

Course descriptions

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COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KEF/2-FTL-204/15		Course title: Diagnostic Methods in Solid State Physics			
Educational activities: Type of activities: lecture Number of hours: per week: 4 per level/semester: 52 Form of the course: on-site learning					
Number of credits: 6					
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: 46					
A	B	C	D	E	FX
65,22	28,26	2,17	4,35	0,0	0,0
Lecturers: prof. RNDr. Andrej Plecenik, DrSc., doc. RNDr. Miroslav Zahoran, CSc., doc. Ing. Maroš Gregor, PhD., doc. RNDr. Tomáš Plecenik, PhD., doc. RNDr. Tomáš Roch, Dr. techn., Mgr. Leonid Satrapinsky, PhD.					
Last change: 02.06.2015					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KEF/2-FTL-920/15		Course title: Diploma Thesis Seminar			
Educational activities: Type of activities: lecture Number of hours: per week: 2 per level/semester: 26 Form of the course: on-site learning					
Number of credits: 3					
Recommended semester: 4.					
Educational level: II.					
Prerequisites:					
Course requirements: Continuous assessment: homework and seminar presentations Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%					
Learning outcomes: Preparation for a successful diploma thesis defense					
Class syllabus: To teach students to present the achieved results of their professional work in a public forum, to lead a professional discussion, to process and present assigned professional issues related to the study focus.					
Recommended literature: Defines the supervisor of the diploma thesis					
Languages necessary to complete the course: Slovak, English					
Notes:					
Past grade distribution Total number of evaluated students: 27					
A	B	C	D	E	FX
85,19	3,7	7,41	3,7	0,0	0,0
Lecturers: prof. RNDr. Peter Kúš, DrSc.					
Last change: 02.02.2022					
Approved by:					

STATE EXAM DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KEF/2-FTL-991/15	Course title: Diploma Thesis and its Defense
Number of credits: 25	
Educational level: II.	
State exam syllabus:	
Last change:	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KEF/2-FTL-108/15	Course title: Electric and Optical Properties of Solid Materials
Educational activities: Type of activities: lecture / practicals Number of hours: per week: 4 / 2 per level/semester: 52 / 26 Form of the course: on-site learning	
Number of credits: 8	
Recommended semester: 2.	
Educational level: II.	
Prerequisites:	
Recommended prerequisites: 1-FYZ-452/18 Introduction to solid state physics	
Course requirements: homeworks + oral exam A 90%, B 80%, C 70%, D 60%, E 50% Scale of assessment (preliminary/final): 55/45	
Learning outcomes: The students will acquire a deeper understanding of the electronic band structure and of those experiments which provide basic information about it. They will gain a working knowledge of the method of second quantization. They will learn how the electronic properties of solids are affected by disorder, Coulomb interactions, as well as by the electron-phonon interaction. They will know what kind of information on solids can be obtained by means of various optical methods.	
Class syllabus: Semiclassical dynamics of electrons. Influence of disorder on the electronic states. Anderson localization in one-dimensional wires. Hall effect and cyclotron resonance. de Haas-van Alphen effect. Quantum Hall effect. Many-body problem and the second quantization. Coulomb gas of electrons. The Wigner, Mott, and Hubbard metal-insulator transition. Electron-phonon coupling. Dielectric function. Clausius-Mossotti formula and polarization catastrophe. Optical properties of ionic crystals. Interband transitions in insulators. Absorption due to excitons and impurity states. Luminescence and the Franck-Condon effect. Scattering of light and photoemission.	
Recommended literature: http://www.st.fmph.uniba.sk/~hlubina1/ Fundamentals of the Physics of Solids, Vols. 1-3, J. Sólyom, Springer 2007 - 2010 Fundamentals of Semiconductors, Yu P. Y. and M. Cardona, Springer, 2010 Condensed matter physics : Corrected printing / Michael P. Marder. New York : John Wiley, 2000 Kvazičástice v pevných látkách / Jan Celý. Brno : Vysoké učení technické VUTÍUM, 2004	
Languages necessary to complete the course:	

english					
Notes:					
Past grade distribution					
Total number of evaluated students: 38					
A	B	C	D	E	FX
55,26	7,89	10,53	7,89	18,42	0,0
Lecturers: doc. RNDr. Richard Hlubina, DrSc.					
Last change: 19.01.2022					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KEF/2-FTL-115/15		Course title: Electronic Components and Circuits			
Educational activities: Type of activities: lecture / practicals Number of hours: per week: 4 / 2 per level/semester: 52 / 26 Form of the course: on-site learning					
Number of credits: 8					
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: 47					
A	B	C	D	E	FX
55,32	29,79	8,51	4,26	2,13	0,0
Lecturers: doc. RNDr. František Kundracik, CSc., doc. RNDr. Michal Mahel', CSc., prof. RNDr. Andrej Plecenik, DrSc.					
Last change: 02.06.2015					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KAI/2-MXX-130/21		Course title: Elements of AI			
Educational activities: Type of activities: independent work Number of hours: per week: 25 per level/semester: 325 Form of the course: on-site learning					
Number of credits: 2					
Recommended semester: 2.					
Educational level: II.					
Prerequisites:					
Course requirements: Passing the online course https://course.elementsofai.com/ (in English or Slovak version).					
Learning outcomes: The student will get acquainted with selected basic concepts of artificial intelligence and their use in solving various practical tasks.					
Class syllabus: 1. What is artificial intelligence: related areas, AI philosophy. 2. Troubleshooting and UI: Browsing and troubleshooting, browsing and games 3. Probability and chance, Bayes' theorem, naive Bayesian classification. 4. Machine learning: nearest neighbor classifier, regression. 5. Neural networks: basics, creation, modern techniques. 6. Consequences: on predicting the future, the effects of AI on society, summary.					
Recommended literature: Russell S., Norwig P. (2010). Artificial Intelligence: A Modern Approach, (3rd ed.), Prentice Hall. Available in faculty library. Marsland S. (2015). Machine Learning: An Algorithmic Perspective, (2nd ed.), CRC Press.					
Languages necessary to complete the course: Slovak or English					
Notes: The course consists of 20 numerical and 5 text-based tasks. Numerical tasks are checked automatically, text-based tasks are evaluated anonymously by students.					
Past grade distribution Total number of evaluated students: 37					
A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0
Lecturers: doc. RNDr. Mária Markošová, PhD.					

