Course descriptions

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COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-815/22	BSc Thesis Supervision

Educational activities:
Type of activities: independent work
Number of hours:
per week: **per level/semester:** 100s
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 4.

Educational level: III.

Prerequisites:

Course requirements:
The condition for granting credits is the successful submission of a bachelor's thesis led by a doctoral student.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
The student has experience in supervising a bachelor's or similar thesis.

Class syllabus:
Formulation of the topic of the bachelor's or similar thesis.
Admission of a student on the topic of thesis, formulation of the assignment.
Consultations leading to the elaboration of students' work.
Writing the final supervisor's report.

Recommended literature:
Selected publications on the methodology of pedagogical research.

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution
Total number of evaluated students: 1

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 09.11.2021

Approved by: doc. RNDr. Peter Demkanin, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-711/22	Cooperation on an International Project

Educational activities:
Type of activities: independent work
Number of hours:
per week: **per level/semester:** 150s
Form of the course: on-site learning

Number of credits: 15

Recommended semester: 8.

Educational level: III.

Prerequisites:

Course requirements:
Credits will be awarded by researcher providing cooperation on an international grant from the Department, if the student's contribution to the grant solution is equal to or greater than the number of allocated credits.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
The student has experience in solving an international scientific project.

Class syllabus:
Involvement in solving an international project.
Contribution to the solution of an international project.
Communication of the concrete contribution of the doctoral student to the solution of the project.

Recommended literature:
Materials of the grant agency providing the solved project.
Materials of the solved project.

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution
Total number of evaluated students: 0

ABS	NEABS
0,0	0,0

Lecturers:

Last change: 09.11.2021

Approved by: doc. RNDr. Peter Demkanin, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/3-MXX-101/15	Course of English for PhD Studies (1)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning, distance learning

Number of credits: 5

Recommended semester:

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: 239

A	ABS	B	C	D	E	FX	NEABS
35,15	61,09	0,42	0,0	0,0	1,67	0,0	1,67

Lecturers: Mgr. Simona Dobiašová, PhD., Mgr. Aneta Barnes

Last change: 13.01.2025

Approved by: doc. RNDr. Peter Demkanin, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/3-MXX-102/15	Course of English for PhD Studies (1)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning, distance learning

Number of credits: 5

Recommended semester:

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: 210

A	ABS	B	C	D	E	FX	NEABS
41,9	52,38	0,0	0,0	0,0	0,0	0,0	5,71

Lecturers: Mgr. Simona Dobiašová, PhD., Mgr. Aneta Barnes

Last change: 13.01.2025

Approved by: doc. RNDr. Peter Demkanin, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-021/22	Design of Materials for Science Education

Educational activities:
Type of activities: course
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 10

Recommended semester: 2.

Educational level: III.

Prerequisites:

Course requirements:
In the middle of the semester, the student submits a plan of semester work - max. 10 marks. At the end of the semester, the student submits a semester work - max. 25 marks. In the exam period, there will be a structured discussion, where the student can get max. 15 marks focus is put on application of the theoretical background presented in the course. Credits will not be awarded if the student scores less than 50% of the points.
Scale of assessment (preliminary/final): 70/30

Learning outcomes:
The doctoral student is aware of the basic rules of writing a textbook for students and the methodology for teachers. He will be acquainted with theories related to the content and criteria of the design of methodological materials for school teachers. Can design and critically evaluate methodological materials for teaching science and physics.

Class syllabus:
Analysis of basic pedagogical documents, analysis of local and foreign physics and science textbooks, comparison of different variants of educational texts, analysis of course participants' own work and discussion about them. During the course, the doctoral student prepares a teaching text for the student together with methodological material for the teacher.
Choice of the topic, design of teaching methods and means for learning, design of environment for learning, selection of contexts. Scenario preparation. Preparation of the first version of the worksheet for the student. Discussion of the first version within the subject. Finalization of the worksheet for the student, methodological material and other multimedia materials. Reflection of activities leading to the final version of the final work of the course.

Recommended literature:
Portal: http://ec.europa.eu (vzdelávanie, výskum)
Sawyer, R. K. The Cambridge Handbook of The Learning Sciences. Cambridge University Press. 2014.
Cil, E. Teaching nature of science through conceptual change approach: Conceptual change text and concept cartoons. Journal of Baltic Science Education, Vol. 13, No. 3, 2014.

Selected journal articles.

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution
Total number of evaluated students: 6

ABS	NEABS
100,0	0,0

Lecturers: doc. PaedDr. Klára Velmovská, PhD.

Last change: 18.06.2022

Approved by: doc. RNDr. Peter Demkanin, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-027/22	Design of Non-formal and Informal Physics Education

Educational activities:
Type of activities: course
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 10

Recommended semester: 4.

Educational level: III.

Prerequisites:

Course requirements:
During the semester, there will be two written examinations, from which the student can obtain max. 2x 20 points. In the middle of the semester, the student submits a plan of semester work - max. 10 points. At the end of the semester, the student submits a semester work - max. 20 points. In the exam period, there will be a structured discussion, where the student can get max. 30 points. Credits will not be awarded if the student scores less than 50% of the points.
Scale of assessment (preliminary/final): 70/30

Learning outcomes:
The student knows the principles of non-formal and informal physics education.
The student knows the possibilities of using students' knowledge acquired through non-formal and informal education in formal physics and science education.
The student knows the selected principles of the design of material for non-formal and informal education.

Class syllabus:
Principles of non - formal and informal physics education.
Possibilities of using students' knowledge acquired through non-formal and informal education in formal physics and science education.
Principles of design of materials for non-formal and informal education.
Practical creation of materials for non-formal or informal physics education.

