

Course descriptions

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COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-803/10	Course title: BSc Thesis Supervision
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 10	
Recommended semester:	
Educational level: III.	
Prerequisites:	
Course requirements: Scale of assessment (preliminary/final): 100/0	
Learning outcomes: By leading the bachelor's thesis, the doctoral student will be involved in scientific and pedagogical work at the department and will gain experience in leading the thesis.	
Class syllabus: Listing the topic of the bachelor's thesis, work plan for the bachelor's student, guiding the student in scientific work of theoretical or experimental nature, consultations.	
Recommended literature:	
Languages necessary to complete the course: english	
Notes:	
Past grade distribution Total number of evaluated students: 0	
ABS	NEABS
0,0	0,0
Lecturers:	
Last change: 11.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFI.KAFZM/3-FFP-203/15	Course title: Bio-medical Applications of Plasmas and Radiation
Educational activities: Type of activities: lecture Number of hours: per week: 2 per level/semester: 28 Form of the course: on-site learning, distance learning	
Number of credits: 10	
Recommended semester: 4.	
Educational level: III.	
Prerequisites:	
Course requirements:	
Learning outcomes:	
Class syllabus:	
Recommended literature:	
Languages necessary to complete the course:	
Notes:	
Past grade distribution Total number of evaluated students: 10	
ABS	NEABS
100,0	0,0
Lecturers: prof. RNDr. Zdenko Machala, DrSc.	
Last change: 02.06.2015	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-704/10	Course title: Citation Registered in SCI or SCOPUS
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 4	
Recommended semester:	
Educational level: III.	
Prerequisites:	
Course requirements: Scale of assessment (preliminary/final): 100/0	
Learning outcomes: The student gained experience with scientific work and publishing their results, which provoked a response in the form of a citation in a peer-reviewed scientific journal or proceedings. Citation registered in SCI or SCOPUS.	
Class syllabus: Research work on a topic related to the dissertation, processing of results, publication of results, citation registered in SCI or SCOPUS.	
Recommended literature:	
Languages necessary to complete the course: english	
Notes:	
Past grade distribution Total number of evaluated students: 0	
ABS	NEABS
0,0	0,0
Lecturers:	
Last change: 11.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-501/15	Course title: Completion of PhD Research Project Stage (1)
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 10	
Recommended semester: 4.	
Educational level: III.	
Prerequisites:	
Course requirements: Indicative rating scale: passed > 50%, failed < 50% Scale of assessment (preliminary/final): 100/0	
Learning outcomes: The student proved by the continuous scientific work the completion of a significant stage of his scientific work on the topic of the dissertation thesis.	
Class syllabus: Completion of a new experimental device, introduction of a new measurement method, development of a new theoretical model, etc.	
Recommended literature: Current scientific papers relevant to topic.	
Languages necessary to complete the course: english	
Notes:	
Past grade distribution Total number of evaluated students: 4	
ABS	NEABS
100,0	0,0
Lecturers:	
Last change: 19.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-507/15	Course title: Completion of PhD Research Project Stage (2)
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 10	
Recommended semester: 6.	
Educational level: III.	
Prerequisites:	
Course requirements: Indicative rating scale: passed > 50%, failed < 50% Scale of assessment (preliminary/final): 100/0	
Learning outcomes: The student proved by the continuous scientific work the completion of a significant stage of his scientific work on the topic of the dissertation thesis.	
Class syllabus: Completion of a new experimental device, introduction of a new measurement method, development of a new theoretical model, etc.	
Recommended literature: Current scientific papers relevant to topic.	
Languages necessary to complete the course: english	
Notes:	
Past grade distribution Total number of evaluated students: 3	
ABS	NEABS
100,0	0,0
Lecturers:	
Last change: 19.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022							
University: Comenius University Bratislava							
Faculty:							
Course ID: FMFL.KJP/3-MXX-101/15				Course title: Course of English for PhD Studies (1)			
Educational activities: Type of activities: practicals Number of hours: per week: 2 per level/semester: 28 Form of the course: on-site learning, distance learning							
Number of credits: 5							
Recommended semester: 1.							
Educational level: III.							
Prerequisites:							
Course requirements:							
Learning outcomes:							
Class syllabus:							
Recommended literature:							
Languages necessary to complete the course:							
Notes:							
Past grade distribution Total number of evaluated students: 166							
A	ABS	B	C	D	E	FX	NEABS
50,6	43,98	0,6	0,0	0,0	2,41	0,0	2,41
Lecturers: PhDr. Alena Zemanová							
Last change: 20.06.2022							
Approved by:							

COURSE DESCRIPTION

Academic year: 2021/2022							
University: Comenius University Bratislava							
Faculty:							
Course ID: FMFI.KJP/3-MXX-102/15				Course title: Course of English for PhD Studies (1)			
Educational activities: Type of activities: practicals Number of hours: per week: 2 per level/semester: 28 Form of the course: on-site learning, distance learning							
Number of credits: 5							
Recommended semester: 2.							
