma Thesis (1)

Educational activities:
Type of activities: independent work
Number of hours:
per week: 4 **per level/semester:** 56
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 3.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
Preparation of literature survey on the basis of assigned subject of diploma theses aims determination, preparation of materials for selection of the methodic procedure for solution of the subject.

Recommended literature:
According to the diploma theses.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 104

A	B	C	D	E	FX
94,23	5,77	0,0	0,0	0,0	0,0

Lecturers: prof. RNDr. Libuša Šikurová, CSc.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBM-912/15	Diploma Thesis (2)

Educational activities:
Type of activities: independent work
Number of hours:
per week: 6 **per level/semester:** 84
Form of the course: on-site learning

Number of credits: 6

Recommended semester: 4.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 105

A	B	C	D	E	FX
99,05	0,95	0,0	0,0	0,0	0,0

Lecturers: prof. RNDr. Libuša Šikurová, CSc.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

STATE EXAM DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KJFB/2-FBM-991/15	**Course title:** Diploma Thesis Defense
Number of credits: 10	
Educational level: II.	
State exam syllabus:	
Last change: 02.06.2015	
Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.	

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBM-920/00	Diploma Thesis Seminar (1)

Educational activities:
Type of activities: seminar
Number of hours:
per week: 5 **per level/semester:** 70
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 3.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
Presentation of information from literature and suggestion of topics for the Diploma thesis. Presentation and discussion of techniques and methods (experimental and theoretical) to be used in the thesis. Presentation of results with statistics, discussion.

Recommended literature:
According to the Diploma thesis

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 104

A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: prof. RNDr. Libuša Šikurová, CSc.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBM-921/00	Diploma Thesis Seminar (2)

Educational activities:
Type of activities: seminar
Number of hours:
per week: 5 **per level/semester:** 70
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 4.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
Presentation of own results with statistics, discussion.

Recommended literature:
According to the Diploma thesis

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 105

A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: prof. RNDr. Libuša Šikurová, CSc.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI-LF.ÚLFBIT/2-FBM-231/00	EMG Methods in Diagnostics and Therapy

Educational activities:
Type of activities: lecture
Number of hours:
per week: 3 **per level/semester:** 42
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 3.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
Anatomical and physiological basis of bioelectromagnetism. Bioelectric sources and conductors and their modelling. Theoretical methods in bioelectromagnetism. Electric and magnetic measurement of electric activity of neural tissue and the heart. Electric and magnetic stimulation of neural tissue and the heart. Measurement of intrinsic electric properties of biological tissue. Other bioelectromagnetic phenomena. Principles of electric and magnetic therapeutic methods.

Recommended literature:
Malmivuo J., Plonsey R., Bioelectromagnetism, Oxford University Press, New York - Oxford 1995, 482 p. - chosen chapters (available also at: http://butler.cc.tut.fi/~malmivuo/bem/bembook/)
Macfarlane P. W., Lawrie T. D. V. (Eds) Comprehensive Electrocardiology, Theory and Practice in Health and Disease, Vol.1, 2, 3, Pergamon Press, New York 1989, 1785 p. - chosen chapters

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 19

A	B	C	D	E	FX
47,37	26,32	26,32	0,0	0,0	0,0

Lecturers: doc. RNDr. Mgr. Katarína Kozlíková, CSc.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-233/13	English Conversation Course (1)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1., 3.

Educational level: I., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:

Class syllabus:
The content of the course is general English.
The language level is B2/C1 (Upper-Intermediate/Lower Advanced).

Recommended literature:
Selection of materials from Inside Out Upper-Intermediate, Cutting Edge Upper-Intermediate, New English File Upper-Intermediate, British and American newspapers and journals
Recordings: authentic and semi-authentic (source: BBC, CNN, coursebook recordings)

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 144

A	B	C	D	E	FX
59,72	18,06	9,03	2,08	1,39	9,72

Lecturers: PhDr. Elena Klátiková

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-234/13	English Conversation Course (2)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2., 4.

Educational level: I., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:

Class syllabus:
The course is a follow-up to the Conversation Course in English (1). The content of the course is general English.
The language level is B2/C1 (Upper-Intermediate/Lower Advanced).

Recommended literature:
Selection of materials from Inside Out Upper-Intermediate, Cutting Edge Upper-Intermediate, New English File Upper-Intermediate, British and American newspapers and journals
Recordings: authentic and semi-authentic (source: BBC, CNN, coursebook recordings)

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 78

A	B	C	D	E	FX
64,1	20,51	6,41	1,28	0,0	7,69

Lecturers: PhDr. Elena Klátiková

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBM-103/00	Experimental Methods in Medical Physics (1)

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 1.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
Introduction to laboratory methods (handling of chemicals, preparation of solutions, pH measurement), separation methods of biological samples (electrophoresis, centrifugation, distillation, extraction), introduction to chromatographic methods (paper, thin film, ion exchange , gel, affinity, capillary, gas, HPLC, supercritical), flow cytometry, microscopic techniques (light microscopy, dark field microscopy, phase contrast, polarized microscopy, electron microscopy - SEM, TEM, fluorescence and confocal microscopy), polymerase chain reaction, spectroscopic methods (UV/VIS, fluorescence, circular dichroism, mass, Raman, infrared spectroscopy), ultrasound

Recommended literature:
R. Martin eds., Neuroscience Methods, A Guide for Advanced students, Harwood Acad. Publishers, Netherlands, 1997, 260 p.
R. S. Gold eds., The Axon Guide for Electrophysiology and Biophysics, Lab. Techniques, Comp. Axon Instruments 1993, 282 p.
V. Prosser a kol., Experimentálni metody biofyziky, Academia Praha 1989

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 120

A	B	C	D	E	FX
70,83	25,0	3,33	0,83	0,0	0,0

Lecturers: RNDr. Marcela Morvová, PhD., RNDr. Milan Zvarík, PhD.