Recommended literature:
Articles from scientific journals focused on these topics.
Proceedings of scientific conferences focused on these topics.

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution Total number of evaluated students: 5	
ABS	NEABS
100,0	0,0
Lecturers: doc. PaedDr. Viera Haverlíková, PhD.	
Last change: 18.06.2022	
Approved by: doc. RNDr. Peter Demkanin, PhD.	

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-022/22	Design of the Physics Part of the Science Curriculum

Educational activities:
Type of activities: course
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 10

Recommended semester: 3.

Educational level: III.

Prerequisites:

Course requirements:
During the semester, there will be two written examinations, from which the student can obtain max. 2x 20 points. In the middle of the semester, the student submits a plan of semester work - max. 10 points. At the end of the semester, the student submits a semester work - max. 20 points. In the exam period, there will be a structured discussion, where the student can get max. 30 points. Credits will not be awarded if the student scores less than 50% of the points.
Scale of assessment (preliminary/final): 70/30

Learning outcomes:
The students will be able to actively assess aspects of science curriculum design for lower and higher secondary schools. They will know several approaches to the formulation of science education goals and several approaches to the selection of topics and contexts for the physics part of science education.

Class syllabus:
Selected theories of science education goals.
Principles and tenets of science education.
Theories of selecting the content and contexts of the physics part of science education.

Recommended literature:
Selected scientific journals focused in the learning sciences.
Proceedings from selected scientific conferences.
Klentschy M., Thompson, L.: Scaffolding science inquiry through lesson design, Heinemann, 2008.
Sawyer, R.K., The Cambridge Handbook of The Learning Sciences, 2014.
Tokuhama-Espinosa, T., 5 Pillars of the Mind, 2018.

Languages necessary to complete the course:
Slovak and English

Notes:

Past grade distribution Total number of evaluated students: 3	
ABS	NEABS
100,0	0,0
Lecturers: doc. RNDr. Peter Demkanin, PhD.	
Last change: 18.06.2022	
Approved by: doc. RNDr. Peter Demkanin, PhD.	

STATE EXAM DESCRIPTION

Academic year: 2025/2026	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KDMFI/3-FVF-950/15	**Course title:** Dissertation Examination
Number of credits: 20	
Educational level: III.	
Class syllabus: Writing and defending a written thesis for the dissertation exam. Oral exam in designated subjects.	
State exam syllabus:	
Recommended literature: Current local and world scientific literature in the field of dissertation research, according to the recommendation and in consultation with the supervisor, or the responsible leader of the scientific research task or research project, resp. guarantor of the study program.	
Languages necessary to complete the course: Slovak and English.	
Last change: 09.11.2021	
Approved by: doc. RNDr. Peter Demkanin, PhD.	

STATE EXAM DESCRIPTION

Academic year: 2025/2026	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KDMFI/3-FVF-990/15	**Course title:** Dissertation Thesis
Number of credits: 30	
Educational level: III.	
Course requirements: Successful defense of the dissertation. Scale of assessment (preliminary/final): 0/100	
Learning outcomes: Successful graduation.	
Class syllabus: Finalisation and submitting the dissertation, preparation for responding to reviews of the dissertation, the defense of the thesis.	
State exam syllabus:	
Recommended literature: Literature listed in the dissertation.	
Languages necessary to complete the course: Slovenský a anglický.	
Last change: 09.11.2021	
Approved by: doc. RNDr. Peter Demkanin, PhD.	

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-101/10	Individual Study of Scientific Resources

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

Number of credits: 10

Recommended semester: 1.

Educational level: III.

Prerequisites:

Course requirements:
Continuous assessment - reporting in consultation with the supervisor. Credits will be awarded by the supervisor if the student has made significant progress in the study of topics relevant to the topic of the dissertation.
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The student is aware of the methods and results of selected current research related to the topic of the dissertation.

Class syllabus:
Familiarization with relevant scientific conferences and sections in which problems similar to dissertation issues are addressed (eg ESERA, GIREP, EDULEARN)
Orientation in the offer of scientific journals relevant to the topic of the dissertation.
Orientation in relevant monographs.
Selection of researchers who deal with similar issues (eg researchgate).

Recommended literature:
Selection of current journal articles, conference papers and monographs from the area of interest of the dissertation. The concrete selection is made in the cooperation of the student and the supervisor.

Languages necessary to complete the course:
Slovak and English

Notes:

Past grade distribution
Total number of evaluated students: 8

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 18.06.2022
Approved by: doc. RNDr. Peter Demkanin, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-312/22	International Peer-Reviewed Journal

Educational activities:
Type of activities: independent work
Number of hours:
per week: **per level/semester:** 120s
Form of the course: on-site learning

Number of credits: 15

Recommended semester: 5.

Educational level: III.

Prerequisites:

Course requirements:
Credits will be awarded when the article is published. The minimal contribution amount for obtaining credits is 3 standard pages. The minimal author's share for obtaining credits is 30%.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
The student has practical experience in publishing the results of scientific work.

Class syllabus:
Writing a comprehensive scientific problem in cooperation with the trainer. Selection of the topic of the article, implementation of the research presented in the article, writing the article, submitting the article for publication, work with the review, finalization of the article, registration of the published article in databases.

Recommended literature:
Journal to which the contribution will be submitted.
Journals focused on the topics solved.

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution
Total number of evaluated students: 3

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 08.11.2021

Approved by: doc. RNDr. Peter Demkanin, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-313/22	International Peer-Reviewed Proceedings (1)

Educational activities:
Type of activities: independent work
Number of hours:
per week: **per level/semester:** 120s
Form of the course: on-site learning

Number of credits: 15

Recommended semester: 6.