Educational level: III.							
Prerequisites: FMFI.KJP/3-MXX-101/15 - Course of English for PhD Studies (1)							
Course requirements:							
Learning outcomes:							
Class syllabus:							
Recommended literature:							
Languages necessary to complete the course:							
Notes:							
Past grade distribution Total number of evaluated students: 161							
A	ABS	B	C	D	E	FX	NEABS
54,66	38,51	0,0	0,0	0,0	0,0	0,0	6,83
Lecturers: PhDr. Alena Zemanová							
Last change: 20.06.2022							
Approved by:							

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-102/15	Course title: Department Seminar (1)
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 5	
Recommended semester: 1.	
Educational level: III.	
Prerequisites:	
Course requirements: Scale of assessment (preliminary/final): 100/0	
Learning outcomes: By actively participating in the scientific seminar of the workplace, the student will learn the form of presentation and discussion of scientific results. They will deepen their knowledge of scientific problems covered at the seminar.	
Class syllabus: Active participation in the workplace seminar. Preparation of materials for performance at the workplace seminar. Presentation at the workplace seminar.	
Recommended literature: Current scientific papers relevant to topic.	
Languages necessary to complete the course: english	
Notes:	
Past grade distribution Total number of evaluated students: 10	
ABS	NEABS
100,0	0,0
Lecturers: prof. RNDr. Pavel Veis, CSc.	
Last change: 11.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-103/15	Course title: Department Seminar (2)
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 5	
Recommended semester: 2.	
Educational level: III.	
Prerequisites:	
Course requirements: Scale of assessment (preliminary/final): 100/0	
Learning outcomes: By actively participating in the scientific seminar of the workplace, the student will learn the form of presentation and discussion of scientific results. They will deepen their knowledge of scientific problems covered at the seminar.	
Class syllabus: Active participation in the workplace seminar. Preparation of materials for performance at the workplace seminar. Presentation at the workplace seminar.	
Recommended literature: Current scientific papers relevant to topic.	
Languages necessary to complete the course: english	
Notes:	
Past grade distribution Total number of evaluated students: 10	
ABS	NEABS
100,0	0,0
Lecturers: prof. RNDr. Pavel Veis, CSc.	
Last change: 11.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-104/15	Course title: Department Seminar (3)
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 5	
Recommended semester: 3.	
Educational level: III.	
Prerequisites:	
Course requirements: Scale of assessment (preliminary/final): 100/0	
Learning outcomes: By actively participating in the scientific seminar of the workplace, the student will learn the form of presentation and discussion of scientific results. They will deepen their knowledge of scientific problems covered at the seminar.	
Class syllabus: Active participation in the workplace seminar. Preparation of materials for performance at the workplace seminar. Presentation at the workplace seminar.	
Recommended literature: Current scientific papers relevant to topic.	
Languages necessary to complete the course: english	
Notes:	
Past grade distribution Total number of evaluated students: 9	
ABS	NEABS
100,0	0,0
Lecturers: prof. RNDr. Pavel Veis, CSc.	
Last change: 11.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-105/15	Course title: Department Seminar (4)
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 5	
Recommended semester: 4.	
Educational level: III.	
Prerequisites:	
Course requirements: Scale of assessment (preliminary/final): 100/0	
Learning outcomes: By actively participating in the scientific seminar of the workplace, the student will learn the form of presentation and discussion of scientific results. They will deepen their knowledge of scientific problems covered at the seminar.	
Class syllabus: Active participation in the workplace seminar. Preparation of materials for performance at the workplace seminar. Presentation at the workplace seminar.	
Recommended literature: Current scientific papers relevant to topic.	
Languages necessary to complete the course: english	
Notes:	
Past grade distribution Total number of evaluated students: 4	
ABS	NEABS
100,0	0,0
Lecturers: prof. RNDr. Pavel Veis, CSc.	
Last change: 11.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-106/15	Course title: Department Seminar (5)
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 5	
Recommended semester: 5.	
Educational level: III.	
Prerequisites:	
Course requirements: Scale of assessment (preliminary/final): 100/0	
Learning outcomes: By actively participating in the scientific seminar of the workplace, the student will learn the form of presentation and discussion of scientific results. They will deepen their knowledge of scientific problems covered at the seminar.	