Last change: 29.04.2019

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBM-104/00	Experimental Methods in Medical Physics (2)

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 2.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
Flow cytometry, stem cell, separation methods of biological samples, methods using classical (equilibrium) thermodynamics in the study of biological systems, chromatographic methods, methods of imaging in medicine, ultrasound, radiotherapy, simulation medicine, methods of genetic modulation, methods for drug development and monitoring of their distribution in the body

Recommended literature:
V. Prosser et al.: Experimental methods of biophysics, Academia Praha 1989, (in Czech).
E. R. Menzel: Laser Spectroscopy, M. Dekker, New York, 1995.
A. V. Prijezzev, V.V.Tucin, L.P. Subockin: Laser diagnostics in biology and medicine, PNTP Moskva 1997, (in Russian).
L.E. Schoeff and R.H. Williams: Principles of laboratory instruments, Mosby, St.Louis Missouri, 1993.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 109

A	B	C	D	E	FX
70,64	25,69	3,67	0,0	0,0	0,0

Lecturers: doc. RNDr. Iveta Waczulíková, PhD., doc. RNDr. Pavol Vitovič, PhD.

Last change: 03.02.2017

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-141/00	French Language (1)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1.

Educational level: I., II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
French language is taught at two levels: beginner and intermediate. Students opt for one of them depending on whether they wish to obtain the fundamentals of the language or wish to maintain and/or improve previous knowledge of French.

Recommended literature:
Pravda, Pravdová: Učebnica francúzštiny pre samoukov a kurzy, SPN Bratislava 1999, ISBN 80-08-00431-2

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 387

A	B	C	D	E	FX
41,09	21,96	21,19	9,82	2,07	3,88

Lecturers: Mgr. Ľubomíra Kožehubová

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-142/00	French Language (2)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: I., II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
The subject continues the program of French language (1) and provides courses of essential and intermediate French language.

Recommended literature:
Pravda, Pravdová: Učebnica francúzštiny pre samoukov a kurzy, SPN Bratislava 1999, ISBN 80-08-00431-2
Blažena Srncová: Učebnica francúzštiny pre študentov Matematicko-fyzikálnej fakulty , UK 1983
Kolektív Lingea, s.r.o.: Slovensko-francúzsky hovorník, Bratislava 2008

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 247

A	B	C	D	E	FX
36,03	26,72	21,05	10,93	2,83	2,43

Lecturers: Mgr. Ľubomíra Kožehubová

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-241/00	French Language (3)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3.

Educational level: I., II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
The subject provides a course of intermediate French language, covering not only general, but also technical language.

Recommended literature:
Pravda, Pravdová: Učebnica francúzštiny pre samoukov a kurzy, SPN Bratislava 1999, ISBN 80-08-00431-2
Blažena Srncová: Učebnica francúzštiny pre študentov Matematicko-fyzikálnej fakulty , UK 1983
Kolektív Lingea, s.r.o.: Slovensko-francúzsky hovorník, Bratislava 2008

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 97

A	B	C	D	E	FX
36,08	28,87	22,68	7,22	1,03	4,12

Lecturers: Mgr. Ľubomíra Kožehubová

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-242/00	French Language (4)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: I., II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
The subject provides a course of intermediate French covering not only general, but also technical French language.

Recommended literature:
Pravda, Pravdová: Učebnica francúzštiny pre samoukov a kurzy, SPN Bratislava 1999, ISBN 80-08-00431-2
Blažena Srncová: Učebnica francúzštiny pre študentov Matematicko-fyzikálnej fakulty , UK 1983
Kolektív Lingea, s.r.o.: Slovensko-francúzsky hovorník, Bratislava 2008
Zarha Lahmidi: Sciences-techniques.com, ISBN 209-0331186-0, CLE international, 2005

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 68

A	B	C	D	E	FX
36,76	35,29	19,12	2,94	1,47	4,41

Lecturers: Mgr. Ľubomíra Kožehubová

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-151/00	German Language (1)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1.

Educational level: I., II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
German language is taught at three levels: beginner, intermediate and advanced. Students opt for one of them depending on whether they need to learn the fundamentals or maintain and/or improve their previous knowledge.

Recommended literature:
Vilášek, P.: Nemčina pre študentov FMFI, Na webovej stránke autora v elektronickej podobe.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 666

A	B	C	D	E	FX
32,28	29,13	21,17	9,91	2,85	4,65

Lecturers: Mgr. Alexandra Maďarová, Mgr. Marián Mancovič

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-152/00	German Language (2)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: I., II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
The course continues the program of German language (1). German language is taught at three levels: beginner, intermediate, advanced.

Recommended literature:
Vilášek, P.: Nemčina pre študentov FMFI, Na webovej stránke autora v elektronickej podobe.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 423

A	B	C	D	E	FX
30,5	21,99	22,93	14,66	3,78	6,15

Lecturers: Mgr. Alexandra Maďarová, Mgr. Marián Mancovič

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-251/00	German Language (3)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3.

Educational level: I., II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
The subject continues the program of German language (2). It provides a course of intermediate and advanced German language.

