Course descriptions

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COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-005/00	Analytical and Numerical Methods in Celestial Mechanics

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

Number of credits: 10

Recommended semester: 1.

Educational level: III.

Prerequisites:

Course requirements:
Continuous assessment: individual work
Exam
Scale of assessment (preliminary/final): 30/70

Learning outcomes:

Class syllabus:
Motivation – Newton's equation of motion and orbital elements in celestial mechanics. Gravitational attraction between bodies of finite dimensions. Perturbation equations of celestial mechanics – derivation from Newton's equation of motion. Simple application to motion of the Moon. Nongravitational effects. The effect of electromagnetic radiation on motion of particles: types of osculating orbital elements, detail analytical calculation of orbital evolution up to the second order of perturbation theory, secular evolution of orbital elements, orbital resonances with planets. Influence of the solar (stellar) wind. Oort's cloud of comets and gravitational perturbations of the Galaxy – secular evolution of cometary orbits. Comparison between analytical and numerical solutions.

Recommended literature:
Brouwer D., Clemence G. M.: 1961, Methods of Celestial Mechanics, Academic Press, New York.
Murray C. D., Dermott S. F.: 1999, Solar System Dynamics, Cambridge Univ. Press
Hockney R. W., Eastwood J. W.: 1992, Computer Simulation Using Particles, J. W. Arrowsmith Ltd, Bristol
Press W. H., Flannery B. P., Teukolsky S. A., Vetterling W. T.: Numerical Recipes, Cambridge Univ. Press

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 1

ABS	NEABS
100,0	0,0

Lecturers: doc. RNDr. Jozef Klačka, PhD.

Last change: 21.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-803/10	BSc Thesis Supervision

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:

Educational level: III.

Prerequisites:

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

Learning outcomes:
The student will gain experience in leading the preparation of the final thesis.

Class syllabus:
Proposal of the topic of the final thesis. Consultations provided to the student. Preparation of work report.

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 2

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 17.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-501/10	Completion of PhD Research Project Stage

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:

Educational level: III.

Prerequisites:

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

Learning outcomes:
Report on the completion of the research phase.

Class syllabus:
Presentation of the results of professional and scientific work of the doctoral student within the project in the form of a report.

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 1

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 19.01.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

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:** 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:	**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:** 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:	**Course title:**
FMFI.KAFZM/3-FAA-806/10	Creation of Teaching Texts and Aids

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

Number of credits: 6

Recommended semester:

Educational level: III.

Prerequisites:

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

Learning outcomes:
The student will master the methodology of creating a teaching aid or textbook.

Class syllabus:
Consultations with the leader of the author's team. Assistance to the leader of the author's team with the elaboration of the teaching text or the preparation of the teaching aid.

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 1

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 17.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-809/10	Diploma Thesis Guidance

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

Number of credits: 4

Recommended semester:

Educational level: III.

Prerequisites:

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

Learning outcomes:
The student will gain experience in leading the preparation of the final thesis.

Class syllabus:
Consultations provided to the student

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 2

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 17.02.2022

Approved by:

STATE EXAM DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFI.KAFZM/3-FAA-990/15	**Course title:** Dissertation Thesis Admission
Number of credits: 30	
Recommended semester: 7., 8..	
Educational level: III.	
State exam syllabus:	
Last change: 02.06.2015	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-301/10	Foreign Periodical Cited in Current Contents

Educational activities:
Type of activities: independent work
Number of hours:
per week: 20 **per level/semester:** 280
Form of the course: on-site learning

Number of credits: 35

Recommended semester:

Educational level: III.

Prerequisites:

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

Learning outcomes:
A publication in foreign periodical cited in current contents

Class syllabus:
Preparation of a research paper.

Recommended literature:
Study of current local and international research literature focusing on the topic of the dissertation advised by the supervisor and/or by a principal investigator of the research project and/or by the study programme guarantor.

Languages necessary to complete the course:
Slovak / English

Notes:

Past grade distribution
Total number of evaluated students: 2

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 17.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-303/10	Foreign Periodical not Cited in Current Contents

Educational activities:
Type of activities: independent work
Number of hours:
per week: 10 **per level/semester:** 140
Form of the course: on-site learning

Number of credits: 20

Recommended semester:

Educational level: III.

Prerequisites:

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

Learning outcomes:
A publication in home periodical not cited in current contents

Class syllabus:
Preparation of a research paper.

Recommended literature:
Study of current local and international research literature focusing on the topic of the dissertation advised by the supervisor and/or by a principal investigator of the research project and/or by the study programme guarantor.

Languages necessary to complete the course:
Slovak / English

Notes:

Past grade distribution
Total number of evaluated students: 0

ABS	NEABS
0,0	0,0

Lecturers:

Last change: 17.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-804/10	Guidance of the Students´ Research Project

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

Number of credits: 7

Recommended semester:

Educational level: III.

Prerequisites:

Course requirements:
100/0

Learning outcomes:
The student will gain experience in leading the preparation of work for a student scientific conference.

Class syllabus:
Proposal of the topic of the Student Scientific Conference. Consultations provided to the student. Elaboration of a report on the work.