Class syllabus: Active participation in the workplace seminar. Preparation of materials for performance at the workplace seminar. Presentation at the workplace seminar.	
Recommended literature: Current scientific papers relevant to topic.	
Languages necessary to complete the course: english	
Notes:	
Past grade distribution Total number of evaluated students: 4	
ABS	NEABS
100,0	0,0
Lecturers: prof. RNDr. Pavel Veis, CSc.	
Last change: 11.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-107/15	Course title: Department Seminar (6)
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 5	
Recommended semester: 6.	
Educational level: III.	
Prerequisites:	
Course requirements: Scale of assessment (preliminary/final): 100/0	
Learning outcomes: By actively participating in the scientific seminar of the workplace, the student will learn the form of presentation and discussion of scientific results. They will deepen their knowledge of scientific problems covered at the seminar.	
Class syllabus: Active participation in the workplace seminar. Preparation of materials for performance at the workplace seminar. Presentation at the workplace seminar.	
Recommended literature: Current scientific papers relevant to topic.	
Languages necessary to complete the course: english	
Notes:	
Past grade distribution Total number of evaluated students: 5	
ABS	NEABS
100,0	0,0
Lecturers: prof. RNDr. Pavel Veis, CSc.	
Last change: 11.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-108/15	Course title: Department Seminar (7)
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 5	
Recommended semester: 7.	
Educational level: III.	
Prerequisites:	
Course requirements: Scale of assessment (preliminary/final): 100/0	
Learning outcomes: By actively participating in the scientific seminar of the workplace, the student will learn the form of presentation and discussion of scientific results. They will deepen their knowledge of scientific problems covered at the seminar.	
Class syllabus: Active participation in the workplace seminar. Preparation of materials for performance at the workplace seminar. Presentation at the workplace seminar.	
Recommended literature: Current scientific papers relevant to topic.	
Languages necessary to complete the course: english	
Notes:	
Past grade distribution Total number of evaluated students: 4	
ABS	NEABS
100,0	0,0
Lecturers: prof. RNDr. Pavel Veis, CSc.	
Last change: 11.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-109/15	Course title: Department Seminar (8)
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 5	
Recommended semester: 8.	
Educational level: III.	
Prerequisites:	
Course requirements: Scale of assessment (preliminary/final): 100/0	
Learning outcomes: By actively participating in the scientific seminar of the workplace, the student will learn the form of presentation and discussion of scientific results. They will deepen their knowledge of scientific problems covered at the seminar.	
Class syllabus: Active participation in the workplace seminar. Preparation of materials for performance at the workplace seminar. Presentation at the workplace seminar.	
Recommended literature: Current scientific papers relevant to topic.	
Languages necessary to complete the course: ENglish	
Notes:	
Past grade distribution Total number of evaluated students: 4	
ABS	NEABS
100,0	0,0
Lecturers: prof. RNDr. Pavel Veis, CSc.	
Last change: 19.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-801/15	Course title: Direct pedagogical activity (1)
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 4	
Recommended semester: 1.	
Educational level: III.	
Prerequisites:	
Course requirements: Indicative rating scale: passed > 50%, failed < 50% Scale of assessment (preliminary/final): 100/0	
Learning outcomes: The student will gain experience with direct pedagogical activities in conducting computer exercises or laboratory practices.	
Class syllabus: Conducting computational exercises or laboratory practices.	
Recommended literature:	
Languages necessary to complete the course: english	
Notes:	
Past grade distribution Total number of evaluated students: 0	
ABS	NEABS
0,0	0,0
Lecturers:	
Last change: 19.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-802/15	Course title: Direct pedagogical activity (2)
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 4	
Recommended semester: 2.	
Educational level: III.	
Prerequisites:	
Course requirements: Indicative rating scale: passed > 50%, failed < 50% Scale of assessment (preliminary/final): 100/0	
Learning outcomes: The student will gain experience with direct pedagogical activities in conducting computer exercises or laboratory practices.	
Class syllabus: Conducting computational exercises or laboratory practices.	
Recommended literature:	
Languages necessary to complete the course: english	
Notes:	
Past grade distribution Total number of evaluated students: 1	
ABS	NEABS
100,0	0,0
Lecturers:	
Last change: 19.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-811/15	Course title: Direct pedagogical activity (3)
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 4	
Recommended semester: 3.	
Educational level: III.	
Prerequisites:	
Course requirements: Indicative rating scale: passed > 50%, failed < 50% Scale of assessment (preliminary/final): 100/0	
Learning outcomes: The student will gain experience with direct pedagogical activities in conducting computer exercises or laboratory practices.	
Class syllabus: Conducting computational exercises or laboratory practices.	