Educational level: III.

Prerequisites:

Course requirements:
Credits will be awarded to the student when the paper is published in the proceedings.
The condition is the author's share of at least 30%.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
The student has experience in publishing papers in proceedings of scientific conferences.

Class syllabus:
Preparation of a paper for a proceedings of an international conference.
Processing of reviewers' comments and finalization of the paper.
Post registration in databases.

Recommended literature:
Proceedings of previous years of the relevant conference.
Conference rules for the content and formal aspects of the paper.

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution
Total number of evaluated students: 5

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 09.11.2021

Approved by: doc. RNDr. Peter Demkanin, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-314/22	International Peer-Reviewed Proceedings (2)

Educational activities:
Type of activities: independent work
Number of hours:
per week: **per level/semester:** 150s
Form of the course: on-site learning

Number of credits: 15

Recommended semester: 8.

Educational level: III.

Prerequisites:

Course requirements:
Credits will be awarded when the paper is published in the proceedings.
The condition for granting credits is an author's share of over 60%.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
Student has experience in publishing a paper at an international conference in the role of main author.

Class syllabus:
Preparation and submission of a paper to the proceedings of an international conference.
Incorporating reviewers' comments and finalizing the paper.
Registration of the contribution in databases.

Recommended literature:
Proceedings of previous years of the conference.
Conference rules for content and form of papers.

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution
Total number of evaluated students: 3

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 09.11.2021

Approved by: doc. RNDr. Peter Demkanin, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-304/22	Local Peer-Reviewed Journal

Educational activities:
Type of activities: independent work
Number of hours:
per week: **per level/semester:** 120s
Form of the course: on-site learning

Number of credits: 10

Recommended semester: 6.

Educational level: III.

Prerequisites:

Course requirements:
Credits will be awarded when the article is published. The minimal contribution amount for obtaining credits is 3 standard pages. The minimal author's share for obtaining credits is 30%.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
The student has practical experience in publishing preliminary results of scientific work.

Class syllabus:
Writing a comprehensive scientific problem in cooperation with the trainer. Selection of the topic of the article, implementation of the research presented in the article, writing the article, submitting the article for publication, work with the review, finalization of the article, registration of the published article in databases.

Recommended literature:
Journal to which the contribution will be submitted.
Journals focused on the topics solved.

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution
Total number of evaluated students: 3

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 10.11.2021

Approved by: doc. RNDr. Peter Demkanin, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-816/22	Mgr Thesis Co-Supervision

Educational activities:
Type of activities: independent work
Number of hours:
per week: **per level/semester:** 100s
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 4., 8.

Educational level: III.

Prerequisites:

Course requirements:
Credits will be awarded upon successful submission of the thesis by the student. The condition is at least 40% share on the supervising the thesis, determined by the thesis supervisor.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
The doctoral student has experience in supervising a diploma thesis.

Class syllabus:
Cooperation with the supervisor of the diploma or similar final thesis on supervising of the thesis.

Recommended literature:
Selected publications on the methodology of pedagogical research.

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution
Total number of evaluated students: 0

ABS	NEABS
0,0	0,0

Lecturers:

Last change: 09.11.2021

Approved by: doc. RNDr. Peter Demkanin, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-017/22	Models of Physics Education

Educational activities:
Type of activities: course
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 10

Recommended semester: 1.

Educational level: III.

Prerequisites:

Course requirements:
During the semester, there will be two written examinations, from which the student can obtain max. 2x 20 points. In the middle of the semester, the student submits a plan of semester work - max. 10 points. At the end of the semester, the student submits a semester work - max. 20 points. In the exam period, there will be a structured discussion, where the student can get max. 30 points. Credits will not be awarded if the student scores less than 50% of the points.
Scale of assessment (preliminary/final): 70/30

Learning outcomes:
PhD. students will have a basic knowledge of current trends in modelling the processes of learning and education.

Class syllabus:
Modelling as a theory of knowledge. Cognitive process modelling. Cognitive significance of the model. Modelling of knowledge by diSessa (p-prims, Knowledge-in-Pieces), principles and principles of learning by T. Tokuhama-Espinosa, ways of representing knowledge (5 pillars of the mind). Linking these models to previous theories of cognition in physics

Recommended literature:
Selection of journal articles.
Klentschy M., Thompson, L.: Scaffolding science inquiry through lesson design, Heinemann, 2008.
Sawyer, R.K., The Cambridge Handbook of The Learning Sciences, 2014.
Tokuhama-Espinosa, T., 5 Pillars of the Mind, 2018.

Languages necessary to complete the course:
slovak, english

Notes:

Past grade distribution Total number of evaluated students: 8	
ABS	NEABS
100,0	0,0
Lecturers: doc. RNDr. Peter Demkanin, PhD.	
Last change: 18.06.2022	
Approved by: doc. RNDr. Peter Demkanin, PhD.	

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-413/22	Presentation at a Department Seminar (1)

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 3.

Educational level: III.

Prerequisites:

Course requirements:
Presentation of the area of interest, research methods, literary sources and hypotheses of research related to the topic of the dissertation.
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The student can formulate the research problem locally, at the department. The student is able to defend the area of interest of the research problem, the proposed methods of solving the problem and the choice of literary sources related to the solved problem.

Class syllabus:
Prezentovanie zámeru podstatnej časti dizertačnej práce na pracovisku.

Recommended literature:
Publications on dissertation-related research methodology recommended by the supervisor.

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution
Total number of evaluated students: 0

ABS	NEABS
0,0	0,0

Lecturers: doc. RNDr. Peter Demkanin, PhD.

Last change: 09.11.2021

Approved by: doc. RNDr. Peter Demkanin, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-414/22	Presentation at a Department Seminar (2)

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 7.

Educational level: III.

Prerequisites:

Course requirements:
Presentation of essential results of the dissertation at the department seminar.
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The student is able to defend the essential results of his work.

Class syllabus:
Active participation in the department seminar.

Recommended literature:
Literature referenced by the dissertation.

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution
Total number of evaluated students: 0

ABS	NEABS
0,0	0,0

Lecturers: doc. RNDr. Peter Demkanin, PhD.

Last change: 09.11.2021

Approved by: doc. RNDr. Peter Demkanin, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-402/22	Presentation at a Local Conference with International Participation

Educational activities:
Type of activities: independent work
Number of hours:
per week: **per level/semester:** 120s
Form of the course: on-site learning

Number of credits: 10

Recommended semester: 6.

Educational level: III.

Prerequisites:

Course requirements:
Credits will be awarded after the presentation of partial results of the work at a local conference with foreign participation. Poster presentation is not a sufficient form for granting credits. The minimum author's share for granting credits is 50%.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
The student has experience in presenting partial results of the scientific work.

Class syllabus:
Registration for the conference.
Preparation of the paper in accordance with the rules of the conference.
Submission of a paper or abstract according to the rules of the conference.
Active presentation.

Recommended literature:
Rules for active participation in the conference.

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution
Total number of evaluated students: 2

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 09.11.2021

Approved by: doc. RNDr. Peter Demkanin, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-411/22	Presentation at an International Conference (1)

Educational activities:
Type of activities: independent work
Number of hours:
per week: **per level/semester:** 120s
Form of the course: on-site learning

Number of credits: 10

Recommended semester: 6.

Educational level: III.

Prerequisites:

Course requirements:
Presentation of a conference paper at an international scientific conference abroad. Credits will be awarded by the supervisor after successful student participation at the conference. The Autor's share must be min. 30%.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
The student is able to present the results of scientific work to an international audience.

Class syllabus:
Conference selection. Study of proceedings of previous years of the conference. Adaptation of research results for presentation at a conference. Submitting the abstract to the conference. Presentation at the conference.

Recommended literature:
Conference proceedings.

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution
Total number of evaluated students: 5

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 09.11.2021

Approved by: doc. RNDr. Peter Demkanin, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-412/22	Presentation at an International Conference (2)

Educational activities:
Type of activities: independent work
Number of hours:
per week: **per level/semester:** 120s
Form of the course: on-site learning

Number of credits: 10

Recommended semester: 8.

Educational level: III.

Prerequisites:

Course requirements:
Presentation of a conference paper at an international scientific conference abroad. Credits will be awarded by the supervisor upon successful participation of the student in the conference. The condition is an author's share of at least 60%.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
The student has experience in presenting partial results of his work in the role of the main author.

Class syllabus:
Preparation and presentation of partial results of scientific work in the role of the main author.

Recommended literature:
Rules for active participation in the conference.

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution
Total number of evaluated students: 4

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 30.05.2022

Approved by: doc. RNDr. Peter Demkanin, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-712/22	Principal Investigator of a Local Project

Educational activities:
Type of activities: independent work
Number of hours:
per week: **per level/semester:** 100s
Form of the course: on-site learning

Number of credits: 10

Recommended semester: 7.

Educational level: III.

Prerequisites:

Course requirements:
Credits will be awarded upon successful submission of the final report on the project.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
The student has advanced skills to formulate a research problem in the form of an application for grant support, experience in solving the grant task and submitting the final report - its scientific and financial part.

Class syllabus:
Orientation in the available possibilities of supporting the solution of a research problem related to the topic of the dissertation.
Formulation of a grant application.
Solving the grant task.
Formulation of the final report and settlement of allocated funds.

Recommended literature:
Materials published by agencies supporting research projects.

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution
Total number of evaluated students: 7

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 09.11.2021

Approved by: doc. RNDr. Peter Demkanin, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-315/22	Reference Registered in WoS or Scopus

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

Number of credits: 5

Recommended semester: 8.

Educational level: III.

Prerequisites:

Course requirements:
Credits will be awarded when the reference is registered in WoS or Scopus.
Credits will be awarded only if the student' share in the citer work is at least 30%.

Learning outcomes:
The student has experience with the reflection of his work by the scientific community.

Class syllabus:
Careful registration of published articles in databases. Active publicity of the results of their work in the scientific community (databases such as research gates and conferences).

Recommended literature:
Journals registered in WoS.

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution
Total number of evaluated students: 3

ABS	NEABS
100,0	0,0

Lecturers: doc. RNDr. Peter Demkanin, PhD.

Last change: 11.03.2022

Approved by: doc. RNDr. Peter Demkanin, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-311/22	Scientific Journal of Category A

Educational activities:
Type of activities: independent work
Number of hours:
per week: **per level/semester:** 150s
Form of the course: on-site learning

Number of credits: 20

Recommended semester: 5.

Educational level: III.

Prerequisites:

Course requirements:
Credits will be awarded when the article is accepted for publication.
The minimal contribution for obtaining credits is 3 standard pages.
The minimal author's share for obtaining credits is 30%.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
The student has practical experience in publishing the results of scientific work on the international level.

Class syllabus:
Writing a comprehensive scientific problem in cooperation with the supervisor.
Selection of the topic of the article, implementation of the research presented in the article, writing the article, submitting the article for publication, work with the review, finalization of the article, registration of the published article in databases.

Recommended literature:
Journal to which the contribution will be submitted.
Journals focused on the topics solved.

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution
Total number of evaluated students: 1

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 08.11.2021

Approved by: doc. RNDr. Peter Demkanin, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJFB/3-FVF-029/22	Selected Chapters of Environmental Physics

Educational activities:
Type of activities: course
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 10

Recommended semester: 4.

Educational level: III.

Prerequisites:

Course requirements:
During the semester, there will be two written examinations, from which the student can obtain max. 2x 20 points. In the middle of the semester, the student submits a plan of semester work - max. 10 points. At the end of the semester, the student submits a semester work - max. 20 points. In the exam period, there will be a structured discussion, where the student can get max. 30 points. Credits will not be awarded if the student scores less than 50% of the points.
Scale of assessment (preliminary/final): 70/30

Learning outcomes:
The student will have advanced knowledge in the topics of environmental physics.

Class syllabus:
Basic views on environmental physics and ecology.
Principles of heat conduction and equation of heat conduction, heat waves, sudden temperature change, stationary heat conduction in a cylinder and ball plate, without internal heat sources, efficiency of real and ideal heat machines, efficiency of combined cycle systems).
Nuclear reactions, nuclear excitation energy, fission mechanism, neutron diffusion, neutron absorption and moderation, reactor. Synthesis and energy, Sulfur pollutants in the environment (modeling of the spread of substances, area continuous source, radon and stability)
Environmental compartments and their interaction, Stratification and convection, Composition and physical properties of the ocean, Coefficient of thermal expansion, Composition of seawater, Density as a function of T and S, Buoyancy, Equation of state for air, Vertical stability of the ocean and atmosphere, Stability in water, Buoyancy frequency (stability frequency), Atmospheric stability, Temperature potential, Temperature potential in the ocean, Temperature potential and density in the ocean. Transport: Definitions, Transport processes, Advection or diffusion effects. Turbulence criteria: Reynolds number, Turbulence and Reynolds number, Examples of turbulent flow, Turbulent flow velocities, Turbulence fluctuations, Reynolds decomposition.

Recommended literature:
Principles of environmental physics / John Monteith, Mike Unsworth. Burlington : Academic press, 2008

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution
Total number of evaluated students: 0

ABS	NEABS
0,0	0,0

Lecturers: doc. RNDr. Radoslav Böhm, PhD.

Last change: 18.06.2022

Approved by: doc. RNDr. Peter Demkanin, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-028/22	Selected Chapters of Mathematics in Physics Education

Educational activities:
Type of activities: course
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 10

Recommended semester: 4.

Educational level: III.

Prerequisites:

Course requirements:
During the semester, there will be two written examinations, from which the student can obtain max. 2x 20 points. In the middle of the semester, the student submits a plan of semester work - max. 10 points. At the end of the semester, the student submits a semester work - max. 20 points. In the exam period, there will be a structured discussion, where the student can get max. 30 points. Credits will not be awarded if the student scores less than 50% of the points.
Scale of assessment (preliminary/final): 70/30

Learning outcomes:
The student will have advanced knowledge in the fields of mathematical culture, methods of mathematical reasoning and methods of expressing mathematical information. The student will have developed skills in presenting physics ideas at different age levels in ways typical for mathematics.

Class syllabus:
Application of the basics of mathematical analysis for the gradual development of physics ideas of students aged 12 to 18 years.
Application of the basics of linear algebra to the gradual development of physics ideas of students aged 12 to 18 years.
Application of the basics of statistics for the gradual development of physics ideas of students aged 12 to 18 years.
Theories of the mathematization of school physics.

Recommended literature:
Discrete and combinatorial mathematics: An applied introduction / Ralph P. Grimaldi. Rose-Hulman Institute of Technology: Pearson, 2004.
Calculus / Gilbert Strang. Massachusetts Institute of Technology: Wellesley-Cambridge Press
Fundamentals of Linear Algebra / James B. Carrell. Canada: University of British Colombia, 2005
Artificial Intelligence: A Modern Approach (3rd ed.) / Stuart Russell and Peter Norvig. The USA: Pearson, 2010

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution
Total number of evaluated students: 0

ABS	NEABS
0,0	0,0

Lecturers: doc. PaedDr. Mária Slavíčková, PhD.

Last change: 18.06.2022

Approved by: doc. RNDr. Peter Demkanin, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KEF/3-FVF-024/22	Selected Topics of Current Physics Research

Educational activities:
Type of activities: course
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 10

Recommended semester: 4.

Educational level: III.

Prerequisites:

Course requirements:
During the semester, there will be two written examinations, from which the student can obtain max. 2x 20 points. In the middle of the semester, the student submits a plan of semester work - max. 10 points. At the end of the semester, the student submits a semester work - max. 20 points. In the exam period, there will be a structured discussion, where the student can get max. 30 points. Credits will not be awarded if the student scores less than 50% of the points.
Scale of assessment (preliminary/final): 70/30

Learning outcomes:
The student will be able to read scientific articles focused to the results of current research in a selected field of physics. The student will be able to reformulate these results in several ways so that they are accessible to primary school students, high school students and the general public.

Class syllabus:
Ways of representation of physics knowledge - symbols, patterns, order, categories, relationships.
Ways of understanding (decoding) information from scientific physics articles.
Methods of didakatic reconstruction of the results of physics research based on the constructive use of knowledge and skills of children, youth and adults in the design of popular science materials.

Recommended literature:
Selected physics scientific journals.
Sawyer, R.K., The Cambridge Handbook of The Learning Sciences, 2014.
Tokuhama-Espinosa, T., 5 Pillars of the Mind, 2018.

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution Total number of evaluated students: 1	
ABS	NEABS
100,0	0,0
Lecturers: doc. RNDr. František Kundracik, CSc.	
Last change: 18.06.2022	
Approved by: doc. RNDr. Peter Demkanin, PhD.	

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-023/22	Statistical Methods in Pedagogical Research

Educational activities:
Type of activities: course
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 10

Recommended semester: 3.

Educational level: III.

Prerequisites:

Course requirements:
During the semester, there will be two written examinations, from which the student can obtain max. 2x 20 points. In the middle of the semester, the student submits a plan of semester work - max. 10 points. At the end of the semester, the student submits a semester work - max. 20 points. In the exam period, there will be a structured discussion, where the student can get max. 30 points. Credits will not be awarded if the student scores less than 50% of the points.
Scale of assessment (preliminary/final): 70/30

Learning outcomes:
The student will be able read the results of selected types of pedagogical research presented in the form of statistical data. The student will be able to design selected statistical methods for processing data files of various sizes.

Class syllabus:
Analysis of selected scientific articles from the point of view of presenting research results with statistically processed data.
Selected concepts of statistics.
Preparation of statistical processing of data sets provided by the subject teacher.
The most well-known software for data processing from pedagogical research.

Recommended literature:
Articles from scientific journals.
Manuals for selected software for statistical data processing.

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution Total number of evaluated students: 8	
ABS	NEABS
100,0	0,0
Lecturers: doc. PaedDr. Viera Haverlíková, PhD.	
Last change: 18.06.2022	
Approved by: doc. RNDr. Peter Demkanin, PhD.	

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-102/10	Study of Science and Research Resources

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

Number of credits: 10

Recommended semester: 2.

Educational level: III.

Prerequisites:

Course requirements:
Continuous assessment - reporting in consultation with the supervisor. Credits will be awarded by the supervisor if the student has made significant progress in the study of topics relevant to the topic of the dissertation.
Scale of assessment (preliminary/final): 100/0

Learning outcomes:

Class syllabus:
Study of selected papers from relevant scientific conferences (eg ESERA, GIREP, EDULEARN).
Study of articles in relevant scientific journals.
Study of selected chapters of relevant monographs.

Recommended literature:
Selection of current journal articles, conference papers and monographs from the area of interest of the dissertation. The concrete selection is made in the cooperation of the student and the supervisor.

Languages necessary to complete the course:
Slovak and English

Notes:

Past grade distribution
Total number of evaluated students: 7

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 06.11.2021

Approved by: doc. RNDr. Peter Demkanin, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-103/10	Study of Science and Research Resources

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

Number of credits: 10

Recommended semester: 3.

Educational level: III.

Prerequisites:

Course requirements:
Continuous assessment by supervisor.

Learning outcomes:
The student will gradually process the dissertation.

Class syllabus:
Study of literature recommended by the supervisor. Analysis and processing of the obtained information and their presentation to the supervisor.

Recommended literature:
Selection of current articles in the field of dissertation focus.

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution
Total number of evaluated students: 9

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 11.03.2022

Approved by: doc. RNDr. Peter Demkanin, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-104/10	Study of Science and Research Resources

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

Number of credits: 10

Recommended semester: 4.

Educational level: III.

Prerequisites:

Course requirements:
Continuous assessment by supervisor.
Credits will not be awarded if the student scores less than 50%.

Learning outcomes:
Progress in preparation for the dissertation.

Class syllabus:
Study of literature recommended by the supervisor. Analysis and processing of the obtained information and their presentation to the supervisor.

Recommended literature:
Selection of current articles in the field of dissertation focus.

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution
Total number of evaluated students: 1

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 11.03.2022

Approved by: doc. RNDr. Peter Demkanin, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-808/15	Supervising and Demonstrating Work (1)

Educational activities:
Type of activities: other
Number of hours:
per week: 4 **per level/semester:** 52
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 1.

Educational level: III.

Prerequisites:

Course requirements:
The subject is evaluated by the head of the department. It will take into account the reactions of students in whose teaching the doctoral student actively participated.
Credits will be awarded after the finalisation of the evaluation of students by the doctoral student.
Scale of assessment (preliminary/final): 80/20

Learning outcomes:
The student will have developed pedagogical skills and professional knowledge in the form of active cooperation in leading seminars.

Class syllabus:
The course is focused on pedagogical activities related to the preparation and conduct of seminars with regard to mastering the basic principles of pedagogical approach to students, mastering modern teaching methods, evaluation and visual communication of the content of the studied issues, or presentation of own results. The content of the course is the preparation of pedagogical and professional materials for teaching students of the first and second degree of university study, preparation of teaching aids and study materials, using modern digital technologies. It is implemented through the active participation of a 3rd degree student in the pedagogical process in teaching students related to bachelor's and master's degree programs, especially with the help of leading seminars.

Recommended literature:
Petty, Teaching Today, 2014
Petty, Evidence-based Teaching, 2009
Literature recommended for the implementation of the subject taught by the doctoral student.

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution Total number of evaluated students: 9	
ABS	NEABS
100,0	0,0
Lecturers:	
Last change: 10.11.2021	
Approved by: doc. RNDr. Peter Demkanin, PhD.	

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-809/15	Supervising and Demonstrating Work (2)

Educational activities:
Type of activities: other
Number of hours:
per week: 4 **per level/semester:** 52
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 2.

Educational level: III.

Prerequisites:

Course requirements:
The subject is evaluated by the head of the department. It will take into account the reactions of students in whose teaching the doctoral student actively participated.
Credits will be awarded after the finalisation of the evaluation of students by the doctoral student.
Scale of assessment (preliminary/final): 80/20

Learning outcomes:
The student will have developed pedagogical skills and professional knowledge in the form of active cooperation in leading seminars.

Class syllabus:
The course is focused on pedagogical activities related to the preparation and conduct of seminars with regard to mastering the basic principles of pedagogical approach to students, mastering modern teaching methods, evaluation and visual communication of the content of the studied issues, or presentation of own results. The content of the course is the preparation of pedagogical and professional materials for teaching students of the first and second degree of university study, preparation of teaching aids and study materials, using modern digital technologies. It is implemented through the active participation of a 3rd degree student in the pedagogical process in teaching students related to bachelor's and master's degree programs, especially with the help of leading seminars.

Recommended literature:
Petty, Teaching Today, 2014
Petty, Evidence-based Teaching, 2009
Literature recommended for the implementation of the subject taught by the doctoral student.

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution Total number of evaluated students: 1	
ABS	NEABS
100,0	0,0
Lecturers:	
Last change: 10.11.2021	
Approved by: doc. RNDr. Peter Demkanin, PhD.	

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-810/15	Supervising and Demonstrating Work (3)

Educational activities:
Type of activities: other
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: III.

Prerequisites:

Course requirements:
The subject is evaluated by the head of the department. It will take into account the reactions of students in whose teaching the doctoral student actively participated.
Credits will be awarded after the finalisation of the evaluation of students by the doctoral student.
Scale of assessment (preliminary/final): 80/20

Learning outcomes:
The student will have developed pedagogical skills and professional knowledge in the form of active cooperation in leading seminars.

Class syllabus:
The course is focused on pedagogical activities related to the preparation and conduct of seminars with regard to mastering the basic principles of pedagogical approach to students, mastering modern teaching methods, evaluation and visual communication of the content of the studied issues, or presentation of own results. The content of the course is the preparation of pedagogical and professional materials for teaching students of the first and second degree of university study, preparation of teaching aids and study materials, using modern digital technologies. It is implemented through the active participation of a 3rd degree student in the pedagogical process in teaching students related to bachelor's and master's degree programs, especially with the help of leading seminars.

Recommended literature:
Petty, Teaching Today, 2014
Petty, Evidence-based Teaching, 2009
Literature recommended for the implementation of the subject taught by the doctoral student.

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution Total number of evaluated students: 9	
ABS	NEABS
100,0	0,0
Lecturers:	
Last change: 10.11.2021	
Approved by: doc. RNDr. Peter Demkanin, PhD.	

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-811/15	Supervising and Demonstrating Work (4)

Educational activities:
Type of activities: other
Number of hours:
per week: 4 **per level/semester:** 52
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 4.

Educational level: III.

Prerequisites:

Course requirements:
The subject is evaluated by the head of the department. It will take into account the reactions of students in whose teaching the doctoral student actively participated.
Credits will be awarded after the finalisation of the evaluation of students by the doctoral student.
Scale of assessment (preliminary/final): 80/20

Learning outcomes:
The student will have developed pedagogical skills and professional knowledge in the form of active cooperation in leading seminars.

Class syllabus:
The course is focused on pedagogical activities related to the preparation and conduct of seminars with regard to mastering the basic principles of pedagogical approach to students, mastering modern teaching methods, evaluation and visual communication of the content of the studied issues, or presentation of own results. The content of the course is the preparation of pedagogical and professional materials for teaching students of the first and second degree of university study, preparation of teaching aids and study materials, using modern digital technologies. It is implemented through the active participation of a 3rd degree student in the pedagogical process in teaching students related to bachelor's and master's degree programs, especially with the help of leading seminars.

Recommended literature:
Petty, Teaching Today, 2014
Petty, Evidence-based Teaching, 2009
Literature recommended for the implementation of the subject taught by the doctoral student.

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution Total number of evaluated students: 0	
ABS	NEABS
0,0	0,0
Lecturers:	
Last change: 10.11.2021	
Approved by: doc. RNDr. Peter Demkanin, PhD.	

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-812/15	Supervising and Demonstrating Work (5)

Educational activities:
Type of activities: other
Number of hours:
per week: 4 **per level/semester:** 52
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 5.

Educational level: III.

Prerequisites:

Course requirements:
The subject is evaluated by the head of the department. It will take into account the reactions of students in whose teaching the doctoral student actively participated.
Credits will be awarded after the finalisation of the evaluation of students by the doctoral student.

Learning outcomes:
The student will have developed pedagogical skills and professional knowledge in the form of active cooperation in leading seminars.

Class syllabus:
The course is focused on pedagogical activities related to the preparation and conduct of seminars with regard to mastering the basic principles of pedagogical approach to students, mastering modern teaching methods, evaluation and visual communication of the content of the studied issues, or presentation of own results. The content of the course is the preparation of pedagogical and professional materials for teaching students of the first and second degree of university study, preparation of teaching aids and study materials, using modern digital technologies. It is implemented through the active participation of the doctorand in the pedagogical process in teaching students related to bachelor's and master's degree programs, especially with the help of leading seminars.

Recommended literature:
Petty, Teaching Today, 2014
Petty, Evidence-based Teaching, 2009
Literature recommended for the implementation of the subject taught by the doctoral student.

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution Total number of evaluated students: 9	
ABS	NEABS
100,0	0,0
Lecturers:	
Last change: 10.11.2021	
Approved by: doc. RNDr. Peter Demkanin, PhD.	

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-813/15	Supervising and Demonstrating Work (6)

Educational activities:
Type of activities: other
Number of hours:
per week: 4 **per level/semester:** 52
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 6.

Educational level: III.

Prerequisites:

Course requirements:
The subject is evaluated by the head of the division. It will take into account the reactions of students in whose teaching the doctoral student actively participated.
Credits will be awarded after the finalisation of the evaluation of students by the doctoral student.

Learning outcomes:
The student will have developed pedagogical skills and professional knowledge in the form of active cooperation in leading seminars.

Class syllabus:
The course is focused on pedagogical activities related to the preparation and conduct of seminars with regard to mastering the basic principles of pedagogical approach to students, mastering modern teaching methods, evaluation and visual communication of the content of the studied issues, or presentation of own results. The content of the course is the preparation of pedagogical and professional materials for teaching students of the first and second degree of university study, preparation of teaching aids and study materials, using modern digital technologies. It is implemented through the active participation of a 3rd degree student in the pedagogical process in teaching students related to bachelor's and master's degree programs, especially with the help of leading seminars.

Recommended literature:
Petty, Teaching Today, 2014
Petty, Evidence-based Teaching, 2009
Literature recommended for the implementation of the subject taught by the doctoral student.

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution Total number of evaluated students: 0	
ABS	NEABS
0,0	0,0
Lecturers:	
Last change: 10.11.2021	
Approved by: doc. RNDr. Peter Demkanin, PhD.	

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-814/15	Supervising and Demonstrating Work (7)

Educational activities:
Type of activities: other
Number of hours:
per week: 4 **per level/semester:** 52
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 7.

Educational level: III.

Prerequisites:

Course requirements:
The subject is evaluated by the head of division. It will take into account the reactions of students in whose teaching the doctoral student actively participated.
Credits will be awarded after the finalisation of the evaluation of students by the doctoral student.

Learning outcomes:
The student will have developed pedagogical skills and professional knowledge in the form of active cooperation in leading seminars.

Class syllabus:
The course is focused on pedagogical activities related to the preparation and conduct of seminars with regard to mastering the basic principles of pedagogical approach to students, mastering modern teaching methods, evaluation and visual communication of the content of the studied issues, or presentation of own results. The content of the course is the preparation of pedagogical and professional materials for teaching students of the first and second degree of university study, preparation of teaching aids and study materials, using modern digital technologies. It is implemented through the active participation of the doctorand in the pedagogical process in teaching students related to bachelor's and master's degree programs, especially with the help of leading seminars.

Recommended literature:
Petty, Teaching Today, 2014
Petty, Evidence-based Teaching, 2009
Literature recommended for the implementation of the subject taught by the doctorand.

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution Total number of evaluated students: 13	
ABS	NEABS
100,0	0,0
Lecturers:	
Last change: 10.11.2021	
Approved by: doc. RNDr. Peter Demkanin, PhD.	

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-026/22	Theory of Content and Methods of High School Physics

Educational activities:
Type of activities: course
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 10

Recommended semester: 4.

Educational level: III.

Prerequisites:

Course requirements:
During the semester, there will be two written examinations, from which the student can obtain max. 2x 20 points. In the middle of the semester, the student submits a plan of semester work - max. 10 points. At the end of the semester, the student submits a semester work - max. 20 points. In the exam period, there will be a structured discussion, where the student can get max. 30 points. Credits will not be awarded if the student scores less than 50% of the points.
Scale of assessment (preliminary/final): 70/30

Learning outcomes:
The student has advanced knowledge and developed skills needed to assess the choice of contexts for physics education and methods of teaching and learning physics in physics education at high schools.

Class syllabus:
Theories of selection of topics for physics education.
Theories of science curriculum design.
Theories of teaching and learning methods.
Application of studied theories to assess selected case studies.

Recommended literature:
Scientific journals devoted to these topics.
Proceedings of scientific conferences focused on these topics.
Petty, Teaching Today, 2014
Petty, Evidence-Based Teaching, 2009 Selected series of physics textbooks

Languages necessary to complete the course:
Slovak and English.

Notes:

Past grade distribution Total number of evaluated students: 2	
ABS	NEABS
100,0	0,0
Lecturers: doc. RNDr. Peter Demkanin, PhD.	
Last change: 18.06.2022	
Approved by: doc. RNDr. Peter Demkanin, PhD.	

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/3-FVF-025/22	Theory of Content and Methods of Lower Secondary School Physics

Educational activities:
Type of activities: course
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 10

Recommended semester: 4.

Educational level: III.

Prerequisites:

Course requirements:
In the middle of the semester, the student submits a plan of semester work - max. 10 marks. At the end of the semester, the student submits a semester work - max. 20 marks. In the exam period, there will be a structured discussion, where the student can get max. 20 marks, focus is put on application of the theoretical background presented in the course. Credits will not be awarded if the student scores less than 50% of the points.
Scale of assessment (preliminary/final): 70/30

Learning outcomes:
The doctoral student knows several theories related to the introduction of concepts in the teaching of physics in primary school. Can design and critically evaluate procedures for introducing concepts with regard to the content of physical education, its objectives and level of education. It can use digital technologies to support the achievement of set educational goals.

Class syllabus:
Strategies for introducing concepts in physical education at primary school. Determination and formulation of specific educational goals according to Bloom's taxonomy. Further teacher education using digital technologies. Teachers' portals related to education and their evaluation. Demonstrations, analysis and critical evaluation of existing materials with teaching procedures. The teacher's personality and his ability to follow materials designed by another teacher.

Recommended literature:
Scientific journals devoted to these topics
Proceedings of scientific conferences focused on these topics
Portal: http://ec.europa.eu (education, research)
Sawyer, R. K. The Cambridge Handbook of The Learning Sciences. Cambridge University Press. 2014.
Selected series of physics/science textbooks

Languages necessary to complete the course:
Slovak and English.

Notes:	
Past grade distribution Total number of evaluated students: 3	
ABS	NEABS
100,0	0,0
Lecturers: doc. PaedDr. Klára Velmovská, PhD.	
Last change: 18.06.2022	
Approved by: doc. RNDr. Peter Demkanin, PhD.	