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:

Last change: 19.01.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-302/10	Home Journal Cited in Current Contents

Educational activities:
Type of activities: independent work
Number of hours:
per week: 15 **per level/semester:** 210
Form of the course: on-site learning

Number of credits: 30

Recommended semester:

Educational level: III.

Prerequisites:

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

Learning outcomes:
A publication in home periodical cited in current contents

Class syllabus:
Preparation of a research paper.

Recommended literature:
Study of current local and international research literature focusing on the topic of the dissertation advised by the supervisor and/or by a principal investigator of the research project and/or by the study programme guarantor.

Languages necessary to complete the course:
Slovak / English

Notes:

Past grade distribution
Total number of evaluated students: 1

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 17.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-304/10	Home Journal not Cited in Current Contents

Educational activities:
Type of activities: independent work
Number of hours:
per week: 10 **per level/semester:** 140
Form of the course: on-site learning

Number of credits: 15

Recommended semester:

Educational level: III.

Prerequisites:

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

Learning outcomes:
A publication in home periodical not cited in current contents

Class syllabus:
Preparation of a research paper.

Recommended literature:
Study of current local and international research literature focusing on the topic of the dissertation advised by the supervisor and/or by a principal investigator of the research project and/or by the study programme guarantor.

Languages necessary to complete the course:
Slovak / English

Notes:

Past grade distribution
Total number of evaluated students: 0

ABS	NEABS
0,0	0,0

Lecturers:

Last change: 17.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-703/10	Home Project Co-researcher

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:

Educational level: III.

Prerequisites:

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

Learning outcomes:
The student will gain practical experience with the design, preparation and solution of a home scientific project.

Class syllabus:
Getting acquainted with the preparation of a scientific project. Participation in project solutions. Assistance in preparing the final report for the project.

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 4

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 19.01.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-101/10	Individual Study of Science and Research Resources

Educational activities:
Type of activities: independent work
Number of hours:
per week: 10 **per level/semester:** 140
Form of the course: on-site learning

Number of credits: 10

Recommended semester: 1.

Educational level: III.

Prerequisites:

Course requirements:
Continuous assessment, individual work
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The graduate will gain an overview of the topic of the dissertation and its the current state. They will learn methods of carrying out research and study information sources.

Class syllabus:
Study of current research literature advised by the supervisor. A creation of the schedule of the literature study and its evaluation by the supervisor.
Selection of literature.
Supervised studying of the scientific literature, presenting gained knowledge to the supervisor.
Overviewing the literature.

Recommended literature:
Selection of the literature by own choice and following advice of the supervisor. The used literature will be referred in the bibliography list.

Languages necessary to complete the course:
Slovak / English

Notes:

Past grade distribution
Total number of evaluated students: 5

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 17.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-102/10	Individual Study of Science and Research Resources

Educational activities:
Type of activities: independent work
Number of hours:
per week: 10 **per level/semester:** 140
Form of the course: on-site learning

Number of credits: 10

Recommended semester: 2.

Educational level: III.

Prerequisites:

Course requirements:
Continuous assessment, individual work
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The graduate will gain an overview of the topic of the dissertation and its the current state. They will learn methods of carrying out research and study information sources.

Class syllabus:
Study of current research literature advised by the supervisor. A creation of the schedule of the literature study and its evaluation by the supervisor.
Selection of literature.
Supervised studying of the scientific literature, presenting gained knowledge to the supervisor.
Overviewing the literature.

Recommended literature:
Selection of the literature by own choice and following advice of the supervisor. The used literature will be referred in the bibliography list.

Languages necessary to complete the course:
Slovak / English

Notes:

Past grade distribution
Total number of evaluated students: 5

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 17.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-103/10	Individual Study of Science and Research Resources

Educational activities:
Type of activities: independent work
Number of hours:
per week: 10 **per level/semester:** 140
Form of the course: on-site learning

Number of credits: 10

Recommended semester: 3.

Educational level: III.

Prerequisites:

Course requirements:
Continuous assessment, individual work
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The graduate will gain an overview of the topic of the dissertation and its the current state. They will learn methods of carrying out research and study information sources.

Class syllabus:
Study of current research literature advised by the supervisor. A creation of the schedule of the literature study and its evaluation by the supervisor.
Selection of literature.
Supervised studying of the scientific literature, presenting gained knowledge to the supervisor.
Overviewing the literature.

Recommended literature:
Selection of the literature by own choice and following advice of the supervisor. The used literature will be referred in the bibliography list.

Languages necessary to complete the course:
Slovak / English

Notes:

Past grade distribution
Total number of evaluated students: 4

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 17.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-104/10	Individual Study of Science and Research Resources

Educational activities:
Type of activities: independent work
Number of hours:
per week: 10 **per level/semester:** 140
Form of the course: on-site learning

Number of credits: 10

Recommended semester: 4.

Educational level: III.

Prerequisites:

Course requirements:
Continuous assessment, individual work
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The graduate will gain an overview of the topic of the dissertation and its the current state. They will learn methods of carrying out research and study information sources.