Recommended literature:
Vilášek, P.: Nemčina pre študentov FMFI, Na webovej stránke autora v elektronickej podobe.
Aus moderner Technik und Naturwissenschaft, 1999, Max Hueber Verlag, D-85737, ISBN 3-19-001629-1

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 150

A	B	C	D	E	FX
38,0	28,0	22,0	6,67	2,67	2,67

Lecturers: Mgr. Alexandra Maďarová, Mgr. Marián Mancovič

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-252/00	German Language (4)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: I., II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
The subject continues the program of German language (3). It provides a course of intermediate and advanced German language.

Recommended literature:
Vilášek, P.: Nemčina pre študentov FMFI, Na webovej stránke autora v elektronickej podobe.
Vilma Václavíková: Nemčina pre študentov MFF UK, Vysokoškolský učebný text pre potrebu študentov KJP, č. 9793/1982 C VIII/2, 1983

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 78

A	B	C	D	E	FX
35,9	28,21	14,1	12,82	3,85	5,13

Lecturers: Mgr. Alexandra Maďarová, Mgr. Marián Mancovič

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBM-111/15	Informatics for Health and Medicine

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 1.

Educational level: II.

Prerequisites:

Antirequisites: FMFI.KJFB/2-FBM-111/00

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 120

A	B	C	D	E	FX
71,67	20,0	6,67	0,83	0,83	0,0

Lecturers: RNDr. Marcela Morvová, PhD.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBF-140/00	Introduction to Biomechanics

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 1.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
1. Introduction to the biomechanical concepts. 2. Biomechanics of cell membrane and form of cell. 3. Biomechanics of human tissues in organism. 4. Human locomotion – system of bone muscles. 5. Thermomechanics of muscle contraction. 6. Active motion of joints. 7. Forces on the skeleton. 8. Visco-elestic properties of body liquids. 9. Heart as a pump machine. 10. Hearing biomechanics. 11. Breathing mechanics. 12. Biomechanics of digestion tract.

Recommended literature:
J. Vogel, Biomechanics, Princeton, University Press, 2003.
J. Valenta, Biomechanics, Academia and Kluwer Academic Publishers, 2002.
http://en.wikipedia.org/wiki/Biomechanics

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 101

A	B	C	D	E	FX
88,12	7,92	1,98	1,98	0,0	0,0

Lecturers: prof. RNDr. Melánia Babincová, DrSc.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBM-214/15	Introduction to Dosimetry

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 3.

Educational level: II.

Prerequisites:

Antirequisites: FMFI.KJFB/2-FJF-108/00

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 12

A	B	C	D	E	FX
83,33	16,67	0,0	0,0	0,0	0,0

Lecturers: doc. RNDr. Karol Holý, CSc., RNDr. Radoslav Böhm, PhD.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBF-146/00	Liposomes in Biophysics and Medicine

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 2.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
1. Structure and properties of lipid bilayers of liposomes. 2. Methods of liposome preparations. 3. Physical properties: ordering of lipid molecules, phase transitions, osmotic properties, permeability. 4. Stability of liposomal structure. 5. Processes of aggregation, fusion and auto-oxidation. 6. Applications in biophysics and medicine. 7. Model systems, cancer chemotherapy, antimicrobial therapy, targeted transport. 8. Methods of efficient drug encapsulation – chemistry and physics. 9. Mechanisms of cell-liposome interaction. 10. Fusion, stable adsorption, endocytosis. 11. Conditions of stability of in the blood – vascular system. 12. Novel structures in liposomal therapy: transferosomes, magnetoliposomes, fullerenosomes.

Recommended literature:
G. Betageri, Liposome Drug Delivery Systems, Technomics Press 2002.
D. Lasic, Liposomes in Gene Delivery, CRC Press 1997.
http://en.wikipedia.org/wiki/Liposome

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 49

A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: prof. RNDr. Melánia Babincová, DrSc.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBM-112/15	Mathematical-physical Analyses of Measurements in Medicine

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 1.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 47

A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: RNDr. Peter Kvasnička

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

STATE EXAM DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KJFB/2-FBM-952/15	**Course title:** Medical Biophysics
Number of credits: 2	
Educational level: II.	
State exam syllabus:	
Last change: 21.02.2017	
Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.	

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBM-101/00	Medical Biophysics (1)

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 1.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
Cell, biopolymers, proteins – structure and function. Cell electric properties. Voltage gated channels and action potential formation. Intracellular signaling. Lipid transport and hormonal regulation. Synaptic transmission in I) neuromuscular junction, II) in CNS. Cytoskeleton. Muscle cell physiology: I) Electric activity of skeletal muscle cells, II) Electric activity of cardiac muscle cells. Secretion, blood circulation, immune system, cancer research. Introduction to ecology and system dynamics.

Recommended literature:
Chorvát D., Biofyzika, Vyd. UK Bratislava, 1998, 204 s.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 121

A	B	C	D	E	FX
34,71	33,06	19,83	7,44	4,96	0,0

Lecturers: Mgr. Zuzana Garaiová, PhD.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBM-109/00	Medical Biophysics (2)

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 2.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
Protein classes specialized to ion channels (IC). Sodium, potassium, calcium, chloride IC and disease. Review of voltage gated channels. Cell junctions, cytoskeleton proteins connected with IC and disease. Receptors, ligand gated channels and corresponding diseases. IC regulated by intracellular ligands. Intracellular signalization. Small proteins (hormones, neurotransmitters, local mediators). Exchangers, pumps, anion and cation channels. Protein therapy. Drugs, toxins. Organism and IC.