Recommended literature:	
Languages necessary to complete the course: english	
Notes:	
Past grade distribution Total number of evaluated students: 1	
ABS	NEABS
100,0	0,0
Lecturers:	
Last change: 19.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-812/15	Course title: Direct pedagogical activity (4)
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 4	
Recommended semester: 4.	
Educational level: III.	
Prerequisites:	
Course requirements: Indicative rating scale: passed > 50%, failed < 50% Scale of assessment (preliminary/final): 100/0	
Learning outcomes: The student will gain experience with direct pedagogical activities in conducting computer exercises or laboratory practices.	
Class syllabus: Conducting computational exercises or laboratory practices.	
Recommended literature:	
Languages necessary to complete the course: english	
Notes:	
Past grade distribution Total number of evaluated students: 0	
ABS	NEABS
0,0	0,0
Lecturers:	
Last change: 19.02.2022	
Approved by:	

STATE EXAM DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-990/15	Course title: Dissertation Thesis Defense
Number of credits: 30	
Recommended semester: 7., 8..	
Educational level: III.	
Learning outcomes: The student prepared and defended the dissertation, in which he presents the results of his scientific work.	
Class syllabus: Študent pripravil dizertačnú prácu, naštudoval problematiku študovanú v rámci dizertačnej práce, popísal experimentálne a teoretické metódy využívané v rámci dizertačnej práce, prezentoval vedecké výsledky získané v rámci dizertačnej práce a ich interpretáciu a na záver obhájil dizertačnú prácu.	
State exam syllabus:	
Recommended literature: Current scientific papers relevant to topic.	
Languages necessary to complete the course: english	
Last change: 11.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFI.KAFZM/3-FFP-001/00	Course title: Experimental Vademecum
Educational activities: Type of activities: lecture Number of hours: per week: 4 per level/semester: 56 Form of the course: on-site learning, distance learning	
Number of credits: 10	
Recommended semester: 1.	
Educational level: III.	
Prerequisites:	
Course requirements: Evaluation during semester: homeworks Exam: oral exam Approximate evaluation grade scale: A 90%, B 80%, C 70%, D 60%, E 50% Scale of assessment (preliminary/final): 30/70	
Learning outcomes: After completing the course, the student will have the basics of construction of experimental apparatus. They will be acquainted with the properties of commonly used materials and with the possibilities of their machining, they will expand their knowledge of vacuum technology, they will gain an overview of the practical use of optical and electronic components.	
Class syllabus: Design of experimental equipment - production processes, materials and their properties, joining materials, blueprints. Vacuum technology - materials, measurement of pressure and flow of gases, vacuum generation, valves, couplings, electricity and electronics in vacuum, differential pumping, construction of metal vacuum apparatus. Optical systems - optical components, materials, sources, lasers. Electronics - basic circuits, passive and active components, amplifiers, voltage and current sources, AD/DA converters, signal and noise, grounding. Temperature measurement and control.	
Recommended literature: J.H. Moore, C.C. Davis, M.A. Coplan, S.C. Greer: Building Scientific Apparatus: A#Practical Guide to Design and Construction, 4th ed., Cambridge University Press, Cambridge, 2009. P. Horowitz, W. Hill: The Art of Electronics, 3rd ed., Cambridge University Press, Cambridge, 2015.	
Languages necessary to complete the course: english	

Notes:	
Past grade distribution	
Total number of evaluated students: 3	
ABS	NEABS
100,0	0,0
Lecturers: doc. RNDr. Karol Hensel, PhD., doc. RNDr. Mário Janda, PhD., prof. RNDr. Zdenko Machala, DrSc., doc. Mgr. Peter Čermák, PhD.	
Last change: 02.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-804/15	Course title: Guidance of a Project for the Students' Conference
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 7	
Recommended semester:	
Educational level: III.	
Prerequisites:	
Course requirements: Indicative rating scale: passed > 50%, failed < 50% Scale of assessment (preliminary/final): 100/0	
Learning outcomes: The doctoral student will gain experience in leading a student of a lower level of study in the creation of the work of the Students Scientific Conference.	
Class syllabus: Listing the topic of the work of SSC, work plan for the student, guiding the student in scientific work of theoretical or experimental nature, consultations.	
Recommended literature:	
Languages necessary to complete the course: english	
Notes:	
Past grade distribution Total number of evaluated students: 0	
ABS	NEABS
0,0	0,0
Lecturers:	
Last change: 19.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-703/10	Course title: Home Project Co-researcher
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 10	
Recommended semester:	
Educational level: III.	