Class syllabus:
Štúdium odbornej literatúry vybranej podľa doporučenia školiteľa. Stanovenie plánu kontrolovaného čítania školiteľom doktoranda
Výber literatúry
Kontrolované čítanie, referovanie o získaných poznatkoch školiteľovi
Rešeršná činnosť

Recommended literature:
Selection of the literature by own choice and following advice of the supervisor. The used literature will be referred in the bibliography list.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 4

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 17.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-702/10	International Project Co-researcher

Educational activities:
Type of activities:
Number of hours:
per week: **per level/semester:**
Form of the course: on-site 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 practical experience with the design, preparation and solution of an international scientific project.

Class syllabus:
Getting acquainted with the preparation of a scientific project. Participation in project solutions. Communication with foreign partners. Participation in international working meetings. Assistance in preparing the final report for the project.

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:

Last change: 19.01.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-307/10	Non-reviewed Foreign Papers Volume

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

Number of credits: 5

Recommended semester:

Educational level: III.

Prerequisites:

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

Learning outcomes:
A publication in foreign non-reviewed proceedings

Class syllabus:

Recommended literature:
Study of current local and international research literature focusing on the topic of the dissertation advised by the supervisor and/or by a principal investigator of the research project and/or by the study programme guarantor.

Languages necessary to complete the course:
Slovak / English

Notes:

Past grade distribution
Total number of evaluated students: 0

ABS	NEABS
0,0	0,0

Lecturers:

Last change: 17.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-308/10	Non-reviewed Home Papers Volume

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

Number of credits: 5

Recommended semester:

Educational level: III.

Prerequisites:

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

Learning outcomes:
A publication in home non-reviewed foreign proceedings

Class syllabus:
Preparation of a research paper.

Recommended literature:
Study of current local and international research literature focusing on the topic of the dissertation advised by the supervisor and/or by a principal investigator of the research project and/or by the study programme guarantor.

Languages necessary to complete the course:
Slovak / English

Notes:

Past grade distribution
Total number of evaluated students: 0

ABS	NEABS
0,0	0,0

Lecturers:

Last change: 17.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KJFB/3-FAA-006/00	Nuclear Astronomy and Astrophysics

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

Number of credits: 10

Recommended semester: 2.

Educational level: III.

Prerequisites:

Course requirements:
Continuous assessment: individual work
Exam

Learning outcomes:
The application of nuclear physical knowledge in the field of astronomy and astrophysics.

Class syllabus:
Basics theory of nucleosynthesis, primordial, antropogenic and cosmogenic nuclides. Principles of nuclear radiometric methods, dating, catastrophic events and their investigation by nuclear methods. Position of the Earth in the Solar system. Isotpos and their applications in Solar system formation chronometry. Space, chemical elemnts in it and their abundances in various objects of Solar system.
Note
The selection of the given topics will be made by the supervisor according to the focus of the dissertation.

Recommended literature:
Ringwood, A. E.: Origin of the Earth and Moon. Springer-Verlag, 1979.
Cox, P. A.: The Elements on the Earth.
Dalrymple, G. B.: The Age of the Earth.
Press, F., Siever, R.: Earth. W. H. Freeman and Company, 1978.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 0

ABS	NEABS
0,0	0,0

Lecturers: prof. RNDr. Jozef Masarik, DrSc.

Last change: 21.06.2022
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-701/10	Obtaining a University Grant

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

Number of credits: 20

Recommended semester:

Educational level: III.

Prerequisites:

Course requirements:
100/0

Learning outcomes:
The doctoral student will gain practical experience with the preparation of a scientific project, its solution, and writing a final report.

Class syllabus:
Preparation of a scientific project within the UK Grants program. Project solution. Preparation of the final report on the project. Closing the project.

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 7

ABS	NEABS
85,71	14,29

Lecturers:

Last change: 17.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-805/10	Participation in a Conference Organising Committee

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

Number of credits: 3

Recommended semester:

Educational level: III.

Prerequisites:

Course requirements:
100/0

Learning outcomes:
The student will gain practical experience in organizing scientific events and communicating with conference participants.

Class syllabus:
Participation in activities related to the organization of the conference.

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:

Last change: 19.01.2022

Approved by:

STATE EXAM DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFI.KAFZM/3-FAA-950/15	**Course title:** Passing Dissertation Examination
Number of credits: 20	
Recommended semester: 3., 4..	
Educational level: III.	
State exam syllabus:	
Last change: 02.06.2015	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-009/00	Planetary Cosmogony

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

Number of credits: 10

Recommended semester: 3.

Educational level: III.

Prerequisites:

Course requirements:
Continuous assessment: preparation and presentation of a paper.
Final examination: oral exam.
Approximate scale of final grades: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 40/60

Learning outcomes:
The graduate of the course will deepen theoretical knowledge of models of the origin and development of planetary systems and will have an overview in the most recent publications in the field of planetary science.

Class syllabus:
Historical models of the formation of the Solar System. Nucleogenesis of chemical elements and their cosmic abundances. Gravitational collapse and the Jeans criterion. Solar System formation, standard model, chemical condensation equilibrium theory of dust formation. Turbulence in protoplanetary disks, collisional growth of planetesimals. Protoplanetary disk structure. Massive disk model - gaseous planets, planet migration. Chronology of the formation of Solar System bodies. Other planetary systems, circumstellar dust disks, the cycle of matter in interstellar clouds.