Last change: 22.08.2021
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KAI/2-MXX-130/21		Course title: Elements of AI			
Educational activities: Type of activities: independent work Number of hours: per week: 25 per level/semester: 325 Form of the course: on-site learning					
Number of credits: 2					
Recommended semester: 1.					
Educational level: II.					
Prerequisites:					
Course requirements: Passing the online course https://course.elementsofai.com/ (in English or Slovak version).					
Learning outcomes: The student will get acquainted with selected basic concepts of artificial intelligence and their use in solving various practical tasks.					
Class syllabus: 1. What is artificial intelligence: related areas, AI philosophy. 2. Troubleshooting and UI: Browsing and troubleshooting, browsing and games 3. Probability and chance, Bayes' theorem, naive Bayesian classification. 4. Machine learning: nearest neighbor classifier, regression. 5. Neural networks: basics, creation, modern techniques. 6. Consequences: on predicting the future, the effects of AI on society, summary.					
Recommended literature: Russell S., Norwig P. (2010). Artificial Intelligence: A Modern Approach, (3rd ed.), Prentice Hall. Available in faculty library. Marsland S. (2015). Machine Learning: An Algorithmic Perspective, (2nd ed.), CRC Press.					
Languages necessary to complete the course: Slovak or English					
Notes: The course consists of 20 numerical and 5 text-based tasks. Numerical tasks are checked automatically, text-based tasks are evaluated anonymously by students.					
Past grade distribution Total number of evaluated students: 37					
A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0
Lecturers: doc. RNDr. Mária Markošová, PhD.					

Last change: 22.08.2021
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KJP/1-MXX-233/13		Course title: English Conversation Course (1)			
Educational activities: Type of activities: practicals Number of hours: per week: 2 per level/semester: 26 Form of the course: on-site learning					
Number of credits: 2					
Recommended semester: 1., 3.					
Educational level: I., II.					
Prerequisites:					
Course requirements: tests, presentations, essays Course prerequisites: https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebezhneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/ Scale of assessment (preliminary/final): 100/0					
Learning outcomes: Continual improvement of all language skills focused on communication/speaking, listening comprehension and writing. The emphasis is on discourse, lexicology and morphology, word-bank broadening of communicational English as well as English for specific purposes appropriate for university students. This course is a follow up of the previously taught ESP course.					
Class syllabus: This course's focus is to broaden spoken/communicational English for students with B2/C1 level of English knowledge.					
Recommended literature: Appropriate study material is supplied based on the participants' level of English by the lecturer. (Sources- The Guardian, The Herald Morning Sun. The Nine News, The West Australian, BBC News and podcasts, CNN podcasts).					
Languages necessary to complete the course:					
Notes:					
Past grade distribution Total number of evaluated students: 215					
A	B	C	D	E	FX
67,44	13,02	6,51	1,86	1,4	9,77
Lecturers: Mgr. Aneta Barnes					

Last change: 21.06.2022
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KJP/1-MXX-234/13		Course title: English Conversation Course (2)			
Educational activities: Type of activities: practicals Number of hours: per week: 2 per level/semester: 26 Form of the course: on-site learning					
Number of credits: 2					
Recommended semester: 2., 4.					
Educational level: I., II.					
Prerequisites:					
Course requirements: tests, oral presentations, essays Course prerequisites: https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebezhneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/ Scale of assessment (preliminary/final): 100/0					
Learning outcomes: Continual improvement of all language skills focused on communication/speaking, listening comprehension and writing. The emphasis is on discourse, lexicology and morphology, word-bank broadening of communicational/spoken English as well as English for specific purpose appropriate for university students. This course is a follow up of the Conversational English course 1.					
Class syllabus: This course's focus is to broaden spoken/communicational English for students with B2/C1 level of English knowledge(Upper-Intermediate/Lower Advanced).					
Recommended literature: Appropriate study material is supplied based on the participants'level of English by the lecturer. (Sources- The Guardian, The Herald Morning Sun. The Nine News, The West Australian, BBC News and podcasts, CNN podcasts).					
Languages necessary to complete the course:					
Notes:					
Past grade distribution Total number of evaluated students: 146					
A	B	C	D	E	FX
77,4	12,33	3,42	1,37	0,0	5,48
Lecturers: Mgr. Aneta Barnes					

Last change: 21.06.2022
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KJP/1-MXX-141/00		Course title: French Language (1)			
Educational activities: Type of activities: practicals Number of hours: per week: 2 per level/semester: 26 Form of the course: on-site learning					
Number of credits: 2					
Recommended semester: 1.					
Educational level: I., II.					
Prerequisites:					
Course requirements: Scale of assessment (preliminary/final): 100/0					
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: Capelle Guy, Menand Robert: Le Nouveau taxi 1, Hachette FLE Paris, France 2009, ISBN 978-2-01-155548 - 9					
Languages necessary to complete the course:					
Notes:					
Past grade distribution Total number of evaluated students: 435					
A	B	C	D	E	FX
45,75	20,0	18,85	8,74	2,3	4,37
Lecturers: Mgr. Ľubomíra Kožehubová					
Last change: 20.06.2022					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFL.KJP/1-MXX-142/00		Course title: French Language (2)			
Educational activities: Type of activities: practicals Number of hours: per week: 2 per level/semester: 26 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: The subject continues the program of French language (1) and provides courses of essential and intermediate French language.					
Recommended literature: Capelle Guy, Menand Robert: Le Nouveau taxi 1, Hachette FLE Paris, France 2009, ISBN 978-2-01-155548 - 9					
Languages necessary to complete the course:					
Notes:					
Past grade distribution Total number of evaluated students: 265					
A	B	C	D	E	FX
38,87	25,28	19,62	10,19	2,64	3,4
Lecturers: Mgr. Ľubomíra Kožehubová					
Last change: 20.06.2022					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFL.KJP/1-MXX-241/00		Course title: French Language (3)			
Educational activities: Type of activities: practicals Number of hours: per week: 2 per level/semester: 26 Form of the course: on-site learning					
Number of credits: 2					
Recommended semester: 3.					
Educational level: I., II.					
Prerequisites:					
Course requirements: Scale of assessment (preliminary/final): 100/0					
Learning outcomes:					
Class syllabus: The subject provides a course of intermediate French language, covering not only general, but also technical language.					
Recommended literature: Capelle Guy, Menand Robert: Le Nouveau taxi 1, Hachette FLE Paris, France 2009, ISBN 978-2-01-155548 - 9					
Languages necessary to complete the course:					
Notes:					
Past grade distribution Total number of evaluated students: 104					
A	B	C	D	E	FX
39,42	27,88	21,15	6,73	0,96	3,85
Lecturers: Mgr. Ľubomíra Kožehubová					
Last change: 20.06.2022					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KJP/1-MXX-242/00		Course title: French Language (4)			
Educational activities: Type of activities: practicals Number of hours: per week: 2 per level/semester: 26 Form of the course: on-site learning					
Number of credits: 2					
Recommended semester: 4.					
Educational level: I., II.					
Prerequisites:					
Course requirements: Scale of assessment (preliminary/final): 100/0					
Learning outcomes:					
Class syllabus: The subject provides a course of intermediate French covering not only general, but also technical French language.					
Recommended literature: Menand Robert: Le Nouveau taxi 2, Hachette FLE, Paris, France 2009, ISBN 978-2-01-155551 - 9					
Languages necessary to complete the course:					
Notes:					
Past grade distribution Total number of evaluated students: 74					
A	B	C	D	E	FX
41,89	32,43	17,57	2,7	1,35	4,05
Lecturers: Mgr. Ľubomíra Kožehubová					
Last change: 20.06.2022					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KJP/1-MXX-151/00		Course title: German Language (1)			
Educational activities: Type of activities: practicals Number of hours: per week: 2 per level/semester: 26 Form of the course: on-site learning					
Number of credits: 2					
Recommended semester: 1.					
Educational level: I., II.					
Prerequisites:					
Course requirements: Scale of assessment (preliminary/final): 100/0					
Learning outcomes: To master the fundamentals of the common language and basic technical terms of particular fields of study (depending on the student's level of German proficiency)					
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. This course's focus is to master the fundamentals of the common language and basic technical terms of particular fields of study (depending on the student's level of German proficiency)					
Recommended literature: Appropriate study material is supplied by teacher based on the participants'level of German proficiency.					
Languages necessary to complete the course:					
Notes:					
Past grade distribution Total number of evaluated students: 734					
A	B	C	D	E	FX
36,1	27,25	19,62	8,99	2,72	5,31
Lecturers: Mgr. Alexandra Maďarová, Mgr. Simona Tomášková, PhD.					
Last change: 21.06.2022					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KJP/1-MXX-152/00		Course title: German Language (2)			
Educational activities: Type of activities: practicals Number of hours: per week: 2 per level/semester: 26 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: To master the fundamentals of the common language and basic technical terms of particular fields of study (depending on the student's level of German proficiency)					
Class syllabus: German 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 German. This course's focus is to to master the fundamentals of the common language and basic technical terms of particular fields of study (depending on the student's level of German proficiency)					
Recommended literature: Appropriate study material is supplied by teacher based on the participants'level of German proficiency					
Languages necessary to complete the course:					
Notes:					
Past grade distribution Total number of evaluated students: 480					
A	B	C	D	E	FX
36,04	20,21	20,83	13,13	3,33	6,46
Lecturers: Mgr. Alexandra Maďarová, Mgr. Simona Tomášková, PhD.					
Last change: 21.06.2022					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KJP/1-MXX-251/00		Course title: German Language (3)			
Educational activities: Type of activities: practicals Number of hours: per week: 2 per level/semester: 26 Form of the course: on-site learning					
Number of credits: 2					
Recommended semester: 3.					
Educational level: I., II.					
Prerequisites:					
Course requirements: Scale of assessment (preliminary/final): 100/0					
Learning outcomes: Master the basics of general language and basic professional terminology of individual fields of study (depending on the advanced level of students)					
Class syllabus: The course is a follow-up to the German language (1,2). The subject provides a course of intermediate or advanced German language. This course's focus is to deepen the knowledge of the common language and basic technical terms of particular fields of study (depending on the student's level of German proficiency).					
Recommended literature: Appropriate study material is supplied by teacher based on the participants' level of German proficiency.					
Languages necessary to complete the course:					
Notes:					
Past grade distribution Total number of evaluated students: 165					
A	B	C	D	E	FX
41,21	25,45	20,61	6,67	2,42	3,64
Lecturers: Mgr. Alexandra Maďarová, Mgr. Simona Tomášková, PhD.					
Last change: 21.06.2022					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KJP/1-MXX-252/00		Course title: German Language (4)			
Educational activities: Type of activities: practicals Number of hours: per week: 2 per level/semester: 26 Form of the course: on-site learning					
Number of credits: 2					
Recommended semester: 4.					
Educational level: I., II.					
Prerequisites:					
Course requirements: Scale of assessment (preliminary/final): 100/0					
Learning outcomes: Master the basics of general language and basic professional terminology of individual fields of study (depending on the advanced level of students)					
Class syllabus: The course is a follow-up to the German language (1-3). It provides a course of intermediate and advanced German language. This course's focus is to deepen the knowledge of the common language and basic technical terms of particular fields of study (depending on the student's level of German proficiency).					
Recommended literature: Appropriate study material is supplied by teacher based on the participants' level of German proficiency.					
Languages necessary to complete the course:					
Notes:					
Past grade distribution Total number of evaluated students: 90					
A	B	C	D	E	FX
42,22	24,44	12,22	12,22	3,33	5,56
Lecturers: Mgr. Alexandra Maďarová, Mgr. Simona Tomášková, PhD.					
Last change: 21.06.2022					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KEF/2-FTL-117/15		Course title: Laboratory Practice in Electronics and Solid State Physics			
Educational activities: Type of activities: laboratory practicals Number of hours: per week: 3 per level/semester: 39 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: 39					
A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0
Lecturers: doc. RNDr. František Kundracik, CSc., RNDr. Ján Greguš, PhD., doc. RNDr. Michal Mahel', CSc.					
Last change: 02.06.2015					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KEF/2-FTL-203/15	Course title: Magnetic Properties of Solids and Superconductivity
Educational activities: Type of activities: lecture / practicals Number of hours: per week: 4 / 2 per level/semester: 52 / 26 Form of the course: on-site learning	
Number of credits: 8	
Recommended semester: 3.	
Educational level: II.	
Prerequisites:	
Course requirements: Continuous: Homework, 20% Final: Project, 80% The course will be classified provided that the student proves the fulfilment of obligations at the level of at least 51 %. The conditions for successful completion of the course are in accordance with the Study Regulations of the Faculty of Mathematics, Physics and Informatics. Scale of assessment (preliminary/final): 20/80	
Learning outcomes: Students acquire essential knowledge of the theory of magnetic phenomena and superconductivity, and their applications as well.	
Class syllabus: Phase transitions in solids. Electronic structure of atoms. Diamagnetism and paramagnetism. Ferromagnetism and other types of magnetic ordering. Properties of hard magnetics. Magnetic resonances. Basics of spintronics. Phenomenological theories of superconductivity. Microscopic theory of superconductivity. Type II superconductivity. Josephson phenomena. Applications of magnetism and superconductivity.	
Recommended literature: Magnetizačné procesy / Vladimír Hajko, Ladislav Potocký, Anton Zentko. Bratislava : Alfa, 1982 Solid state physics / Neil W. Ashcroft, N. David Mermin. Fort Worth : Harcourt Brace, 1976 Supravodivosť / Pavol Valko. Zlín : Kniha Zlín, 2011 Introduction to superconductivity / Michael Tinkham, Gordon McKay. Mineola : Dover, 2004	
Languages necessary to complete the course: Slovak in combination with English (suggested readings in English)	
Notes:	

Past grade distribution					
Total number of evaluated students: 30					
A	B	C	D	E	FX
70,0	3,33	6,67	10,0	10,0	0,0
Lecturers: doc. RNDr. Michal Maheľ, CSc.					
Last change: 20.01.2022					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KEF/2-FTL-205/15	Course title: Many-body Physics
Educational activities: Type of activities: lecture Number of hours: per week: 4 per level/semester: 52 Form of the course: on-site learning	
Number of credits: 6	
Recommended semester: 3.	
Educational level: II.	
Prerequisites: FMFI.KEF/2-FTL-108/15 - Electric and Optical Properties of Solid Materials	
Recommended prerequisites: 2-FTL-107 Structure and mechanical properties of solids 2-FTL-108 Electronic and optical properties of solids	
Course requirements: homeworks and oral exam: A 90%, B 80%, C 70%, D 60%, E 50% Scale of assessment (preliminary/final): 55/45	
Learning outcomes: The students will be acquainted with the notions of effective model and renormalization group. They will gain a deeper understanding of the notions of the physical vacuum and elementary excitation. They will also understand how spontaneous symmetry breaking and its defects determine physical properties of condensed matter. They will gain basic information about the role of topology in modern condensed matter physics.	
Class syllabus: Effective models. Symmetries and conservation laws. Heisenberg model: exact results, spontaneous symmetry breaking. Goldstone modes. Generalized rigidity. XY model and the quantum spin liquid. Kosterlitz-Thouless transition. Superfluid helium: basic experimental facts, Josephson equations, Bogoliubov theory. Superconductivity: basic experimental facts, effective model, Cooper instability and renormalization group. BCS theory. Thermodynamics and spectroscopy of superconductors. Topological defects. Topological insulators.	
Recommended literature: http://www.st.fmph.uniba.sk/~hlubina1/STUD_MATER/FMC/fmc.pdf Statistical mechanics : Entropy, order parameters, and complexity / James P. Sethna. Oxford University Press, 2006 Condensed matter physics : Corrected printing / Michael P. Marder. John Wiley, 2000 Basic notions of condensed matter physics / P. W. Anderson, Addison Wesley, 1984	
Languages necessary to complete the course: english	

Notes:					
Past grade distribution					
Total number of evaluated students: 16					
A	B	C	D	E	FX
62,5	12,5	18,75	0,0	6,25	0,0
Lecturers: doc. RNDr. Richard Hlubina, DrSc.					
Last change: 19.01.2022					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KEF/2-FTL-114/00	Course title: Measuring Techniques in Solid State Physics
Educational activities: Type of activities: lecture Number of hours: per week: 2 per level/semester: 26 Form of the course: on-site learning	
Number of credits: 3	
Recommended semester: 1.	
Educational level: II.	
Prerequisites:	
Course requirements: The evaluation of the course has a form of an oral exam, grading of which reflects the overall orientation of the student in the covered topics. Indicative evaluation scale: A 90%, B 80%, C 70%, D 60%, E 50%. Scale of assessment (preliminary/final): 0/100	
Learning outcomes: By completing the course, students will gain an overview of selected electrical, magnetic and optical measurement methods used for characterization of properties of solids.	
Class syllabus: Conductivity and contact phenomena. DC methods of measuring resistance and conductivity - probe methods, Van der Pauw method. Arrhenius plot – determination of activation energies. Measurement of very small currents and voltages. Hall effect. AC measurements - phase sensitive signal detection, Lock-in, measurement of differential ($dI(V)/dV$) characteristics, tunneling spectroscopy, impedance spectroscopy. AC susceptibility measurements. Kelvin probe measurements. Noises - intrinsic and extrinsic noises, capacitive and inductive coupling, shielding, grounding, noises in amplifiers. Measurement of lifetime, mobility and diffusion length of minority charge carriers by optical methods. Femtosecond spectroscopy - pump-probe measurement. Temperature measurement methods.	
Recommended literature: J.Brož a kol., Základy fyzikálních měření (I), SPN, Praha, 1967, pp.532. J.Brož a kol., Základy fyzikálních měření (II)A, SPN, Praha, 1974, pp.295. J.Brož a kol., Základy fyzikálních měření (II)B, SPN, Praha, 1974, pp.756. K. V. Šalimová, Fyzika polovodičů, Bratislava, 1978, pp. 448 Ralph Morrison, Grounding and Shielding Techniques, 4th edition, John Wiley&Sons, Inc., New York, 1998, pp. 201, ISBN 0-471-24518-6. Henry W. Ott, Noise Reduction Techniques in Electronic Systems, 2nd edition, John Wiley & Sons, New York, 1988, pp.426, ISBN 0-471-85068-3. J.Jelínek, Z.Málek, Kryogenní technika, SNTL, Praha, 1982, pp.354.	

V.Matuáš, Elektronické měřicí přístroje, SNTL/ALFA, Praha, 1981, pp.402.
 L. Michalski, K. Eckersdorf, J. Kucharski, J. McGhee, Temperature measurement, 2nd edition, John Wiley & Sons, New York, 2000, ISBN 0-471-86779-9
 A.S. Morris, Measurement and Instrumentation principles, Elsevier, Amsterdam, 2001, pp.475, ISBN 0-7506-5081-8
 R.B. Northrop, Introduction to instrumentation and measurement, Taylor&Francis, London, 2005, pp.743, ISBN 0-8493-3773-9
 E.L.Wolf: Principles of Electron Tunneling Spectroscopy, Oxford University Press, New York, 1989, pp.576.
 KEITHLEY: Nanotechnology Measurement Handbook
 KEITHLEY: Making precision Low Current and High Resistance Measurements

Languages necessary to complete the course:

Slovak in combination with English (some of the suggested readings are in English)

Notes:

Past grade distribution

Total number of evaluated students: 46

A	B	C	D	E	FX
58,7	21,74	17,39	2,17	0,0	0,0

Lecturers: doc. RNDr. Tomáš Plecenik, PhD.

Last change: 03.12.2021

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KEF/2-FTL-224/15	Course title: Mesoscopic Physics and Quantum Electronics
Educational activities: Type of activities: lecture Number of hours: per week: 4 per level/semester: 52 Form of the course: on-site learning	
Number of credits: 6	
Recommended semester: 3.	
Educational level: II.	
Prerequisites:	
Course requirements: written test during the course – weight 30 %, written and oral exam – weight 70 %. Evaluation A – at least 90 %, B – at least 80 %, C – at least 70 %, D – at least 60 %, E – at least 50 %. Scale of assessment (preliminary/final): 30/70	
Learning outcomes: After completing the course the student will gain knowledge of basic theoretical methods and experimental facts from the field of quantum electron transport in mesoscopic systems. He/she will be able to understand physical principles of nanoelectronics devices at the edge of miniaturization.	
Class syllabus: Definition of mesoscopic system. Two-terminal conductance of disordered mesoscopic system – Landauer formula. Fundamental quantization of ballistic conductance. Coherent conductance of disordered one-dimensional wire – strong localization, giant conductance fluctuations, conductance distribution. Weak localization and universal conductance fluctuations. Multiterminal conductance of disordered mesoscopic system – Büttiker equations, effect of measurement on the measured coherent conductance. Quantum Hall effect. Mesoscopic ring connected to leads, electronic Bohm-Aharonov effect and parallel connection of quantum resistors in the scattering matrix formalism. Single-electron tunneling through a weak link and through a series of weak links, Coulomb blockade, single-electron transistor.	
Recommended literature: S. Datta, Electronic Transport in Mesoscopic Systems (Cambridge University Press, Cambridge, UK, 1995) Y. Imry, Introduction to Mesoscopic Physics (Oxford University Press, Oxford, UK, 2002) M. Moško a A. Mošková , Introduction into mesoscopic physics (in Slovak language), http://kflin.elf.stuba.sk/~ballo/SimLab/skripta	
Languages necessary to complete the course: The course is held in Slovak (in English when necessary)	

Notes:

Grading:

Completion of the course is assessed by the grades – graduated or not graduated.