Prerequisites:	
Course requirements: Scale of assessment (preliminary/final): 100/0	
Learning outcomes: The student will gain experience in scientific work on homework projects.	
Class syllabus: Scientific work on tasks arising from the objectives of a domestic scientific project.	
Recommended literature:	
Languages necessary to complete the course: english	
Notes:	
Past grade distribution Total number of evaluated students: 8	
ABS	NEABS
100,0	0,0
Lecturers:	
Last change: 11.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-101/15	Course title: Individual Study of Science and Research Resources (1)
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 10	
Recommended semester: 1.	
Educational level: III.	
Prerequisites:	
Course requirements: Indicative rating scale: passed > 50%, failed < 50% Scale of assessment (preliminary/final): 100/0	
Learning outcomes: After completing the 2-semester course, the student will be able to independently study professional and scientific literature and critically assess its content.	
Class syllabus: The doctoral student will study the professional and scientific literature recommended by the supervisor related to the topic of the dissertation.	
Recommended literature: Selection of current articles from the area.	
Languages necessary to complete the course: English	
Notes:	
Past grade distribution Total number of evaluated students: 9	
ABS	NEABS
100,0	0,0
Lecturers:	
Last change: 19.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-111/15	Course title: Individual Study of Science and Research Resources (2)
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 10	
Recommended semester: 2.	
Educational level: III.	
Prerequisites:	
Course requirements: Indicative rating scale: passed > 50%, failed < 50% Scale of assessment (preliminary/final): 100/0	
Learning outcomes: After completing the 2-semester course, the student will be able to independently study professional and scientific literature and critically assess its content.	
Class syllabus: The doctoral student will study the professional and scientific literature recommended by the supervisor related to the topic of the dissertation.	
Recommended literature: Selection of current articles from the area.	
Languages necessary to complete the course: English	
Notes:	
Past grade distribution Total number of evaluated students: 11	
ABS	NEABS
100,0	0,0
Lecturers:	
Last change: 19.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-702/10	Course title: International Project Co-researcher
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 15	
Recommended semester:	
Educational level: III.	
Prerequisites:	
Course requirements: Scale of assessment (preliminary/final): 100/0	
Learning outcomes: The student will gain experience in scientific work on the tasks of an international scientific project.	
Class syllabus: Scientific work on tasks arising from the goals of an international scientific project.	
Recommended literature:	
Languages necessary to complete the course: english	
Notes:	
Past grade distribution Total number of evaluated students: 1	
ABS	NEABS
100,0	0,0
Lecturers:	
Last change: 11.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFI.KEF/3-FOS-022/15	Course title: Laser Processes and Chemical Reactions
Educational activities: Type of activities: course Number of hours: per week: 2 per level/semester: 28 Form of the course: on-site learning, distance learning	
Number of credits: 5	
Recommended semester: 3.	
Educational level: III.	
Prerequisites:	
Antirequisites: FMFI.KEF/3-FOS-022/10	
Course requirements: Continuous assessment: elaboration of professional literature on a selected topic and its presentation Exam: oral Indicative rating scale: passed > 50%, failed < 50% Scale of assessment (preliminary/final): 40/60	
Learning outcomes: The student will gain theoretical knowledge and practical experience in the field of laser processes, photophysical and photochemical processes, in the processes of melting and evaporation of material, subsequent atomization and plasma formation. Furthermore, the processes of reassociation and cluster formation during the expansion of the laser-excited flame. He will also gain practical experience with analytical techniques using laser-induced processes.	
Class syllabus: (series of lectures, excursions and laboratory exercises) Thermal, photophysical and photochemical processes. Reaction kinetics and particle transport. Atomization and formation of clusters. Surface melting processes. Material evaporation and plasma formation processes. Material deposition. Transformation and synthesis of material, creation of structures. Measurement and diagnostic techniques. Laser-induced penetration in gases, liquids and on the surface of solids, processes of ablation of solids. Laser-induced plasma (LIBS) and its morphology. Chemical analysis of surfaces and possibilities of non-calibration quantitative analysis. Analysis of samples using LIBS. Measurement and diagnostic techniques. Laser-induced penetration in gases, liquids and on the surface of solids, processes of ablation of solids. Laser-induced plasma (LIBS) and its morphology. Chemical analysis of surfaces and possibilities of non-calibration quantitative analysis. Analysis of samples using LIBS.	
Recommended literature: Laser spectroscopy : Basic concepts and instrumentation / Wolfgang Demtröder. Berlin : Springer, 1981 Principles of laser plasmas / Edited by George Bekefi. New York : John Wiley, 1976	

Selection of current articles from the area.	
Languages necessary to complete the course: Slovak in combination with English (study literature in English)	
Notes:	
Past grade distribution Total number of evaluated students: 3	
ABS	NEABS
100,0	0,0
Lecturers: doc. Dr. Alicia Marín Roldán, prof. RNDr. Pavel Veis, CSc.	
Last change: 11.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-021/10	Course title: Laser Spectroscopy
Educational activities: Type of activities: lecture Number of hours: per week: 2 per level/semester: 28 Form of the course: on-site learning, distance learning	
Number of credits: 10	
Recommended semester: 1.	
Educational level: III.	
Prerequisites:	
Course requirements:	
Learning outcomes:	
Class syllabus:	
Recommended literature:	
Languages necessary to complete the course:	
Notes:	
Past grade distribution Total number of evaluated students: 8	
ABS	NEABS
100,0	0,0
Lecturers: doc. RNDr. Mário Janda, PhD., prof. RNDr. Pavel Veis, CSc.	
Last change: 02.06.2015	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFI.KEF/3-FOS-023/15	Course title: New Trends in Laser Application in Surface Modification
Educational activities: Type of activities: lecture Number of hours: per week: 2 per level/semester: 28 Form of the course: on-site learning, distance learning	
Number of credits: 5	
Recommended semester: 4.	
Educational level: III.	
Prerequisites:	
Antirequisites: FMFI.KEF/3-FOS-023/10	
Course requirements:	
Learning outcomes:	
Class syllabus:	
Recommended literature:	
Languages necessary to complete the course:	
Notes:	
Past grade distribution Total number of evaluated students: 0	
ABS	NEABS
0,0	0,0
Lecturers: doc. RNDr. Anna Zahoranová, PhD.	
Last change: 02.06.2015	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-701/10	Course title: Obtaining a University Grant
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 20	
Recommended semester:	
Educational level: III.	
Prerequisites:	
Course requirements: Scale of assessment (preliminary/final): 100/0	
Learning outcomes: The student gains experience in preparing a scientific project.	
Class syllabus: Scientific project proposal, setting project goals, work progress, and budget projects	
Recommended literature: Current scientific papers relevant to topic.	
Languages necessary to complete the course: english	
Notes:	
Past grade distribution Total number of evaluated students: 7	
ABS	NEABS
100,0	0,0
Lecturers:	
Last change: 11.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-024/10	Course title: Optical Spectroscopy of Gases and Plasma
Educational activities: Type of activities: lecture Number of hours: per week: 2 per level/semester: 28 Form of the course: on-site learning, distance learning	
Number of credits: 10	
Recommended semester: 2.	
Educational level: III.	
Prerequisites:	
Course requirements:	
Learning outcomes:	
Class syllabus:	
Recommended literature:	
Languages necessary to complete the course:	
Notes:	
Past grade distribution Total number of evaluated students: 5	
ABS	NEABS
100,0	0,0
Lecturers: prof. RNDr. Pavel Veis, CSc.	
Last change: 02.06.2015	
Approved by:	

STATE EXAM DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-950/15	Course title: Passing Dissertation Examination
Number of credits: 20	
Recommended semester: 3., 4..	
Educational level: III.	
Learning outcomes: Passing the dissertation exam and defending the dissertation project.	
Class syllabus: Presentation of the dissertation project, objectives of the dissertation. In the second part, an oral exam in Laser Physics and Optical Spectroscopy.	
State exam syllabus:	
Languages necessary to complete the course: english	
Last change: 11.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFI.KEF/3-FOS-008/15	Course title: Physics of Ultrashort Pulses
Educational activities: Type of activities: lecture Number of hours: per week: 2 per level/semester: 28 Form of the course: on-site learning, distance learning	
Number of credits: 5	
Recommended semester: 3.	
Educational level: III.	
Prerequisites:	
Antirequisites: FMFI.KEF/3-FOS-008/10	
Course requirements: Final assessment: Examination: oral and written test, Indicative rating scale: passed > 50%, failed < 50% Scale of assessment (preliminary/final): 0/100	
Learning outcomes: The student will gain basic theoretical knowledge in the field of ultrashort pulse physics, experience in the implementation of ultrashort experiments.	
Class syllabus: Fundamentals of ultrashort pulse theory, propagation and interaction with matter (GVD, TOD), generation and amplification (modelocking, free-electron laser, CPA, OPCPA), practical implementation of femtosecond systems (oscillators, multi-pass amplifiers, regenerative amplifiers, stretcher - compressor, fs -optics), classical applied nonlinear optics (SHG, THG, NOPA, THz radiation, etc.), pulse length and phase measurement (FROG, SPIDER, etc.), femtosecond spectroscopy, sub-10-fs pulses and absolute phase stabilization of pulses, nonlinear optics at intensities > 10 ¹⁴ W / cm ² , attosecond generation and photoelectron spectroscopy.	