Recommended literature:
Sun Kwok: The Origin and Evolution of Planetary Nebulae. Cambridge University Press, 2000
G. A. Gurzadyan: The Physics and Dynamics of Planetary Nebulae. Springer, 1997
W. Benz et al.: From dust to terrestrial planets. Proceedings of an ISSI Workshop, Bern, Kluwer Ac. Publishers, 1999
E.H. Levy, J.I. Lunine: Protostars and Planets III. The Univ. of Arizona Press, Tuscon, 1999
V. Mannings, A.P. Boss, S.S. Pressell (Ed.): Protostars and Planets IV. The Univ. of Arizona Press, Tuscon, 2000

Languages necessary to complete the course:
Slovak / English

Notes:

Past grade distribution Total number of evaluated students: 0	
ABS	NEABS
0,0	0,0
Lecturers: doc. RNDr. Sebastián Ševčík, CSc.	
Last change: 20.06.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-001/00	Population of the Small Bodies of the Solar System (1)

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

Number of credits: 10

Recommended semester: 1.

Educational level: III.

Prerequisites:

Course requirements:
Continuous assessment, exam

Learning outcomes:
The student will gain the latest knowledge from the research of the population of meteoroids and interplanetary dust.

Class syllabus:
Meteoroid population – components; interaction of meteoroids with the atmosphere and meteor physics; observational methods – photographic, radio, TV, meteor spectra; micrometeoroids, interplanetary dust; zodiacal light; meteoroid population – structure; sporadic meteors, activity variations, sources; selection effects; meteoroid streams - activity, structure, origin and evolution; meteor complexes, associations of potential parent bodies; influx of meteor matter on the Earth; interaction of large meteoroids with the atmosphere, falls of meteorites' accompanying effects, classification of meteorites – structure, chemical composition, mineralogy; meteor crates, ages of meteorites, origin of meteorites and their parent bodies.
Note: The supervisor will make a selection of the given topics according to the focus of the dissertation.

Recommended literature:
Murrad E., Williams I.P.: 2002, Meteors in the Earth's Atmosphere. Cambridge, London
McDonnell J.A.M.: 1978, Cosmic Dust. John Wiley & Sons, New York, Toronto
McKinley D.W.R.: 1961, Meteor science and engineering. McGraw-Hill Comp., New York
Heide F., Wlotzka F.: 1995, Meteorites. Springer, Berlin, Heidelberg, New York
McSween H.Y.: 1999, Meteorites and their parent bodies. Cambridge Univ. Press, Cambridge.
Buchwald, F.: 1975, Handbook od iron meteorites, Vol. 1-3, Univ. of California Press, Berkeley
Current monographs and papers.

Languages necessary to complete the course:

Notes:

Past grade distribution Total number of evaluated students: 3	
ABS	NEABS
100,0	0,0
Lecturers: doc. RNDr. Leonard Kornoš, PhD.	
Last change: 17.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-002/00	Population of the Small Bodies of the Solar System (2)

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

Number of credits: 10

Recommended semester: 2.

Educational level: III.

Prerequisites:

Course requirements:
Continuous assessment: semestral work.
Final examination: oral exam.
Approximate scale of final grades: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 30/70

Learning outcomes:
Detailed knowledge of populations of asteroids, comets and ice bodies of the Edgeworth-Kuiper belt. Extension of knowledge from II. degree.

Class syllabus:
Distribution of asteroids in the Solar System, commensurabilities, asteroid families, asteroids on special orbits. Asteroid structure, taxonomic types and their incidence depending on heliocentric distance, near-Earth asteroids, Trojans and centaurs. Comets at large heliocentric distances, new comets in the Oort´s sense, Oort cloud. Ice objects of the Edgeworth-Kuiper belt, Pluto and Charon. Origin and evolution of individual populations of interplanetary matter and their interrelationships.

Recommended literature:
Michel, P., Demeo, F.E., Bottke, W.F.: Asteroids IV, Tucson, University of Arizona Press, 2015.
Festou, M.C., Keller, H.U., Weaver, H.A.: Comets II, Tucson, University of Arizona Press, 2004.
Fernández. J.A., Lazzaro, D., Prialnik, D., Schulz, R.: Icy Bodies of the Solar System, Cambridge University Press, 2010.

Languages necessary to complete the course:
Slovak / English

Notes:
Jazyk, ktorého znalosť je potrebná na absolvovanie predmetu: anglický

Past grade distribution Total number of evaluated students: 4	
ABS	NEABS
100,0	0,0
Lecturers: doc. RNDr. Ján Svoreň, DrSc., doc. RNDr. Leonard Kornoš, PhD.	
Last change: 20.06.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-404/10	Presentation at a Department Seminar

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

Number of credits: 5

Recommended semester:

Educational level: III.

Prerequisites:

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

Learning outcomes:
Presentation of the research results at the seminar

Class syllabus:
Preparation of the results and the seminar contribution.