Past grade distribution

Total number of evaluated students: 19

A	B	C	D	E	FX
57,89	31,58	10,53	0,0	0,0	0,0

Lecturers: doc. RNDr. Martin Moško, DrSc.**Last change:** 20.01.2022**Approved by:**

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KEF/2-FEL-203/00		Course title: Microprocessor Systems			
Educational activities: Type of activities: lecture Number of hours: per week: 2 per level/semester: 26 Form of the course: on-site learning					
Number of credits: 3					
Recommended semester: 3.					
Educational level: II.					
Prerequisites:					
Course requirements:					
Learning outcomes:					
Class syllabus: Central processing unit (internal structure, registers, ALU). Instructions (format, variety, arguments). Communication with peripheral devices, interfaces, drivers. Programming (machine code, assembler). Command overview with respect to different applications. Side effects, program debugging. Typical machine code structures.					
Recommended literature: Frištacký a kol. Logické systémy, Alfa 1986, http://www.sandpile.org/ The world's leading source for pure technical x86 processor information http://www.brookscole.com/ The analytical Engine Online					
Languages necessary to complete the course:					
Notes:					
Past grade distribution Total number of evaluated students: 71					
A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0
Lecturers: doc. RNDr. František Kundracik, CSc.					
Last change: 02.06.2015					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFL.KTV/2-MXX-110/00		Course title: Physical Education and Sport (1)			
Educational activities: Type of activities: practicals Number of hours: per week: 2 per level/semester: 26 Form of the course: on-site learning					
Number of credits: 2					
Recommended semester: 1.					
Educational level: II.					
Prerequisites:					
Course requirements: Scale of assessment (preliminary/final): 100/0					
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: Slovak, English					
Notes:					
Past grade distribution Total number of evaluated students: 1657					
A	B	C	D	E	FX
98,37	0,6	0,06	0,0	0,0	0,97
Lecturers: PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, Mgr. Jana Leginusová, Mgr. Tomáš Kuchár, PhD., PaedDr. Mikuláš Ortutay, Mgr. Martin Dovičák, PhD., Mgr. Júlia Raábová, PhD., Mgr. Branislav Nedbálek, Mgr. Tomáš Lovecký					
Last change: 15.03.2022					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KTV/2-MXX-120/00		Course title: Physical Education and Sport (2)			
Educational activities: Type of activities: practicals Number of hours: per week: 2 per level/semester: 26 Form of the course: on-site learning					
Number of credits: 2					
Recommended semester: 2.					
Educational level: II.					
Prerequisites:					
Course requirements: Scale of assessment (preliminary/final): 100/0					
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 aerobics 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: Slovak, English					
Notes:					
Past grade distribution Total number of evaluated students: 1557					
A	B	C	D	E	FX
98,52	0,39	0,06	0,06	0,06	0,9
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. Júlia Raábová, PhD., Mgr. Tomáš Lovecký					
Last change: 15.03.2022					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KTV/2-MXX-210/00		Course title: Physical Education and Sport (3)			
Educational activities: Type of activities: practicals Number of hours: per week: 2 per level/semester: 26 Form of the course: on-site learning					
Number of credits: 2					
Recommended semester: 3.					
Educational level: II.					
Prerequisites:					
Course requirements: Scale of assessment (preliminary/final): 100/0					
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: Slovak, English					
Notes:					
Past grade distribution Total number of evaluated students: 1281					
A	B	C	D	E	FX
98,75	0,47	0,08	0,0	0,0	0,7
Lecturers: PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, Mgr. Jana Leginusová, Mgr. Tomáš Kuchár, PhD., PaedDr. Mikuláš Ortutay, Mgr. Martin Dovičák, PhD., Mgr. Júlia Raábová, PhD., Mgr. Branislav Nedbálek, Mgr. Tomáš Lovecký					
Last change: 15.03.2022					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KTV/2-MXX-220/00		Course title: Physical Education and Sport (4)			
Educational activities: Type of activities: practicals Number of hours: per week: 2 per level/semester: 26 Form of the course: on-site learning					
Number of credits: 2					
Recommended semester: 4.					
Educational level: II.					
Prerequisites:					
Course requirements: Scale of assessment (preliminary/final): 100/0					
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: Slovak, English					
Notes:					
Past grade distribution Total number of evaluated students: 1110					
A	B	C	D	E	FX
98,47	0,45	0,09	0,09	0,09	0,81
Lecturers: PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, Mgr. Jana Leginusová, Mgr. Tomáš Kuchár, PhD., PaedDr. Mikuláš Ortutay, Mgr. Martin Dovičák, PhD., Mgr. Branislav Nedbálek, Mgr. Júlia Raábová, PhD., Mgr. Tomáš Lovecký					
Last change: 15.03.2022					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFL.KTF/2-FTF-113/00		Course title: Quantum Field Theory			
Educational activities: Type of activities: lecture / practicals Number of hours: per week: 4 / 2 per level/semester: 52 / 26 Form of the course: on-site learning					
Number of credits: 8					
Recommended semester: 1.					
Educational level: II.					
Prerequisites:					
Course requirements: Examination: written, with possible oral part Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50% Scale of assessment (preliminary/final): 0/100					
Learning outcomes: After completing this course, students should 1. understand the basic principles of relativistic quantum field theory 2. be able to calculate the transition amplitude for zero-spin particles using Feynman diagrams					
Class syllabus: 1. Introduction 2. Free field 3. Interacting fields 4. Functional methods					
Recommended literature: M. Mojžiš, Quantum Field Theory (electronic study materials) An introduction to quantum field theory / Michael E. Peskin, Daniel V. Schroeder. Boulder : Westview Press, 1995					
Languages necessary to complete the course: Slovak, English					
Notes:					
Past grade distribution Total number of evaluated students: 109					
A	B	C	D	E	FX
65,14	17,43	7,34	2,75	7,34	0,0
Lecturers: doc. RNDr. Martin Mojžiš, PhD.					

Last change: 25.02.2022
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KEF/2-FTL-123/20		Course title: Quantum Simulations in Condensed Matter			
Educational activities: Type of activities: lecture / seminar Number of hours: per week: 2 / 2 per level/semester: 26 / 26 Form of the course: on-site learning					
Number of credits: 5					
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: 2					
A	B	C	D	E	FX
0,0	0,0	50,0	50,0	0,0	0,0
Lecturers: prof. Ing. Roman Martoňák, DrSc.					
Last change: 05.06.2020					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KJP/1-MXX-161/00		Course title: Russian Language (1)			
Educational activities: Type of activities: practicals Number of hours: per week: 2 per level/semester: 26 Form of the course: on-site learning					
Number of credits: 2					
Recommended semester: 1.					
Educational level: I., II.					
Prerequisites:					
Course requirements: Scale of assessment (preliminary/final): 100/0					
Learning outcomes: Basic communication in Russian, developing other Russian language skills - listening comprehension, reading and writing.					
Class syllabus: To master the fundamentals of general Russian. The language level is A1. Learning the Cyrillic (Russian) alphabet, gaining basic language competence, building up skills and confidence in dealing with unfamiliar authentic and semi-authentic texts. The subject provides a course in Russian language for beginners.					
Recommended literature: The textbook: : Точка Ру А1 (Ольга Долматова, Екатерина Новачац), pracovné karty Падежи 1 (Л.С. Безкоровайная, В.Е. Штыленко).					
Languages necessary to complete the course:					
Notes:					
Past grade distribution Total number of evaluated students: 707					
A	B	C	D	E	FX
58,56	16,55	11,03	4,38	1,84	7,64
Lecturers: Viktoria Mirsalova					
Last change: 20.06.2022					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KJP/1-MXX-162/00		Course title: Russian Language (2)			
Educational activities: Type of activities: practicals Number of hours: per week: 2 per level/semester: 26 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: Basic communication in Russian, developing other Russian language skills - listening comprehension, reading and writing.					
Class syllabus: To master the fundamentals of general Russian. Learning the Cyrillic (Russian) alphabet, gaining basic language competence, building up skills and confidence in dealing with unfamiliar authentic and semi-authentic texts. The subject continues the program of Russian language (1) and provides a course of Russian for beginners.					
Recommended literature: Textbook: Точка Ру А1 (Ольга Долматова, Екатерина Новачац), pracovné karty Падежи 1 (Л.С. Безкоровайная, В.Е. Штыленко).					
Languages necessary to complete the course:					
Notes:					
Past grade distribution Total number of evaluated students: 421					
A	B	C	D	E	FX
65,08	15,68	8,79	3,8	0,95	5,7
Lecturers: Viktoria Mirsalova					
Last change: 20.06.2022					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KJP/1-MXX-261/00		Course title: Russian Language (3)			
Educational activities: Type of activities: practicals Number of hours: per week: 2 per level/semester: 26 Form of the course: on-site learning					
Number of credits: 2					
Recommended semester: 3.					
Educational level: I., II.					
Prerequisites:					
Course requirements: Scale of assessment (preliminary/final): 100/0					
Learning outcomes: Basic communication in Russian, developing other Russian language skills - listening comprehension, reading and writing.					
Class syllabus: Learning the handwritten Russian (Russian Cursive Cyrillic), developing further language skills, gaining knowledge of Russian culture, history and way of life, pre-intermediate to intermediate grammar and vocabulary. 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: Точка Ру А2 (Ольга Долматова, Екатерина Новачац) а Short Stories in Russian (Olly Richards, Alex Rowlings)					
Languages necessary to complete the course:					
Notes:					
Past grade distribution Total number of evaluated students: 200					
A	B	C	D	E	FX
70,5	17,5	8,5	2,5	0,0	1,0
Lecturers: Viktoria Mirsalova					
Last change: 20.06.2022					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KJP/1-MXX-262/00		Course title: Russian Language (4)			
Educational activities: Type of activities: practicals Number of hours: per week: 2 per level/semester: 26 Form of the course: on-site learning					
Number of credits: 2					
Recommended semester: 4.					
Educational level: I., II.					
Prerequisites:					
Course requirements: Scale of assessment (preliminary/final): 100/0					
Learning outcomes: Learning the handwritten Russian (Russian Cursive Cyrillic), developing further language skills, gaining knowledge of Russian culture, history and way of life, pre-intermediate to intermediate grammar and vocabulary.					
Class syllabus: Learning the handwritten Russian (Russian Cursive Cyrillic), developing further language skills, gaining knowledge of Russian culture, history and way of life, pre-intermediate to intermediate grammar and vocabulary. 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: Точка Ру А2 (Ольга Долматова, Екатерина Новачац) а Short Stories in Russian (Olly Richards, Alex Rowlings)					
Languages necessary to complete the course:					
Notes:					
Past grade distribution Total number of evaluated students: 144					
A	B	C	D	E	FX
75,69	13,19	6,94	2,78	0,69	0,69
Lecturers: Viktoria Mirsalova					
Last change: 20.06.2022					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFL.KTF/2-FTF-114/00	Course title: Selected Parts of Advanced Statistical Physics
Educational activities: Type of activities: lecture / practicals Number of hours: per week: 4 / 2 per level/semester: 52 / 26 Form of the course: on-site learning	
Number of credits: 8	
Recommended semester: 2.	
Educational level: II.	
Prerequisites:	
Course requirements: Continuous assessment: homeworks Exam: oral exam A: 100-90, B: 89-80, C: 79-70, D: 69-60, E: 59-50, Fx: 49-0. Scale of assessment (preliminary/final): 80/20	
Learning outcomes: Acquire advanced techniques of statistical physics. Namely <ul style="list-style-type: none"> - probability theory techniques related to normal distribution - elements of hypothesis testing - the relationship between quantum and classical statistical physics - the relationship between thermodynamics and statistical physics - basic knowledge of phase transitions - orientation in techniques of physical kinetics 	
Class syllabus: Mathematical statistics, elements of information theory, general formalism of quantum statistical physics, numerical methods, variation principles, phase transitions, spin models, kinetic equations, transport phenomena, theory of fluctuations, random processes.	
Recommended literature: L. E. Reichl, A modern course in statistical physics David Tong, Statistical Physics V.Černý, M.Medo: Selected topics from statistical physics, elektronický text na web stránke predmetu	
Languages necessary to complete the course:	
Notes:	

Past grade distribution					
Total number of evaluated students: 104					
A	B	C	D	E	FX
64,42	30,77	0,96	0,96	2,88	0,0
Lecturers: Mgr. Samuel Kováčik, PhD.					
Last change: 15.06.2022					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KEF/2-FTL-109/15		Course title: Selected Technologies in Solid-state Physics			
Educational activities: Type of activities: lecture / practicals Number of hours: per week: 2 / 1 per level/semester: 26 / 13 Form of the course: on-site learning					
Number of credits: 4					
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: 24					
A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0
Lecturers: doc. Ing. Marián Mikula, PhD., Mgr. Branislav Grančič, PhD., Mgr. Leonid Satrapinskyy, PhD.					
Last change: 02.06.2015					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KEF/2-FTL-121/15		Course title: Semester Project (1)			
Educational activities: Type of activities: practicals Number of hours: per week: 2 per level/semester: 26 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: 17					
A	B	C	D	E	FX
82,35	11,76	0,0	0,0	0,0	5,88
Lecturers: prof. RNDr. Peter Kúš, DrSc.					
Last change: 02.06.2015					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KEF/2-FTL-122/15		Course title: Semester Project (2)			
Educational activities: Type of activities: practicals Number of hours: per week: 2 per level/semester: 26 Form of the course: on-site learning					
Number of credits: 3					
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: 20					
A	B	C	D	E	FX
95,0	0,0	5,0	0,0	0,0	0,0
Lecturers: prof. RNDr. Peter Kúš, DrSc.					
Last change: 02.06.2015					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KEF/2-FTL-221/15		Course title: Semester Project (3)			
Educational activities: Type of activities: practicals Number of hours: per week: 4 per level/semester: 52 Form of the course: on-site learning					
Number of credits: 5					
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: 17					
A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0
Lecturers: prof. RNDr. Peter Kúš, DrSc.					
Last change: 02.06.2015					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KJP/1-MXX-171/20		Course title: Slovak Language for Foreign Students (1)			
Educational activities: Type of activities: practicals Number of hours: per week: 2 per level/semester: 26 Form of the course: on-site learning					
Number of credits: 2					
Recommended semester: 1.					
Educational level: I., II.					
Prerequisites:					
Course requirements: tests Course prerequisites: https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebežneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/ Scale of assessment (preliminary/final): 100/0					
Learning outcomes: This course is aimed for foreign students to learn the fundamentals of the Slovak language with the focus on basic communication as well as all other language skills- listening comprehension,reading and writing.					
Class syllabus: The syllabus is targeted at the comprehension of the basics of the Slovak language for the absolute beginners (A1).					
Recommended literature: Križom- Krážom Slovenčina 1, additional material to further support the covered topics.					
Languages necessary to complete the course:					
Notes:					
Past grade distribution Total number of evaluated students: 23					
A	B	C	D	E	FX
47,83	0,0	0,0	0,0	0,0	52,17
Lecturers: Mgr. Aneta Barnes					
Last change: 21.06.2022					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KJP/1-MXX-172/20		Course title: Slovak Language for Foreign Students (2)			
Educational activities: Type of activities: practicals Number of hours: per week: 2 per level/semester: 26 Form of the course: on-site learning					
Number of credits: 2					
Recommended semester: 2.					
Educational level: I., II.					
Prerequisites:					
Course requirements: tests Course prerequisites: https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebežneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/ Scale of assessment (preliminary/final): 100/0					
Learning outcomes: This course is aimed for foreign students to learn the fundamentals of the Slovak language with the focus on basic communication as well as all other language skills- listening comprehension,reading and writing.					
Class syllabus: The syllabus is targeted at the comprehension of the basics of the Slovak language for the absolute beginners (A1) and this course is a follow up course to the Slovak language course 1.					
Recommended literature: Križom- Krážom Slovenčina 1, additional material to further support the covered topics					
Languages necessary to complete the course:					
Notes:					
Past grade distribution Total number of evaluated students: 22					
A	B	C	D	E	FX
81,82	0,0	4,55	0,0	0,0	13,64
Lecturers: Mgr. Aneta Barnes					
Last change: 21.06.2022					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KJP/1-MXX-271/20		Course title: Slovak Language for Foreign Students (3)			
Educational activities: Type of activities: practicals Number of hours: per week: 2 per level/semester: 26 Form of the course: on-site learning					
Number of credits: 2					
Recommended semester: 3.					
Educational level: I., II.					
Prerequisites:					
Course requirements: tests Course prerequisites: https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebežneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/ Scale of assessment (preliminary/final): 100/0					
Learning outcomes: This course is aimed for foreign students to better comprehend all the language skills important to enable correct usage of the Slovak language – listening comprehension, reading, writing and speaking.					
Class syllabus: The syllabus is targeted at the comprehension of all the language skills of the Slovak language , and it is a follow up course to the Slovak language course 2.					
Recommended literature: Križom-Krážom Slovenčina 2, additional material to further support the covered topics.					
Languages necessary to complete the course:					
Notes:					
Past grade distribution Total number of evaluated students: 8					
A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0
Lecturers: Mgr. Aneta Barnes					
Last change: 21.06.2022					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KJP/1-MXX-272/20		Course title: Slovak Language for Foreign Students (4)			
Educational activities: Type of activities: practicals Number of hours: per week: 2 per level/semester: 26 Form of the course: on-site learning					
Number of credits: 2					
Recommended semester: 4.					
Educational level: I., II.					
Prerequisites:					
Course requirements: tests Course prerequisites: https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebežneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/ Scale of assessment (preliminary/final): 100/0					
Learning outcomes: This course is aimed for foreign students to better comprehend all the language skills important to enable correct usage of the Slovak language – listening comprehension, reading, writing and speaking.					
Class syllabus: The syllabus is targeted at the comprehension of all the language skills of the Slovak language , and it is a follow up course to the Slovak language course 3.					
Recommended literature: Križom-Krážom Slovenčina 2, additional material to further support the covered topics.					
Languages necessary to complete the course:					
Notes:					
Past grade distribution Total number of evaluated students: 7					
A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0
Lecturers: Mgr. Aneta Barnes					
Last change: 21.06.2022					
Approved by:					

STATE EXAM DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KEF/2-FTL-954/15	Course title: Solid State Physics
Number of credits: 4	
Educational level: II.	
State exam syllabus:	
Last change: 06.06.2017	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFL.KTV/2-MXX-115/17		Course title: 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: Grades: A 90%, B 80%, C 70%, D 60%, E 50% The condition for the award of 1 or 2 credits is the completion of a multi-day course in its full scope, or the completion of one-day courses in the scope of 4 days. Candidates can apply to the leaders of individual courses. From the presented offer of courses, you can choose the one that suits your interests, abilities and deadlines.					
Learning outcomes: Acquisition and development of basic motor skills and abilities in selected sports: skiing and snowboarding. Mastering the correct technique of performing individual movements, which are necessary for skiing and snowboarding.					
Class syllabus: The student can sign up for the outdoor sports courses offered by the department: skiing, snowboarding. The lessons in the courses are focused on the development of basic and special movement skills and mastering the techniques needed for the sports.					
Recommended literature:					
Languages necessary to complete the course: Slovak					
Notes: KTVŠ does not rent ski equipment.					
Past grade distribution Total number of evaluated students: 83					
A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0
Lecturers: Mgr. Martin Dovičák, PhD., Mgr. Tomáš Kuchár, PhD., Mgr. Jana Leginusová, PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, PaedDr. Mikuláš Ortutay, Mgr. Júlia Raábová, PhD.					