Recommended literature: Optics and lasers : Including fibers and optical waveguides / Matt Young. Berlin : Springer, 2000 Svetlo : Vlny, lúče, fotóny / Anton Štrba, Vladimír Mesároš, Dagmar Senderáková. Nitra : Enigma, 2011 Selection of current articles from the area. Selection of current overview articles from the area.	
Languages necessary to complete the course: Slovak in combination with English (study literature in English)	
Notes:	

Past grade distribution	
Total number of evaluated students: 2	
ABS	NEABS
100,0	0,0
Lecturers: doc. RNDr. Mário Janda, PhD., Dr. rer. nat. Peter Šiffalovič, PhD.	
Last change: 21.06.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-403/15	Course title: Presentation at Domestic Conference
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 8	
Recommended semester:	
Educational level: III.	
Prerequisites:	
Course requirements: Scale of assessment (preliminary/final): 100/0	
Learning outcomes: The student will gain experience in presenting the results of scientific work to domestic and foreign scientific audiences.	
Class syllabus: Acquisition and processing of results, preparation of presentation, presentation at domestic conference.	
Recommended literature:	
Languages necessary to complete the course: english	
Notes:	
Past grade distribution Total number of evaluated students: 3	
ABS	NEABS
100,0	0,0
Lecturers:	
Last change: 11.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-402/15	Course title: Presentation at Domestic Conference with International Participation
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 10	
Recommended semester:	
Educational level: III.	
Prerequisites:	
Course requirements: Scale of assessment (preliminary/final): 100/0	
Learning outcomes: The student will gain experience in presenting the results of scientific work to domestic and foreign scientific audiences.	
Class syllabus: Acquisition and processing of results, preparation of presentation, presentation at domestic conference.	
Recommended literature:	
Languages necessary to complete the course: english	
Notes:	
Past grade distribution Total number of evaluated students: 0	
ABS	NEABS
0,0	0,0
Lecturers:	
Last change: 11.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-401/10	Course title: Presentation at an International Conference
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 20	
Recommended semester:	
Educational level: III.	
Prerequisites:	
Course requirements: Scale of assessment (preliminary/final): 100/0	
Learning outcomes: The student will gain experience in presenting the results of scientific work to a foreign scientific audience.	
Class syllabus: Obtaining and processing the results, preparation of the presentation, presentation at a foreign conference.	
Recommended literature:	
Languages necessary to complete the course: english	
Notes:	
Past grade distribution Total number of evaluated students: 7	
ABS	NEABS
100,0	0,0
Lecturers:	
Last change: 11.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKTF/3-FOS-007/15	Course title: Quantum Optics
Educational activities: Type of activities: lecture Number of hours: per week: 2 per level/semester: 28 Form of the course: on-site learning, distance learning	
Number of credits: 5	
Recommended semester: 2.	
Educational level: III.	
Prerequisites:	
Antirequisites: FMFLKTFDF/3-FOS-007/10	
Course requirements: Continuous assessment: individual work Examination: written, oral Indicative rating scale: passed > 50%, failed < 50% Scale of assessment (preliminary/final): 40/60	
Learning outcomes: After completing the lecture, the student will master the basic principles of theoretical quantum optics and their use in experiments.	
Class syllabus: Quantization of free electromagnetic field. Interaction of radiation with an atom. Photon experiments. Cavity quantum electrodynamics. Elements from the theory of laser radiation. Photon crystals. Macroscopic quantum phenomena and their experimental observation.	
Recommended literature: Quantum optics of small structures : Proceedings of the colloquium, Amsterdam, 23-24 September 1999 / Edited by Daan Lenstra, Taco D. Visser and K. A. H. van Leeuwen. Amsterdam : Academie van Wetenschappen verhandlingen, 2000 Ch. C. Gerry, P.L.Knight, Introductory Quantum Optics, Cambridge University Press, 2005 Selection of current articles from the area	
Languages necessary to complete the course: english	
Notes:	
Past grade distribution Total number of evaluated students: 0	
ABS	NEABS
0,0	0,0

Lecturers: prof. RNDr. Anna Dubníčková, DrSc., doc. RNDr. Tomáš Blažek, PhD.
Last change: 11.02.2022
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-302/15	Course title: Scientific Publication in a Current Contents-registered Periodical
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 30	
Recommended semester:	
Educational level: III.	
Prerequisites:	
Course requirements: Scale of assessment (preliminary/final): 100/0	
Learning outcomes: By publishing the work in a peer-reviewed journal, the student will gain practical experience in preparing the achieved scientific results for publication.	
Class syllabus: Preparation of results for publication, preparation of the article, sending the article to the editorial office, incorporation of comments from the review continuation, proofreading and communication with the editor of the journal.	
Recommended literature: Current scientific papers relevant to topic.	
Languages necessary to complete the course: english	
Notes:	
Past grade distribution Total number of evaluated students: 2	
ABS	NEABS
100,0	0,0
Lecturers:	
Last change: 11.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-304/15	Course title: Scientific Publication in a Foreign Reviewed Periodical (Almanac)
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 20	
Recommended semester:	
Educational level: III.	
Prerequisites:	
Course requirements: Scale of assessment (preliminary/final): 100/0	
Learning outcomes: By publishing the work in a foreign peer-reviewed journal or peer-reviewed proceedings, the student will gain practical experience in preparing the achieved scientific results for publication.	
Class syllabus: Preparation of results for publication, preparation of the article, sending the article to the editorial office, incorporation of comments from the review continuation, proofreading and communication with the editor of the journal.	
Recommended literature: Current scientific papers relevant to topic.	
Languages necessary to complete the course: english	
Notes:	
Past grade distribution Total number of evaluated students: 0	
ABS	NEABS
0,0	0,0
Lecturers:	
Last change: 11.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-303/15	Course title: Scientific Publication in a Reviewed Periodical (Almanac)
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 15	
Recommended semester:	
Educational level: III.	
Prerequisites:	
Course requirements: Scale of assessment (preliminary/final): 100/0	
Learning outcomes: By publishing the work in a peer-reviewed journal or peer-reviewed proceedings, the student will gain practical experience in preparing the achieved scientific results for publication.	
Class syllabus: Preparation of results for publication, preparation of the article, sending the article to the editorial office, incorporation of comments from the review continuation, proofreading and communication with the editor of the journal.	
Recommended literature: Current scientific papers relevant to topic.	
Languages necessary to complete the course: english	
Notes:	
Past grade distribution Total number of evaluated students: 0	
ABS	NEABS
0,0	0,0
Lecturers:	
Last change: 11.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-301/15	Course title: Scientific Publication in an A-category Periodical
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 35	
Recommended semester:	
Educational level: III.	
Prerequisites:	
Course requirements: Scale of assessment (preliminary/final): 100/0	
Learning outcomes: Preparation of results for publication, preparation of the article, submission of the article, comment procedure, proofreading. A category A magazine is one whose ISI Thomson impact factor or Elsevier Scopus SNIP factor is at least 1.25.	
Class syllabus: Preparation of results for publication, preparation of the article, sending the article to the editorial office, incorporation of comments from the review continuation, proofreading and communication with the editor of the journal.	
Recommended literature: Current scientific papers relevant to topic.	
Languages necessary to complete the course: english	
Notes:	
Past grade distribution Total number of evaluated students: 8	
ABS	NEABS
100,0	0,0
Lecturers:	
Last change: 11.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-305/15	Course title: Scientific Published Contribution in a Non-reviewed Almanac
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 7	
Recommended semester:	
Educational level: III.	
Prerequisites:	
Course requirements: Scale of assessment (preliminary/final): 100/0	
Learning outcomes: By publishing the work in a non-peer-reviewed journal or peer-reviewed proceedings, the student will gain practical experience in preparing the achieved scientific results for publication.	
Class syllabus: Preparation of results for publication, preparation of the article, submission of the article.	
Recommended literature: Current scientific papers relevant to topic.	
Languages necessary to complete the course: english	
Notes:	
Past grade distribution Total number of evaluated students: 0	
ABS	NEABS
0,0	0,0
Lecturers:	
Last change: 11.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFLKEF/3-FOS-808/10	Course title: Writing Diploma Thesis Assessment Protocol
Educational activities: Type of activities: Number of hours: per week: per level/semester: Form of the course: on-site learning, distance learning	
Number of credits: 4	
Recommended semester:	
Educational level: III.	
Prerequisites:	
Course requirements: Scale of assessment (preliminary/final): 100/0	
Learning outcomes: Elaboration of an opinion on the final work of a bachelor's or master's student.	
Class syllabus: Critical reading of the final thesis of a bachelor's or master's student. Assessment of work in terms of professional and formal. Deficiencies. Evaluation of work with a mark. Elaboration of an opinion and participation in the defense of the thesis.	
Recommended literature:	
Languages necessary to complete the course: english	
Notes:	
Past grade distribution Total number of evaluated students: 0	
ABS	NEABS
0,0	0,0
Lecturers:	
Last change: 11.02.2022	
Approved by:	