Recommended literature:
selected articles

Languages necessary to complete the course:
Slovak / English

Notes:

Past grade distribution
Total number of evaluated students: 1

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 17.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-403/10	Presentation at a Home Conference

Educational activities:
Type of activities: independent work
Number of hours:
per week: 7 **per level/semester:** 98
Form of the course: on-site learning

Number of credits: 10

Recommended semester:

Educational level: III.

Prerequisites:

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

Learning outcomes:
Presentation of the research results at the conference.

Class syllabus:
Preparation of the results and the conference contribution.

Recommended literature:
selected articles

Languages necessary to complete the course:
Slovak / English

Notes:

Past grade distribution
Total number of evaluated students: 6

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 17.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-402/10	Presentation at a Home Conference with International Participation

Educational activities:
Type of activities: independent work
Number of hours:
per week: 10 **per level/semester:** 140
Form of the course: on-site learning

Number of credits: 15

Recommended semester:

Educational level: III.

Prerequisites:

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

Learning outcomes:
Presentation of the research results at the conference.

Class syllabus:
Preparation of the results and the conference contribution.

Recommended literature:
slected articles

Languages necessary to complete the course:
Slovak / English

Notes:

Past grade distribution
Total number of evaluated students: 1

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 17.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-401/10	Presentation at an International Conference

Educational activities:
Type of activities: independent work
Number of hours:
per week: 10 **per level/semester:** 140
Form of the course: on-site learning

Number of credits: 20

Recommended semester:

Educational level: III.

Prerequisites:

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

Learning outcomes:
Presentation of the research results at an international conference.

Class syllabus:
Preparation of the results and the conference contribution.

Recommended literature:
selected articles

Languages necessary to complete the course:
Slovak / English

Notes:

Past grade distribution
Total number of evaluated students: 3

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 17.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-704/10	Quotation 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

Number of credits: 4

Recommended semester:

Educational level: III.

Prerequisites:

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

Learning outcomes:
Citation. By obtaining a registered response to their work, the student demonstrates the relevance of their own research.

Class syllabus:
Citation of the doctoral student's contribution in a publication without self-citation

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:

Last change: 19.01.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-707/10	Quotation in a Home Scientific Journal

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

Number of credits: 2

Recommended semester:

Educational level: III.

Prerequisites:

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

Learning outcomes:
Citation. By obtaining a registered response to their work, the student demonstrates the relevance of their own research.

Class syllabus:
Citation of the doctoral student's contribution in a publication without self-citation

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:

Last change: 19.01.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-705/10	Quotation in a Monograph

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

Number of credits: 4

Recommended semester:

Educational level: III.

Prerequisites:

Course requirements:
100/0

Learning outcomes:
Citation. By obtaining a registered response to their work, the student demonstrates the relevance of their own research.

Class syllabus:
Citation of the doctoral student's contribution in a publication without self-citation

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:

Last change: 19.01.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-706/10	Quotation in a Scientific Journal Abroad

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

Number of credits: 3

Recommended semester:

Educational level: III.

Prerequisites:

Course requirements:
100/0

Learning outcomes:
Citation. By obtaining a registered response to their work, the student demonstrates the relevance of their own research.

Class syllabus:
Citation of the doctoral student's contribution in a publication without self-citation

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:

Last change: 19.01.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-305/10	Reviewed Foreign Papers Volume

Educational activities:
Type of activities: independent work
Number of hours:
per week: 15 **per level/semester:** 210
Form of the course: on-site learning

Number of credits: 30

Recommended semester:

Educational level: III.

Prerequisites:

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

Learning outcomes:
A publication in foreign peer-reviewed proceedings

Class syllabus:
Preparation of a research paper.

Recommended literature:
Study of current local and international research literature focusing on the topic of the dissertation advised by the supervisor and/or by a principal investigator of the research project and/or by the study programme guarantor.

Languages necessary to complete the course:
Slovak / English

Notes:

Past grade distribution
Total number of evaluated students: 2

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 17.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-306/10	Reviewed Home Papers Volume

Educational activities:
Type of activities: independent work
Number of hours:
per week: 10 **per level/semester:** 140
Form of the course: on-site learning

Number of credits: 15

Recommended semester:

Educational level: III.

Prerequisites:

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

Learning outcomes:
A publication in home peer-reviewed proceedings

Class syllabus:
Preparation of a research paper.

Recommended literature:
Study of current local and international research literature focusing on the topic of the dissertation advised by the supervisor and/or by a principal investigator of the research project and/or by the study programme guarantor.

Languages necessary to complete the course:
Slovak / English

Notes:

Past grade distribution
Total number of evaluated students: 0

ABS	NEABS
0,0	0,0

Lecturers:

Last change: 17.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-511/15	Science Thesis (1)

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

Number of credits: 15

Recommended semester: 5., 6..

Educational level: III.

Prerequisites:

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

Learning outcomes:
The PhD. student will gain and expand the ability to work individually as well as in team during conducting his/her research activities connected to the PhD. project, writing research papers.

Class syllabus:
Individual research of the PhD. student represents a crucial part of the PhD. studies.
Individual approach to solving open scientific problems. Original and individual results under supervision of the supervisor.