Recommended literature:
D. J. Aidley, P. R. Stanfield, Ion Chanels, molecules in action, Cambridge Univ. Press, Cambridge 1966

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 109

A	B	C	D	E	FX
44,95	27,52	20,18	2,75	4,59	0,0

Lecturers: Mgr. Zuzana Garaiová, PhD.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAI+KI/1-BIN-301/15	Methods in Bioinformatics

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 2 / 2 **per level/semester:** 28 / 28
Form of the course: on-site learning

Number of credits: 6

Recommended semester: 1.

Educational level: I., II.

Prerequisites:

Course requirements:
Homework assignments, group project, written exam
Scale of assessment (preliminary/final): 40/60

Learning outcomes:
Students will be familiar with basic problems and methods in bioinformatics; they will be able to choose an appropriate method for a given biological problem and to interpret its results.

Class syllabus:
Basic concepts from molecular biology, algorithms and machine learning. Sequencing and assembling genomes. Gene finding. Sequence alignment. Evolutionary models and phylogenetic trees. Comparative genomics. RNA structure. Motif finding and gene expression analysis. Protein structure and function. Selected current topics.
Students of computer science programs will focus on computer science methods and mathematical modeling of the covered problems. Life science students will focus on understanding and correct application of these methods on real data.

Recommended literature:
Biological sequence analysis : Probabilistic models of proteins and nucleic acids / Richard Durbin ... [et al.]. Cambridge : Cambridge University Press, 1998
Understanding bioinformatics / Marketa Zvelebil, Jeremy O. Baum. New York : Garland Science, 2008

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 88

A	B	C	D	E	FX
28,41	18,18	25,0	20,45	4,55	3,41

Lecturers: doc. Mgr. Bronislava Brejová, PhD., doc. Mgr. Tomáš Vinař, PhD., Mgr. Vladimír Boža, PhD.
Last change: 08.02.2018
Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

STATE EXAM DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KJFB/2-FBM-953/15	**Course title:** Methods in Biomedical Physics
Number of credits: 2	
Educational level: II.	
State exam syllabus:	
Last change: 21.02.2017	
Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.	

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBM-135/00	Methods of Biosignal Processing and Medical Imaging Computer Graphic (1)

Educational activities:
Type of activities: lecture
Number of hours:
per week: 4 **per level/semester:** 56
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 1.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
Image processing:
1. Basic terms, physical principles of image registration, detectors of optical signal
2. Sampling, analog to digital conversion, aliasing, digital and optical resolution
3. Intensity histogram, signal and noise, greyscale transformations, matematical operations
4. Resampling, image transformation, pseudocolor and color spaces,
5. Convolution, point spread function, image bluring and sharpening
6. Fourier transform, digital image filtering
7. Binary operations, edge detection, morphology and segmentation
Data visualization in Iris Explorer:
8. Principles of visualization of multidimensional data, visualization software
9. Slicing of 3D data, application of colormaps, 2D and 3D contours
10. Surface and volumetric rendering of 3D data, visualization of vector fields
11. Geometry processing, animation of virtual 3D models
12. Application of visualization techniques on selected data (microscopy, tomography)

Recommended literature:
S.W. Smith: The Scientist and Engineer's Guide to Digital Signal Processing, Second edition, California Technical Publishing, 1999, (http://www.dspguide.com/pdfbook.htm)
I.N. Bankman: Handbook of Medical Imaging, Processing and Analysis, Academic Press, 2000
IRIS Explorer User's Guide (http://www.nag.co.uk/visual/ie/iecbb/doc/html/nt-ie5-0.htm)

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 135

A	B	C	D	E	FX
80,0	18,52	1,48	0,0	0,0	0,0

Lecturers: RNDr. Dušan Chorvát, PhD.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KJFB/2-FBM-136/00	**Course title:** Methods of Biosignal Processing and Medical Imaging Computer Graphic (2)
Educational activities: **Type of activities:** lecture **Number of hours:** **per week:** 2 **per level/semester:** 28 **Form of the course:** on-site learning	
Number of credits: 3	
Recommended semester: 2.	
Educational level: II.	
Prerequisites:	
Course requirements:	
Learning outcomes:	
Class syllabus: Spracovanie signálov: 1. Types, detection and analogue preprocessing of signal 2. Signal transmission, conversion, digitalisation and recording 3. Signal and noise, frequency analysis, digital and analogue filters 4. Linear and nonlinear systems, superposition, signal waveform analysis 5. Matematical modelling and fitting of complex signals, statistical analysis 6. Convolution, instrument response function, deconvolution techniques 7. Signal synthesis, compression and encoding Aplikácie: 8. Optical microscopy 9. Computer tomography 10. Bioacoustics 11. Electrophysiology 12. Stationary and time-resolved spectroscopy	
Recommended literature: S.W.Smith: The Scientist and Engineer's Guide to Digital Signal Processing, Second edition, California Technical Publishing, 1999, HYPERLINK http://www.dspguide.com/pdfbook.htm J. Dempster: Computer Analysis of Electrophysiological Signals, Biological Techniques, D.Sattelle ed., Academic Press 1993	
Languages necessary to complete the course:	
Notes:	

Past grade distribution
Total number of evaluated students: 116

A	B	C	D	E	FX
86,21	10,34	3,45	0,0	0,0	0,0

Lecturers: RNDr. Milan Zvarík, PhD.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBM-125/15	Methods of Radiation Detection

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 1.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 0

A	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0

Lecturers: doc. RNDr. Ivan Sýkora, PhD., RNDr. Miroslav Pikna, PhD.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KAMŠ/2-EFM-236/15	**Course title:** Modelling Biological Processes
Educational activities: **Type of activities:** lecture **Number of hours:** **per week:** 2 **per level/semester:** 28 **Form of the course:** on-site learning	
Number of credits: 3	
Recommended semester: 3.	
Educational level: II.	
Prerequisites:	
Course requirements: Continuous assessment: homework, exam during the semester Exam: written and oral Approximate grading scale: A 90%, B 80%, C 70%, D 60%, E 50%	
Learning outcomes: Passing this subject, students will gain a basic understanding and overview of methods in biological modeling.	
Class syllabus: Biological modeling with ordinary differential equations: the principle of mass balance, mass action rule, scaling and nondimensionalisation, one-component models (Michaelis-Menten kinetics, gene autoregulation), multi-component models (biological switches, oscillators, epidemiology). Modeling with differential equations with delay. Models with spatial component: the reaction-diffusion systems, the spread of epidemics, pattern formation. Stochastic models: probability balance equation, Gillespie simulation algorithm, stochastic models of gene expression.	
Recommended literature: Mathematical biology : 1. : An introduction / J. D. Murray. New York : Springer, 2002 Mathematical biology : 2. : Spatial models and biomedical applications / J. D. Murray. New York : Springer, 2003 Keener, J., Sneyd, J., Mathematical physiology: I. Cellular physiology, 2nd. ed., Springer, New York, 2008 Wilkinson, D., Stochastic modelling for systems biology, 2nd ed., Chapman & Hall/CRC, Boca Raton, 2012.	
Languages necessary to complete the course: Slovak, English	
Notes:	

Past grade distribution
Total number of evaluated students: 59

A	B	C	D	E	FX
35,59	16,95	23,73	16,95	6,78	0,0

Lecturers: doc. Mgr. Pavol Bokes, PhD.

Last change: 19.10.2016

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBF-120/00	Molecular Biophysics

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 2.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
1. Introduction, historical overview. Structure of proteins, peptide bound, Secondary structure of proteins. 2. Conformation of polypeptide chain. 3D structure of proteins. 3. The typee of interactions in macromolecules. 4. Phase transitions in biopolymers (Globule-Statistical chain). 5. Structure of nucleic acids. 6. Structure of biomembranes and their models. Electron microscopy and X-ray analysis of membranes. 7. Physical properties of the membranes. Membrane electric breakdown, electroporation. 8. Mechanisms of membrane conductivity. Membrane receptors. 9. Phase and membrane theory of exitation. Membrane potential. Aprovement of the membrane theory of Bernstein. 10. Mechanisms of the origin and propagation of nervous impulse. Model of Hodgkin and Huxley. 11. Structure of the muscle and muscle proteins. Electrochemical coupling of muscle contraction. 12. The theory of muscle contraction

Recommended literature:
T. Hianik, Basics of Molecular Biophysics, UK, 1987 (in Slovak).
M.B. Jackson, Molecular and Cellular Biophysics, Cambridge University Press, 2006
B. Nölting, Methods in Modern Biophysics, Springer, 2006.
T. Hianik, Structure and physical properties of biomembranes and model membranes, Acta Physica Slovaca 56 (2006) 687-805.
C.R. Cantor, P.R. Schimmel, Biophysical Chemistry, W.H. Freeman and Company, San Francisco, 1980.
B. Alberts, D. Bray, A. Johnson, J. Lewis, M. Ralf, K. Roberts, P. Walter, Essential Cell Biology, Garland Publishing. Inc, New York, 1998.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 136

A	B	C	D	E	FX
47,79	32,35	13,97	5,88	0,0	0,0

Lecturers: prof. RNDr. Tibor Hianik, DrSc.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBF-226/15	Molecular Dynamics Simulations

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 2 / 2 **per level/semester:** 28 / 28
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 3.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 0

A	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0

Lecturers: RNDr. Ing. Milan Melicherčík, PhD., prof. RNDr. Ján Urban, DrSc.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI-LF.ÚPA/2-FBM-108/00	Pathological Anatomy

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 4 / 2 **per level/semester:** 56 / 28
Form of the course: on-site learning

Number of credits: 7

Recommended semester: 2.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
Definition of pathology, history, sources of information, basic terminology. Methods in pathology (Autopsy and its significance, Biopsy a its role in detrmination of clinical diagnosis, histology, histochemistry). Optical methods of investigation and possibility of application in pathology (non-polarized and polarized light, fluorescence, phase contrast, differential interference contrast, dark field, confocal, transmission and scanning electron microscopy, transmitted and reflected light). Physical chemistry and its application in pathology (Raman spectroscopy, infrared spectroscopy, secondary ion mass spectroscopy (SIMS), energy-dispersive analysis (EDX). Pathology of the cell (cellular pathology). Pathology of the extracellular matrix. Metabolic and regressive alterations (dystrophy, atrophy, necrosis, death). Disturbances of the blood and lympha. Causes of the diseases. Pathology of the environment. General oncopathology. Selected problems of special oncopathology. Pathology of central nervous system. Pathology of oral cavity and respiratory tract. Pathology of digestive tract. Pathology of cardiovascular system. Pathology of the muscle, bone and joints. Osteoporosis as actual problem of contemporary public health. Pathology of urinary system and genital system. Skin pathology. Pathology of lymphatic and hemopoietic systems. Pathology of the spleen. Pathology of endocrine system. Chronicity test and cancerogenity from pathologist view.