Last change: 16.06.2022
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFL.KTV/2-MXX-116/18		Course title: 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: Grades: A 90%, B 80%, C 70%, D 60%, E 50%. The condition for the award of 1 or 2 credits is the completion of a multi-day course in its full scope, or the completion of one-day courses in the scope of 4 days. Candidates can apply to the leaders of individual courses. From the presented offer of courses, you can choose the one that suits your interests, abilities and deadlines.					
Learning outcomes: Creating a positive and lasting relationship with physical activity. Acquisition and mastery of basic motor skills and abilities in outdoor sports: windsurfing, beach volleyball, water tourism - river rafting, hiking and other sports according to interest. Training and improving the technique needed for the sports.					
Class syllabus: The student can sign up for the outdoor sports courses offered by the department: water tourism - river rafting, windsurfing, beach volleyball, hiking and other hobby sports. The lessons in the courses are focused on the development of basic and special movement skills and, mastering the techniques needed for the sports.					
Recommended literature:					
Languages necessary to complete the course: Slovak					
Notes: KTVŠ will provide sports equipment.					
Past grade distribution Total number of evaluated students: 50					
A	B	C	D	E	FX
94,0	0,0	0,0	0,0	0,0	6,0

Lecturers: Mgr. Martin Dovičák, PhD., Mgr. Tomáš Kuchár, PhD., Mgr. Jana Leginusová, PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, PaedDr. Mikuláš Ortutay, Mgr. Júlia Raábová, PhD., Mgr. Tomáš Lovecký
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Last change: 16.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KEF/2-FTL-107/15	Course title: Structure and Mechanical Properties of Solids
Educational activities: Type of activities: lecture / practicals Number of hours: per week: 4 / 2 per level/semester: 52 / 26 Form of the course: on-site learning	
Number of credits: 8	
Recommended semester: 1.	
Educational level: II.	
Prerequisites:	
Course requirements: Homework Exam Grades: A 90%, B 80%, C 70%, D 60%, E 50% Scale of assessment (preliminary/final): 20/80	
Learning outcomes: The course provides deeper insight into the structure of a broad spectrum of forms of condensed matter, from ideal crystals to defective crystals to quasicrystals to liquid crystals to liquids and amorphous structures. Besides description of structure we focus on understanding of relations between structure, energy and entropy.	
Class syllabus: Thermodynamic potentials and phase diagrams Lattice vibrations in harmonic approximation - dynamical matrix, phonons Anharmonic effects in crystals - thermal expansion Quasicrystals and incommensurate structures Defects in crystals - point defects, dislocations Order/disorder transition in alloys Structure of surfaces - reconstruction Mechanical properties of solids - strain and stress tensors, elastic constants in crystals, plasticity, fracture Structure of liquids, glasses and amorphous solids Soft matter Polymers and their properties Liquid crystals, isotropic-nematic transition, Frederiks transition 2D systems - graphene	
Recommended literature: Solid state physics / Neil W. Ashcroft, N. David Mermin. Fort Worth : Harcourt Brace, 1976	

Úvod do fyziky pevných látek / Charles Kittel ; přeložili Miloš Matyáš ... [et al.]. Praha : Academia, 1985 Condensed matter physics : Corrected printing / Michael P. Marder. New York : John Wiley, 2000					
Languages necessary to complete the course: Slovak, English					
Notes:					
Past grade distribution Total number of evaluated students: 46					
A	B	C	D	E	FX
65,22	10,87	10,87	6,52	6,52	0,0
Lecturers: prof. Ing. Roman Martoňák, DrSc., Mgr. Ondrej Tóth, PhD.					
Last change: 19.01.2022					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022					
University: Comenius University Bratislava					
Faculty: Faculty of Mathematics, Physics and Informatics					
Course ID: FMFI.KEF/2-FTL-110/15		Course title: Use of Computer Simulations in Condensed-matter Physics			
Educational activities: Type of activities: lecture / practicals Number of hours: per week: 3 / 3 per level/semester: 39 / 39 Form of the course: on-site learning					
Number of credits: 8					
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: 17					
A	B	C	D	E	FX
58,82	29,41	5,88	5,88	0,0	0,0
Lecturers: prof. RNDr. Peter Markoš, DrSc., doc. Mgr. Jozef Kristek, PhD., prof. Ing. Roman Martoňák, DrSc.					
Last change: 12.09.2016					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KEF/2-FFP-109/15	Course title: Vacuum Physics and Technology
Educational activities: Type of activities: lecture / practicals Number of hours: per week: 2 / 1 per level/semester: 26 / 13 Form of the course: on-site learning	
Number of credits: 4	
Recommended semester: 1.	
Educational level: II.	
Prerequisites:	
Course requirements: Evaluation during semester: individual work Approximate grade scale: A 90%, B 80%, C 70%, D 60%, E 50% Scale of assessment (preliminary/final): 20/80	
Learning outcomes: The result of the training will be theoretical and practical knowledge about the methods of obtaining, maintaining and measuring low pressures in the range of 10 ⁻⁵ to 10 ⁻¹³ Pa, in the field of gas flow, as well as in the field of materials suitable for low pressure physics. Students will gain knowledge enabling the design of vacuum equipment for scientific and technical equipment, select appropriate technical solutions (vacuum pumps, chambers, vacuum gauges).	
Class syllabus: Introduction to vacuum physics (historical overview, basic concepts, vacuum distribution, talc units). Kinetic theory of gases. Gas flow in viscous mode, mixed mode and molecular mode. Transmission phenomena in gases (diffusion, heat conduction). Processes taking place on the walls of vacuum systems (physical, chemical adsorption, absorption). Pumping process theory. Mechanical and dry pumps. Turbomolecular and diffusion pumps. Ionic and cryogenic pumps. Methods of measuring the pumping speed of the pump. Vacuum gauges. Measurement of partial pressures. Leak detection of vacuum systems. Selection of materials for vacuum technology. Design of vacuum apparatus.	
Recommended literature: Ch. Edelman, Vakuumphysik, Spektrum, Heidelberg, 1998	
Languages necessary to complete the course: english	
Notes:	

Past grade distribution					
Total number of evaluated students: 45					
A	B	C	D	E	FX
88,89	11,11	0,0	0,0	0,0	0,0
Lecturers: prof. Dr. Štefan Matejčík, DrSc., Mgr. Michal Stano, PhD.					
Last change: 31.01.2022					
Approved by:					