Recommended literature:
Relevant scientific papers

Languages necessary to complete the course:
Slovak / English

Notes:

Past grade distribution
Total number of evaluated students: 6

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 17.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-512/15	Science Thesis (2)

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

Number of credits: 15

Recommended semester: 5., 6..

Educational level: III.

Prerequisites:

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

Learning outcomes:
The PhD. student will gain and expand the ability to work individually as well as in team during conducting his/her research activities connected to the PhD. project, writing research papers.

Class syllabus:
Individual research of the PhD. student represents a crucial part of the PhD. studies.
Individual approach to solving open scientific problems. Original and individual results under supervision of the supervisor.

Recommended literature:
Relevant scientific papers

Languages necessary to complete the course:
Slovak / English

Notes:

Past grade distribution
Total number of evaluated students: 7

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 17.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-513/15	Science Thesis (3)

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

Number of credits: 20

Recommended semester: 7., 8..

Educational level: III.

Prerequisites:

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

Learning outcomes:
The PhD. student will gain and expand the ability to work individually as well as in team during conducting his/her research activities connected to the PhD. project, writing research papers.

Class syllabus:
Individual research of the PhD. student represents a crucial part of the PhD. studies.
Individual approach to solving open scientific problems. Original and individual results under supervision of the supervisor.

Recommended literature:
Relevant scientific papers

Languages necessary to complete the course:
Slovak / English

Notes:

Past grade distribution
Total number of evaluated students: 6

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 17.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-514/15	Science Thesis (4)

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

Number of credits: 20

Recommended semester: 7., 8..

Educational level: III.

Prerequisites:

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

Learning outcomes:
The PhD. student will gain and expand the ability to work individually as well as in team during conducting his/her research activities connected to the PhD. project, writing research papers.

Class syllabus:
Individual research of the PhD. student represents a crucial part of the PhD. studies.
Individual approach to solving open scientific problems. Original and individual results under supervision of the supervisor.

Recommended literature:
Relevant scientific papers

Languages necessary to complete the course:
Slovak / English

Notes:

Past grade distribution
Total number of evaluated students: 6

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 17.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-003/00	Selected Topics of Solar Physics

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

Number of credits: 10

Recommended semester: 1.

Educational level: III.

Prerequisites:

Course requirements:
Continuous assessment, individual work
Exam
Scale of assessment (preliminary/final): 30/70

Learning outcomes:
A deeper understanding of the processes in the physics of the Sun.

Class syllabus:
The course is realized in the form of lectures in which deeper information about existing knowledge and the most current findings from the field of Solar physics will be conveyed. The contents of the lectures are the following topics: basic definitions and assumptions, basic physical facts about the Sun, internal structure of the Sun, energy production, the problem of solar neutrinos, energy transfer by radiation and convection, helioseismology, solar atmosphere, photospheric radiation and photospheric structures, chromosphere, transition region and corona, optically thin radiation, solar flares, coronal mass ejections, magnetic fields in the solar atmosphere, measurements of the magnetic field strength, Stokes parameters, basic MHD equations, solar dynamics, differential rotation and its description, Standard model of the Sun, solar activity and its cycle, solar wind, solar-earth relations, space weather. The supervisor will make a choice of the given topics according to the focus of the dissertation.

Recommended literature:
Zirin, H.: Astrophysics of the Sun, Cambridge Univ. Press, Cambridge, 1988
Priest, E. R.: Solar Magnetohydrodynamics, D. Reidel Publishing Company, 1982
M. Stix: The Sun, An Introduction, Springer, 2nd edition, 2002.

Languages necessary to complete the course:
Slovak / English

Notes:

Past grade distribution Total number of evaluated students: 0	
ABS	NEABS
0,0	0,0
Lecturers: doc. RNDr. Elena Dzifčáková, CSc.	
Last change: 17.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty:	
Course ID: FMFI.KAFZM/3-FAA-004/00	**Course title:** Selected Topics of Stellar Physics
Educational activities: **Type of activities:** lecture **Number of hours:** **per week:** 2 **per level/semester:** 28 **Form of the course:** on-site learning	
Number of credits: 10	
Recommended semester: 2.	
Educational level: III.	
Prerequisites:	
Course requirements:	
Learning outcomes: Extending knowledge of stellar physics.	
Class syllabus: Internal structure depending on evolution; rotation; energy transport, convection; fundamental stellar parameters, HRD; radiative transfer in continuum and spectral line; atmosphere models, opacity, atomic databases, synthetic spectra; spectrum analysis; magnetic field, Stokes parametersm, spectropolarimetry; atmospheric chemical composition, CP stars; pulsation, oscillation, asteroseismology; double stars, interacting binaries, cataclismtic stars; observational methods, photometry, photometric systems, spectrophotometry, spectroscopy.	
Recommended literature: V.C. Reddish: 1978, Stellar Formation. Pergamon Press, Oxford L.H. Aller and D.B. McLaughlin: 1965, Stellar Structure.Univ. of Chicago Press, Illinois D. Gray: 1976, Observation and Analysis of Stellar Atmospheres.Willey-Interscience Publ., New York The A-star puzzle, J. Zverko, J. Žižňovský, S. J. Adelman, W. W. Weiss (eds.), 2005, Proc. IAUS 224, Cambridge University Presss, Cambridge T. Padhanabhan, Theoretical Astrophysics Vol. 1-2, 2001, CUP, Cambridge D.Prialnik, An introduction to the theory of stellar structure and evolution, 2000, CUP, Cambridge Current papers, monographs.	
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. Jozef Klačka, PhD., RNDr. Augustín Skopal, DrSc.	
Last change: 04.02.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-007/00	Seminar on Astronomy and Astrophysics (1)

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

Number of credits: 5

Recommended semester: 1.