Recommended literature:
Zaviačič M. (Ed): Kompendium patológie I a II, Bratislava 2002, Univerzita Komenského.
Currently content of lectures available at home page of Institute of pathology, prof. Jakubovský home page and RNDr Kopáni home page (in progress).

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 106

A	B	C	D	E	FX
69,81	16,98	8,49	2,83	0,94	0,94

Lecturers: prof. MUDr. Ľudovít Danihel, CSc., MUDr. Mgr. Vladimír Šišovský, PhD.
Last change: 02.06.2015
Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI-LF.ÚPF/2-FBM-110/00	Pathological Physiology

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 4 / 2 **per level/semester:** 56 / 28
Form of the course: on-site learning

Number of credits: 7

Recommended semester: 2.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
Pathophysiology of respiratory system, Pathophysiology of blood and haematologic system, Pathophysiology of cardiovascular system, Pathophysiology of kidneys and urinary system, Pathophysiology of endocrine system, Pathophysiology of nervous system, Pathophysiology of gastrointestinal tract, Pathophysiology of bones and joints, Fluid and electrolite disturbances, Disorders of acid-base homeostasis.

Recommended literature:
Hulín I. et al.: Patofyziológia a klinická fyziológia pre magisterské a bakalárske štúdium, Bratislava, SAP 2005, 593 s.,
Holzerová J. et al.: Experimentálne modely chorôb. Univerzita Komenského Bratislava, 2003, 113 s.,
Hulín I. et al.: Patofyziológia, 6. prepracované a doplnené vydanie, SAP 2002 - vybrané kapitoly.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 110

A	B	C	D	E	FX
78,18	10,91	1,82	2,73	5,45	0,91

Lecturers: doc. RNDr. Ing. Peter Celec, DrSc., prof. MUDr. Marián Bernadič, CSc., prof. MUDr. Beáta Mladosievičová, CSc.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBM-213/00	Photobiophysics and Phototherapy

Educational activities:
Type of activities: lecture
Number of hours:
per week: 3 **per level/semester:** 42
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 3.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
The field of photobiophysics; Sun radiation penetrating to the Earth; biologically active bands of the electro-magnetic radiation spectrum; chromophores and fluorophores in biological objects; application of electron spectroscopy to the study of biological objects; phototherapy, photosterilization, photodiagnostics; classification of photobiological processes; non-physiological photobiological processes; physiological photobiological processes: photoreception, photosynthesis, bioluminiscence.

Recommended literature:
Š. Kováč, I. Leško, Spektrálne metódy v organickej chémii. Alfa, Bratislava 1980
B. Birks B. (Ed.), Organic Molecular Photophysics, Arrowsmith, Bristol, 1973
G. Britton, The Biochemistry of Natural Pigments, Cambridge University Press, Cambridge, 1983
R.J.H. Clark, R.E. Hester, Biomedical Aplications of Spectroscopy, Wiley, New York,1996
J. Javurek .: Fototerapie biolaserem, Avicenum, Praha, 1995
D. Philips, Chemical mechanisms in photodynamic therapy with phtalocyanines. In: Progress in Reaction Kinetics (Eds.: Kemp T. J., Donovan R.J., Rodgers M. A. J.) Vol. 22, pp. 175-300, 1997

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 78

A	B	C	D	E	FX
94,87	3,85	0,0	0,0	1,28	0,0

Lecturers: prof. RNDr. Libuša Šikurová, CSc.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBF-102/00	Physical Chemistry and Electrochemistry

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 1.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
1. Fundamentals of chemical thermodynamics, thermochemistry, reaction enthalpy, enthalpy of formation. 2. Chemical potential and its application to equilibrium processes in one and multicomponent systems. 3. Colligative properties, electrolyte solutions, weak and strong electrolytes. 4. Activity, activity coefficient, electrolyte solutions as special case. Debay-Huckel limiting law. 5. Affinity of the chemical reaction, equilibrium constants. Application to electrolyte solutions: pH, pKa, buffer solutions, Henderson-Haselbalch equation. 6. Galvanic cell, Nernst equation, standard electrode potentials, its meaning for oxido-reduction processes. 7. Standard electrode potential and activity coefficient from measurement of EMF of galvanic cell. 8. Classification of electrodes, pH measurement. Corrosion from electrochemical point of view. 9. Introduction to chemical kinetics. Reaction order, methods for its determination. Reaction mechanism and its connection with rate low. 10. Gas-phase reactions. Lindemann-Hinshelwood mechanism. Complex mechanisms. 11. Collision and transition state theories of chemical kinetics. 12. Homogeneous and heterogeneous catalysis. Enzymatic catalysis, autocatalysis, chemical oscillations.

Recommended literature:
W.J. Moore, Physical Chemistry, SNTL Praha, 1979 (in Czech)
P.W Atkins, Physical Chemistry, Oxford Univ. Press, 2001.
P.W. Atkins, Fyzikálna chémia, STU, Bratislava, 1999 (Translation from English).

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 75

A	B	C	D	E	FX
66,67	25,33	5,33	0,0	0,0	2,67

Lecturers: prof. Ing. Pavel Mach, CSc.
Last change: 02.06.2015
Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/2-MXX-110/00	Physical Education and Sport (1)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
Practicing of the students´ game skills in collective sports: basketball, volleyball, football, floorball and hockey. Mastering of the basic technique of a particular sport discipline in other sports. In paddling, basic training on still and slightly flowing water. Development of coordination skills, improvement of articular mobility and cardiovascular system.

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 1433

A	B	C	D	E	FX
99,16	0,56	0,0	0,0	0,0	0,28

Lecturers: PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, Mgr. Ondrej Podkonický, Mgr. Jana Leginusová, Mgr. Tomáš Kuchár, PhD., PaedDr. Mikuláš Ortutay, Mgr. Martin Dovičák, PhD., Mgr. Júlia Raábová, PhD., Mgr. Branislav Nedbálek

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/2-MXX-120/00	Physical Education and Sport (2)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
Practicing of offensive and defensive game combinations and playing with modified rules in collective sports such as basketball, volleyball, football, floorball, hockey. Command of elements of higher difficulty in locomotion skills (swimming - crawl stroke, breast stroke, butterfly stroke, trampoline jumping and aerobics – practicing of areobics compositions, bodybuilding – development of the main muscle groups, paddling on running water. Testing of the level of physical fitness and coordination skills.

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 1331

A	B	C	D	E	FX
99,77	0,08	0,0	0,08	0,0	0,08

Lecturers: Mgr. Martin Dovičák, PhD., Mgr. Tomáš Kuchár, PhD., Mgr. Jana Leginusová, PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, Mgr. Branislav Nedbálek, PaedDr. Mikuláš Ortutay, Mgr. Ondrej Podkonický, Mgr. Júlia Raábová, PhD.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/2-MXX-210/00	Physical Education and Sport (3)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
To improve offensive and defensive game combinations in collective sports. Practicing of tactical and technical elements in individual sports. Compensatory exercises to correct wrong body posture. Stretching. Competition rules in sport disciplines.

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 1081

A	B	C	D	E	FX
99,44	0,37	0,0	0,0	0,0	0,19

Lecturers: PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, Mgr. Ondrej Podkonický, Mgr. Jana Leginusová, Mgr. Tomáš Kuchár, PhD., PaedDr. Mikuláš Ortutay, Mgr. Martin Dovičák, PhD., Mgr. Júlia Raábová, PhD., Mgr. Branislav Nedbálek

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/2-MXX-220/00	Physical Education and Sport (4)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
Sport training for Faculty Championships in a selected sport with modified rules. Selection of sport-talented students into teams of the Faculty Sport League, University League of Bratislava Faculties, and participation in sport events of the Faculty and University.

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 957

A	B	C	D	E	FX
99,37	0,42	0,0	0,0	0,1	0,1

Lecturers: PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, Mgr. Ondrej Podkonický, Mgr. Jana Leginusová, Mgr. Tomáš Kuchár, PhD., PaedDr. Mikuláš Ortutay, Mgr. Martin Dovičák, PhD., Mgr. Branislav Nedbálek, Mgr. Júlia Raábová, PhD.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBM-206/15	Planning and Assessment of Experiments with Applications in Biomedicine and Biophysics

Educational activities:
Type of activities: course
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 3.

Educational level: II.

Prerequisites:

Antirequisites: FMFI.KJFB/2-FBM-206/00

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 105

A	B	C	D	E	FX
87,62	9,52	2,86	0,0	0,0	0,0

Lecturers: doc. RNDr. Iveta Waczulíková, PhD.

Last change: 07.10.2016

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBM-240/15	Project Seminar

Educational activities:
Type of activities: seminar
Number of hours:
per week: 3 **per level/semester:** 42
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 4.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 33

A	B	C	D	E	FX
96,97	0,0	0,0	0,0	0,0	3,03

Lecturers: prof. RNDr. Libuša Šikurová, CSc.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBF-108/15	Quantum Theory of Molecules

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 4 / 2 **per level/semester:** 56 / 28
Form of the course: on-site learning

Number of credits: 6

Recommended semester: 1.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 25

A	B	C	D	E	FX
84,0	16,0	0,0	0,0	0,0	0,0

Lecturers: prof. RNDr. Peter Babinec, CSc., prof. Ing. Pavel Mach, CSc., prof. RNDr. Ján Urban, DrSc.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBM-141/00	Radiation Biophysics

Educational activities:
Type of activities: lecture
Number of hours:
per week: 1 **per level/semester:** 14
Form of the course: on-site learning

Number of credits: 1

Recommended semester: 2.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
Interactions of particles with matter. Base of experimental and theoretical microdosimetry. Applications of microdosimetry in biology (radiobiology, radiotherapy, radiation protection). Survival Curve and its Significance. Theories and models for cell survival. Radiation effects of particles with high linear energy transfer. Radiation exposure from natural background and other sources.

Recommended literature:
Sedlák A.: Mikrodozimetrie a její aplikace, Academia, Praha, 1989
Kovař, Spurný F., Novotný , Cejnar: Pokroky dozimetrie ionizujúciho záření, Akademia, Praha, 1984
Alpen E.L.: Radiation Biophysics, Academic Press, San Diego, 1998
F. Fremuth, Účinky záření a chemických látek na bunky a organizmus, SPN Praha 1981

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 48

A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: RNDr. Radoslav Böhm, PhD.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-161/00	Russian Language (1)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1.

Educational level: I., II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
The subject provides a course in Russian language for beginners.

Recommended literature:
The textbook has not been published. It is at students' disposal in an electronic format.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 654

A	B	C	D	E	FX
60,4	15,9	10,09	4,74	1,83	7,03

Lecturers: PhDr. Elena Klátiková

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-162/00	Russian Language (2)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: I., II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
The subject continues the program of Russian language (1) and provides a course of Russian for beginners.

Recommended literature:
The textbook has not been published. It is at students' disposal in an electronic format.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 399

A	B	C	D	E	FX
65,66	15,79	9,02	4,01	1,0	4,51

Lecturers: PhDr. Elena Klátiková

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-261/00	Russian Language (3)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3.

Educational level: I., II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
The course "Russian for Intermediate Students" is a follow-up to "Russian for Beginners". The subject of the course is general Russian in the range appropriate to the given level.

Recommended literature:
The textbook has not been published. It is at students' disposal in an electronic format.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 196

A	B	C	D	E	FX
70,41	17,35	8,67	2,55	0,0	1,02

Lecturers: PhDr. Elena Klátiková

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-262/00	Russian Language (4)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: I., II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
The course "Russian for Intermediate Students" is a follow-up to "Russian for Beginners". The subject of the course is general Russian in the range appropriate to the given level.

Recommended literature:
The textbook has not been published. It is at students' disposal in an electronic format.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 138

A	B	C	D	E	FX
75,36	13,04	7,25	2,9	0,72	0,72

Lecturers: PhDr. Elena Klátiková

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MAT-731/00	Software MATLAB (1)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: I., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:

Class syllabus:
- introduction to working environment
- using Matlab as a numerical calculator, basic arithmetic operations, number format
- entering vectors and matrices, doing matrix products, sums etc
- using Matlab to solve linear equations
- plotting basic graphs in 2D an 3D
- basic programming techniques, writing scripts and functions

Recommended literature:
Kozák Š., Kajan S., Matlab - Simulink, 1. Slovenská Technická, Univerzita v Bratislave, 1999. ISBN
Dušek F., MatLab a Simulink, Univerzita Pardubice, 2000
www.mathworks.com/matlabcentral
www.humusoft.cz

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 308

A	B	C	D	E	FX
39,94	11,69	20,78	14,29	11,04	2,27

Lecturers: Mgr. Peter Novotný, PhD.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBM-105/00	Special Practical in Biomedical Physics (1)

Educational activities:
Type of activities: laboratory practicals
Number of hours:
per week: 3 **per level/semester:** 42
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 1.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
Quantitative morphology of muscular tissue, Turbidimetric studies on lipid vesicles´ aggregation and fusion, Determination of rate constants of affinity reactions, Paper chromatography, Spectroscopic quantitative analysis of proteins/nucleic acids, Laser-induced fluorescence of tissue components in medical diagnostics

Recommended literature:
V. Prosser et al.: Experimental methods of biophysics, Academia Praha 1989, (in Czech).
Compiled training material.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 120

A	B	C	D	E	FX
65,0	28,33	5,83	0,83	0,0	0,0

Lecturers: RNDr. Marcela Morvová, PhD., RNDr. Milan Zvarík, PhD.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBM-106/00	Special Practical in Biomedical Physics (2)

Educational activities:
Type of activities: laboratory practicals
Number of hours:
per week: 3 **per level/semester:** 42
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 2.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
Electron microscopy, Polymer polarography, Free enthalpy of dissociation of p-nitrophenol, Biophysical methods in diagnostic of neurological diseases (at a clinical setting), Introductory statistics, concepts, models, and applications, Analysis of variance (ANOVA), Contingency tables.

Recommended literature:
V. Prosser, et al.: Experimental methods of biophysics, Academia Praha 1989, (in Czech).
T.A. Lang and M. Secic: How to report statistics in medicine, ACP Philadelphia PA, 1997.
Compiled training material.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 107

A	B	C	D	E	FX
62,62	33,64	2,8	0,0	0,93	0,0

Lecturers: RNDr. Milan Zvarík, PhD., RNDr. Marcela Morvová, PhD.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBM-126/15	Specialised Practical Classes in Radiological Physics

Educational activities:
Type of activities: laboratory practicals
Number of hours:
per week: 4 **per level/semester:** 56
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 2.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 0

A	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0

Lecturers: doc. RNDr. Ivan Sýkora, PhD., doc. RNDr. Jaroslav Staníček, PhD., RNDr. Imrich Szarka, CSc.

Last change: 02.06.2015

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/2-FBM-236/15	Specifics of Interdisciplinary Teamwork

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 28
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 3.

Educational level: II.

Prerequisites:

Antirequisites: FMFI.KJFB/2-FBM-236/00

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 50

A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: doc. RNDr. Iveta Waczulíková, PhD.

Last change: 07.10.2016

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/2-MXX-115/17	Sports in Natur (1)

Educational activities:
Type of activities:
Number of hours:
per week: **per level/semester:**
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 30

A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: Mgr. Branislav Nedbálek

Last change:

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/2-MXX-116/18	Sports in Natur (2)

Educational activities:
Type of activities:
Number of hours:
per week: **per level/semester:**
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 9

A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: Mgr. Branislav Nedbálek

Last change:

Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.

STATE EXAM DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KJFB/2-FBM-954/15	**Course title:** Theoretical Fundamentals of Medicine
Number of credits: 2	
Educational level: II.	
State exam syllabus:	
Last change: 21.02.2017	
Approved by: prof. MUDr. Štefan Polák, CSc., prof. RNDr. Libuša Šikurová, CSc.	