Educational level: III.

Prerequisites:

Course requirements:
Continuous assessment: presentation and discussion participation
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Students will gain experiences with the preparation and oral presentation of their scientific work and with active participation in the discussion. Students will deepen their knowledge of the research fields covered at the seminar presentations.

Class syllabus:
Student's own scientific work, preparation of background materials and presentation of partial results of the disertation thesis. Active participation in the discussion. Presentation of current results of research programs by the staff of the Division of Astronomy and Astrophysics and invited speakers.
The current astronomical news, discoveries and information from the meetings organized by the International Astronomical Union, with a focus to the research fields of astronomy in Slovakia: the interplanetary matter research, solar physics and stellar astronomy.

Recommended literature:
Proceedings from the symposia and meetings organized by the IAU
Astronomical periodicals and journals.

Languages necessary to complete the course:
English

Notes:
Language necessary to complete the course: English

Past grade distribution
Total number of evaluated students: 4

ABS	NEABS
100,0	0,0

Lecturers: doc. RNDr. Jozef Klačka, PhD.
Last change: 21.06.2022
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-008/00	Seminar on Astronomy and Astrophysics (2)

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

Number of credits: 5

Recommended semester: 2.

Educational level: III.

Prerequisites:

Course requirements:
Continuous assessment: presentation and discussion participation
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Students will gain experiences with the preparation and oral presentation of their scientific work and with active participation in the discussion. Students will deepen their knowledge of the research fields covered at the seminar presentations.

Class syllabus:
Student's own scientific work, preparation of background materials and presentation of partial results of the disertation thesis. Active participation in the discussion. Presentation of current results of research programs by the staff of the Division of Astronomy and Astrophysics and invited speakers.
The current astronomical news, discoveries and information from the meetings organized by the International Astronomical Union, with a focus to the research fields of astronomy in Slovakia: the interplanetary matter research, solar physics and stellar astronomy.

Recommended literature:
Proceedings from the symposia and meetings organized by the IAU
Astronomical periodicals and journals

Languages necessary to complete the course:
English

Notes:
Language necessary to complete the course: English

Past grade distribution
Total number of evaluated students: 4

ABS	NEABS
100,0	0,0

Lecturers: doc. RNDr. Jozef Klačka, PhD.
Last change: 21.06.2022
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-011/00	Seminar on Astronomy and Astrophysics (3)

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

Number of credits: 5

Recommended semester: 3.

Educational level: III.

Prerequisites:

Course requirements:
Continuous assessment: presentation and discussion participation
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Students will gain experiences with the preparation and oral presentation of their scientific work and with active participation in the discussion. Students will deepen their knowledge of the research fields covered at the seminar presentations.

Class syllabus:
Student's own scientific work, preparation of background materials and presentation of partial results of the disertation thesis. Active participation in the discussion. Presentation of current results of research programs by the staff of the Division of Astronomy and Astrophysics and invited speakers.
The current astronomical news, discoveries and information from the meetings organized by the International Astronomical Union, with a focus to the research fields of astronomy in Slovakia: the interplanetary matter research, solar physics and stellar astronomy.

Recommended literature:
Proceedings from the symposia and meetings organized by the IAU
Astronomical periodicals and journals

Languages necessary to complete the course:
English

Notes:
Language necessary to complete the course: English

Past grade distribution
Total number of evaluated students: 4

ABS	NEABS
100,0	0,0

Lecturers: doc. RNDr. Jozef Klačka, PhD.
Last change: 21.06.2022
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-012/00	Seminar on Astronomy and Astrophysics (4)

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

Number of credits: 5

Recommended semester: 4.

Educational level: III.

Prerequisites:

Course requirements:
Continuous assessment: presentation and discussion participation
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Students will gain experiences with the preparation and oral presentation of their scientific work and with active participation in the discussion. Students will deepen their knowledge of the research fields covered at the seminar presentations.

Class syllabus:
Student's own scientific work, preparation of background materials and presentation of partial results of the disertation thesis. Active participation in the discussion. Presentation of current results of research programs by the staff of the Division of Astronomy and Astrophysics and invited speakers.
The current astronomical news, discoveries and information from the meetings organized by the International Astronomical Union, with a focus to the research fields of astronomy in Slovakia: the interplanetary matter research, solar physics and stellar astronomy.

Recommended literature:
Proceedings from the symposia and meetings organized by the IAU
Astronomical periodicals and journals

Languages necessary to complete the course:
English

Notes:
Language necessary to complete the course: English

Past grade distribution
Total number of evaluated students: 4

ABS	NEABS
100,0	0,0

Lecturers: doc. RNDr. Jozef Klačka, PhD.
Last change: 21.06.2022
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-013/00	Seminar on Astronomy and Astrophysics (5)

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

Number of credits: 5

Recommended semester: 5.

Educational level: III.

Prerequisites:

Course requirements:
Continuous assessment: presentation and discussion participation
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Students will gain experiences with the preparation and oral presentation of their scientific work and with active participation in the discussion. Students will deepen their knowledge of the research fields covered at the seminar presentations.

Class syllabus:
Student's own scientific work, preparation of background materials and presentation of partial results of the disertation thesis. Active participation in the discussion. Presentation of current results of research programs by the staff of the Division of Astronomy and Astrophysics and invited speakers.
The current astronomical news, discoveries and information from the meetings organized by the International Astronomical Union, with a focus to the research fields of astronomy in Slovakia: the interplanetary matter research, solar physics and stellar astronomy.

Recommended literature:
Proceedings from the symposia and meetings organized by the IAU
Astronomical periodicals and journals.

Languages necessary to complete the course:
English

Notes:
Language necessary to complete the course: English

Past grade distribution
Total number of evaluated students: 5

ABS	NEABS
100,0	0,0

Lecturers: doc. RNDr. Jozef Klačka, PhD.
Last change: 21.06.2022
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-014/00	Seminar on Astronomy and Astrophysics (6)

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

Number of credits: 5

Recommended semester: 6.

Educational level: III.

Prerequisites:

Course requirements:
Continuous assessment: presentation and discussion participation
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Students will gain experiences with the preparation and oral presentation of their scientific work and with active participation in the discussion. Students will deepen their knowledge of the research fields covered at the seminar presentations.

Class syllabus:
Student's own scientific work, preparation of background materials and presentation of partial results of the disertation thesis. Active participation in the discussion. Presentation of current results of research programs by the staff of the Division of Astronomy and Astrophysics and invited speakers.
The current astronomical news, discoveries and information from the meetings organized by the International Astronomical Union, with a focus to the research fields of astronomy in Slovakia: the interplanetary matter research, solar physics and stellar astronomy.

Recommended literature:
Proceedings from the symposia and meetings organized by the IAU
Astronomical periodicals and journals

Languages necessary to complete the course:
English

Notes:
Language necessary to complete the course: English

Past grade distribution
Total number of evaluated students: 5

ABS	NEABS
100,0	0,0

Lecturers: doc. RNDr. Jozef Klačka, PhD.
Last change: 21.06.2022
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-807/10	Study Stay Abroad

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

Number of credits: 3

Recommended semester:

Educational level: III.

Prerequisites:

Course requirements:
100/0

Learning outcomes:
The student will gain valuable experience with teaching and research in a foreign institution.

Class syllabus:
Completion of a study stay abroad.

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 2

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 19.01.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-801/10	Supervising and Demonstrating Work

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

Number of credits: 5

Recommended semester:

Educational level: III.

Prerequisites:

Course requirements:
Regular student's weekly teaching.
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The PhD student will gain teaching and pedagogical skills by leading practicals and exercises.

Class syllabus:
Regular student's weekly teaching.
Consultations with the lecturer.
Evaluation of tests and assignments.
Providing assistance to the lecturer during final examinations.

Recommended literature:

Languages necessary to complete the course:
Slovak / English

Notes:

Past grade distribution
Total number of evaluated students: 11

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 17.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KAFZM/3-FAA-802/10	Supervising and Demonstrating Work

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

Number of credits: 5

Recommended semester:

Educational level: III.

Prerequisites:

Course requirements:
Regular student's weekly teaching.
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The PhD student will gain teaching and pedagogical skills by leading practicals and exercises.

Class syllabus:
Regular student's weekly teaching.
Consultations with the lecturer.
Evaluation of tests and assignments.
Providing assistance to the lecturer during final examinations.

Recommended literature:

Languages necessary to complete the course:
SLovak / English

Notes:

Past grade distribution
Total number of evaluated students: 7

ABS	NEABS
100,0	0,0

Lecturers:

Last change: 17.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty:

Course ID:	**Course title:**
FMFI.KJFB/3-FBF-002/00	Theoretical Methods of the Study the Molecular Systems

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

Number of credits: 10

Recommended semester: 3.

Educational level: III.

Prerequisites:

Course requirements:
oral exam
scale: A 90%, B 80%, C 70%, D 60%, E 51%

Learning outcomes:

Class syllabus:
The study of statical properties:
Quantum mechanic description of energetic and reactivity of molecules (HF, post HF and DFT methods, semi empirical methods, methods of molecular mechanics, combined methods).
Study of dynamical properties:
Methods of molecular dynamics, Monte Carlo methods, analysis of the results of simulations, methods of classical and quasi classical trajectories.

Recommended literature:
O.Becker et al. Computational Biochemistry and Biophysics, Dekker, 2000
A. Szabo N. S. Ostlund: Modern Quantum Chemistry: Introduction to Advanced Electronic Structure Theory
P.W. Atkins: Molecular Quantum Mechanics, Oxford Univ. Press, 1970

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 2

ABS	NEABS
100,0	0,0

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

Last change: 18.06.2022

Approved by: