CONTENT

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: CJP/ PFAJAKA/07	**Course name:** Academic English

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course:

Course level: I.

Prerequisities:

Conditions for course completion:
Active classroom participation, assignments handed in on time, 2 absences tolerated
1 test (13th week), no retake.
Presentation on chosen topic
Final evaluation- average assessment of test (50%), and presentation (50%).
Grading scale: A 93-100%, B 86-92%, C 79-85%, D 72-78%, E 65-71%, FX 64% and less

Learning outcomes:
The development of students´ language skills - reading, writing, listening, speaking, improvement of their linguistic competence - students acquire knowledge of selected phonological, lexical and syntactic aspects, development of pragmatic competence - students can efectively use the language for a given purpose, with focus on Academic English, level B2.

Brief outline of the course:
Formal and informal English
Academic English and its specific features
Key academic verbs and nouns
Linking words in academic writing, writing a paragraph, word-order, topic sentences
Word-formation - affixation
abstract
Selected aspects of English pronunciation, academic vocabulary
Selected functional grammar structures - defining, classifying, epressing opinion, cause-effect, paraphrasing

Recommended literature:
Seal B.: Academic Encounters, CUP, 2002
T. Armer :Cambridge English for Scientists, CUP 2011
M. McCarthy M., O´Dell F. - Academic Vocabulary in Use, CUP 2008
Zemach, D.E, Rumisek, L.A: Academic Writing, Macmillan 2005
Olsen, A. : Active Vocabulary, Pearson, 2013
www.bbclearningenglish.com
Cambridge Academic Content Dictionary, CUP, 2009

Course language:
English language, level B2 according to CEFR.

Notes:

Course assessment
Total number of assessed students: 416

A	B	C	D	E	FX
36.54	21.63	15.14	9.38	6.01	11.3

Provides: Mgr. Viktória Mária Slovenská

Date of last modification: 20.09.2023

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: KPE/ ALP/06	**Course name:** Alternative Education

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 327

A	B	C	D	E	FX
69.42	25.08	2.75	0.61	0.31	1.83

Provides: Mgr. Beáta Sakalová, doc. PaedDr. Renáta Orosová, PhD.

Date of last modification: 12.03.2024

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚFV/ EP/22	**Course name:** Applied Electronics

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 5.

Course level: I.

Prerequisities:

Conditions for course completion:
For successful take part of the subject, the student must demonstrate understanding of physical phenomena which are necessary for description of selected classical electronic elements and systems together with their technological implementation. The analysis of the properties and functions of these elements, electronic circuits, information transmission and processing systems are required. Student needs to become familiar with basic elements and components in Nanoelectronics, explain the methods of their production and principles of operation. This knowledge is needed for understanding basic concepts of modern electronics and its applications. The student must acquire the content of the subject during the semester and acquired knowledge can be active and creatively used in understanding the electronic circuits. Condition to obtain credits is the completion of the final test. Credit assessment of the subject takes into account the following student burden: participation in exercises (1 credit) and elaboration of protocols (1 credits). The minimum boundary for completing the subject is to obtain at least 50% of the total point evaluation, using the following evaluation scale: A (90-100%), B (80-89%), C (70-79%), D (60- 69%), E (50-59%), F (0-49%).

Learning outcomes:
Student will have sufficient physical knowledge to allow solutions and analysis of electronic circuits after completing the practice. At the same time, they will have an overview of modern electronic technologies on the nano-level scale.

Brief outline of the course:
1. Introduction to electronics: Basic components of electronic circuits, basic electrical laws 2. Passive components, basic properties of semiconductors 3. Semiconductors without PN junction, components with PN junction 4. Semiconductors with PN junction 5. Transistor phenomenon, transistor 6. Electronic circuit with transistor 7. Operational amplifiers 8. Sources and generators 9. Two-value logic algebra, combinational logic circuits 10. Digital memory circuits 11. Sequential logic circuits 12. Digital-analog converters, analog-digital converters

Recommended literature:
1. Brown P.B., Frantz G.N., Moraff H.: Electronics for the Modern Scientist. Elsevier, 1982.
2. Delaney C.F.G.: Electronics for the Physicist with Aplications. John Willey & Sons, 1980.

3. Wolt E. L.: Quantum Nanoelectronics, An introduction to electronic nanotechnology and quantum computing, Wiley-VCh, 2009

Course language:
1.Slovak 2. English

Notes:

Course assessment
Total number of assessed students: 13

A	B	C	D	E	FX
84.62	15.38	0.0	0.0	0.0	0.0

Provides: RNDr. Vladimír Tkáč, PhD.

Date of last modification: 12.05.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚGE/ BKP/14	**Course name:** Bachelor Project
Course type, scope and the method: **Course type:** **Recommended course-load (hours):** **Per week: Per study period:** **Course method:** present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 5.	
Course level: I.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Notes:	
Course assessment Total number of assessed students: 115	

abs	n
97.39	2.61

Provides:
Date of last modification: 03.05.2015
Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ BKP1/22	**Course name:** Bachelor Project

Course type, scope and the method:
Course type:
Recommended course-load (hours):
Per week: Per study period:
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 5.

Course level: I.

Prerequisities:

Conditions for course completion:
Submission of the bachelor project structure based on the assignments of the supervisor and acceptance of its content by the supervisor.

Learning outcomes:
The design of the bachelor's project structure for the elaboration of a bachelor's thesis, in which the student demonstrates that he is able to define, update the topic and structure of the bachelor's project, can study, process and correctly cite selected bibiographic resources, has an idea of formal and graphic aspects of the thesis.

Brief outline of the course:
The bachelor project is focused on a selected area of physics. Based on the goals of the bachelor's project, the student implements the first (preparatory phase) of the bachelor's thesis based on the following activities: clearly defines the topic, studies and updates bibiographic resources, creates a project structure in which formulates the working hypothesis, problem solving methods, works on the specified problem, prepares citations of bibliographic resources

Recommended literature:
1. Resources (literature, papers) based on the project assignments.
2. Regulations No. 1/2011 about final works (thesis for University of P.J. Safarik.

Course language:
Slovak, English

Notes:

Course assessment
Total number of assessed students: 4

abs	n
100.0	0.0

Provides:

Date of last modification: 31.01.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ BKP2/14	**Course name:** Bachelor Project

Course type, scope and the method:
Course type:
Recommended course-load (hours):
Per week: Per study period:
Course method: present

Number of ECTS credits: 4

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities:

Conditions for course completion:
FInalization and submission of the bachelor project based on the assignments of the supervisor and acceptance of its content by the supervisor.

Learning outcomes:
Finished bachelor project prepared as a design of a bachelor thesis, as an evidence that student is able to process konwledge available in different resources, citate correctly and keep the layout correctly, prepare a presentation and share the results in front of experts.

Brief outline of the course:
Using the created structure and partial work on the bachelor project, the student implements the second (finalization) phase of elaboration of the bachelor thesis based on the following activities: finalizes the project into a thesis in required formal and technical forms with correct citations of bibliographic references, implements the principles of presentation and reporting the work and its results.

Recommended literature:
1. Resources (literature, papers) based on the project assignments.
2. Regulations No. 1/2011 about final works (thesis for University of P.J. Safarik.

Course language:
Slovak, English

Notes:

Course assessment
Total number of assessed students: 15

abs	n
100.0	0.0

Provides:

Date of last modification: 31.01.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ BSSM/15	**Course name:** Bachelor State Exam Physics

Course type, scope and the method:
Course type:
Recommended course-load (hours):
Per week: Per study period:
Course method: present

Number of ECTS credits: 1

Recommended semester/trimester of the course:

Course level: I.

Prerequisities:

Conditions for course completion:
Answering questions concerning selected fields of the subjects of Bachelor state exam.

Learning outcomes:
Basic knowledge and overview of konowledge in the fields stated by the Bachelro state exam.

Brief outline of the course:
Exam in the field of knowledge in physics consisting of an overview of the following fields:
- Mechanics and molecular physics
- Electricity and magnetism
- Oscillations and waves, optics
- Nuclear physics
- General biophysics
- Theoretical mechanics
- Theory of electromagnetic field
- Statistical physics

Recommended literature:

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 29

A	B	C	D	E	FX
41.38	31.03	17.24	0.0	10.34	0.0

Provides:

Date of last modification: 16.02.2016

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ BSSM/22	**Course name:** Bachelor State Exam Physics

Course type, scope and the method:
Course type:
Recommended course-load (hours):
Per week: Per study period:
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course:

Course level: I.

Prerequisities:

Conditions for course completion:
Answering questions concerning selected fields of the subjects of Bachelor state exam.

Learning outcomes:
Student has basic knowledge and overview of knowledge in the fields stated by the Bachelor state exam in line with the graduate profile.

Brief outline of the course:
Exam in the field of knowledge in physics consisting of an overview of the following fields:
- Mechanics and molecular physics
- Electricity and magnetism
- Oscillations and waves, optics
- Nuclear physics
- General biophysics
- Theoretical mechanics
- Theory of electromagnetic field
- Statistical physics

Recommended literature:

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 6

A	B	C	D	E	FX
16.67	50.0	0.0	16.67	0.0	16.67

Provides:

Date of last modification: 18.02.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ SPB1/21	**Course name:** Bachelor Thesis Project Seminar 1

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 5.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 34

A	B	C	D	E	FX
85.29	8.82	5.88	0.0	0.0	0.0

Provides: prof. Mgr. Jaroslav Hofierka, PhD., doc. Mgr. Ladislav Novotný, PhD.

Date of last modification: 27.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ SPB2/21	**Course name:** Bachelor Thesis Project Seminar 2

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 21

A	B	C	D	E	FX
71.43	23.81	4.76	0.0	0.0	0.0

Provides: prof. Mgr. Jaroslav Hofierka, PhD., doc. Mgr. Ladislav Novotný, PhD., Mgr. Katarína Onačillová, PhD.

Date of last modification: 27.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ BPO/14	**Course name:** Bachelor Thesis and its Defence

Course type, scope and the method:
Course type:
Recommended course-load (hours):
Per week: Per study period:
Course method: present

Number of ECTS credits: 4

Recommended semester/trimester of the course:

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 185

A	B	C	D	E	FX
37.3	28.65	16.76	8.65	8.11	0.54

Provides:

Date of last modification: 07.12.2021

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/BPO/14	**Course name:** Bachelor Thesis and its Defence

Course type, scope and the method:
Course type:
Recommended course-load (hours):
Per week: Per study period:
Course method: present

Number of ECTS credits: 4

Recommended semester/trimester of the course:

Course level: I.

Prerequisities:

Conditions for course completion:
Required number of credits gained basedon submitting the bachelor thesis.

Learning outcomes:

Brief outline of the course:
Presentation of the bachelor thesis results, answering questions of the reviewer and members of professional commission.

Recommended literature:

Course language:
Slovak or English

Notes:

Course assessment
Total number of assessed students: 62

A	B	C	D	E	FX
85.48	8.06	3.23	3.23	0.0	0.0

Provides:

Date of last modification: 07.12.2021

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ KAR/05	**Course name:** Basics of Karstology and Speleology

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 226

A	B	C	D	E	FX
77.88	15.04	5.31	0.0	1.77	0.0

Provides: RNDr. Alena Gessert, PhD., univerzitná docentka

Date of last modification: 27.08.2020

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ZKAR/21	**Course name:** Basics of Karstology and Speleology

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 1 / 1 **Per study period:** 14 / 14
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 4.

Course level: I., II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 11

A	B	C	D	E	FX
45.45	18.18	18.18	18.18	0.0	0.0

Provides: RNDr. Alena Gessert, PhD., univerzitná docentka, doc. Ing. Katarína Bónová, PhD.

Date of last modification: 20.02.2023

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ BDD/05	**Course name:** Biology of Children and Adolescents

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 0 **Per study period:** 28 / 0
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 4., 6.

Course level: I.

Prerequisities:

Conditions for course completion:
Written test

Learning outcomes:
Acquisition of basic morphological and physiological knowledge about individual organs and systems of the human body with a focus on the specifics of childhood and adolescence. Familiarity with developmental and growth characteristics and with the most common diseases in these stages of ontogenesis.

Brief outline of the course:
Human ontogenesis. Postnatal development. Age specific features of skeletal and muscalar, circulatory, respiratory, gastrointestinal and urinary systems. Reproductive system. Endocrine system. Nervous system. Age specifics of selected diseases and drug dependence arise. Human population and environment.

Recommended literature:
Drobný I., Drobná M.: Biológia dieťaťa pre špeciálnych pedagógov I. a II. Bratislava, PdF UK, 2000
Lipková V.: Somatický a fyziologický vývoj dieťaťa. Osveta Bratislava, 1980
Malá H., Klementa J.: Biológia detí a dorastu. Bratislava, SPN, 1989

Course language:

Notes:

Course assessment
Total number of assessed students: 1757

A	B	C	D	E	FX
31.59	24.08	18.16	16.62	9.05	0.51

Provides: doc. RNDr. Monika Kassayová, CSc.

Date of last modification: 20.04.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚGE/ KAG/15	**Course name:** Cartography and Geoinformatics

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 2 **Per study period:** 28 / 28
Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 1.

Course level: I.

Prerequisities:

Conditions for course completion:
During the semester it is necessary to pass out the work outputs from the exercises. The knowledge gained on the exercises will be verified by continuous written examinations. The number of work outputs and written examinations will be announced at the beginning of the semester. It is possible to obtain 30% of the assessment criteria for the exercise (work outputs and written examinations). The final evaluation of the exercises is determined by the instructor of the subject based on the completion of tasks in the exercises during the semester. The final evaluation of the study subject is based on the combination of the evaluation conditions from the exercise and the final exam. The final exam may be enrolled by a student who has fulfilled the requirements for attending the exercises and who achieves a raiting of at least minimum 16 % in evaluation in exercises. The final assessment is the weighted average of the exercise assessment (30 %) and the final exam (70 %). Credits are awarded only to a student who achieves rating at least at the grade level of E, i.e. he achieves the raiting of at least 51 %. Credits will not be awarded to a student who does not meet the requirements of the exercise and the exam is rated FX. Rating scale: A (100-91%), B (81-90%,) C (71-80%), D (61-70%), E (51-60%).

Learning outcomes:
The main learning outcomes include theoretical and practical skills in cartography and geoinformatics. Students understand cartographic and GIS terminology, students can apply cartographic approaches and methods using GIS, projections and define the content and composition of maps in GIS. The student masters the design, use and evaluation of the properties of cartographic representations in various geoinformatics applications.

Brief outline of the course:
Cartography - the branch of science, position in the system of sciences, the history of cartography, topographic mapping in Slovakia; Cartographic projects, cartographic interpretation; Description maps, geographical names, cartographic generalization, State map series; Cartometry and morphometry; Mathematical cartography (reference area map projection and distortion).
Geoinformatics – the branch of science, elements of GIS, digital representation of landscape, raster and vector data, data collection and processing data for GIS, geospatial database, visualization and cartographic representation using GIS, applications of GIS.

Recommended literature:

HOFIERKA, J., J. KAŇUK, M. GALLAY, 2014. Geoinformatika. Košice: Univerzita Pavla Jozefa Šafárika v Košiciach. ISBN 978-80-8152-178-2.
HOJOVEC, V. et al., 1987. Kartografie. Praha: Geodetický a kartografický podnik v Praze. ISBN 29-621-87.
LONGLEY, P.A., M. GOODCHILD, D. J. MAGUIRE, D. W. RHIND, 2010. Geographic Information Systems and Science. 3rd ed. Hoboken: Wiley & Sons, ISBN 978-0-470-72144-5.
PRAVDA, J., D. KUSENDOVÁ, 2004. Počítačová tvorba tematických máp. Bratislava: Univerzita Komenského v Bratislave. ISBN 80-223-2011-0.
ROBINSON, A. H. et al., 1995. Elements of Cartography. 6th ed. Hoboken: Wiley & Sons. ISBN 0-471-55579-7.
VOŽENÍLEK, V. et al., 2011. Metody tematické kartografie - Vizualizace prostorových jevů. Olomouc: Univerzita Palackého v Olomouci. ISBN 978-80-24427-90-4.

Course language:
Slovak

Notes:
withot notes

Course assessment
Total number of assessed students: 425

A	B	C	D	E	FX
15.29	21.65	20.94	19.29	18.12	4.71

Provides: doc. RNDr. Ján Kaňuk, PhD., Mgr. Patrícia Gurová, Mgr. Ondrej Tokarčík

Date of last modification: 28.09.2020

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚGE/ KRT1/21	**Course name:** Cartography and Geoinformatics 1

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 2 **Per study period:** 28 / 28
Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 1.

Course level: I.

Prerequisities:

Conditions for course completion:
During the semester, it is necessary to submit the results of the exercises. The acquired knowledge at the exercises will be verified by continuous examinations. The number of work outputs and written examinations will be announced at the beginning of the semester. It is possible to obtain 30% for meeting the evaluation criteria at the exercise (work outputs and written tests). The final evaluation of the exercises is determined by the instructor of the subject on the basis of completing the tasks in the exercises during the semester. The final evaluation of the course is based on a combination of meeting the evaluation conditions from the exercises and the final exam. A student who has met the conditions for passing the course at the seminars can apply for the final exam. The final evaluation is a weighted average of the evaluation from the exercises (30%) and the final exam (70%). Credits will be awarded only to a student who achieves the final grade at least at the level of grade E. Credits will not be awarded to a student who does not meet the requirements of the exercises and the final exam is evaluated by FX. Rating scale: A (100-91%), B (81-90%,) C (71-80%), D (61-70%), E (51-60%).

Learning outcomes:
Knowledge: The student will gain theoretical knowledge in the field of cartography and geoinformatics. The student is able to understand cartographic and geoinformatics terminology, appropriately applies cartographic methods for displaying spatial information using a geographic information system, acquires a theoretical basis for the application of cartographic representations and coordinate systems and defines the composition of maps in GIS. The student acquires knowledge of the mathematical principles of mapping the Earth on a map and understands cartographic distortions, classification of cartographic representations, simple and false representations. The student acquires knowledge from the Slovak state map work (civil, military) and also acquires knowledge in cartographic expression methods (cartogram, cartodiagram) and the basics of cartometry.
Skills: The student will learn to acquire and work with the basics of the QGIS program, its control, purpose and structure. The student acquires basic orientations and work in the QGIS program, and work in the basic tools, setting layer properties and is capable of exporting data in different formats. The student understands cartographic representations in QGIS. The student acquires skills in working with paper maps, scale and measurements on maps, can orient in the field using a map, compass and can determine the azimuth. The student has skills in creating a point layer, has skills in

the principles of expressing point phenomena, the creation of a line layer as well as in the principles of expressing line phenomena, isolines. Student also has skills in creating a surface layer, in the principles of expressing surface phenomena. Controls the creation of map output, page settings, map export and output parameters settings. The student has skills in the composition of the map - setting the compositional elements of the map and in creating the map output.
Competences: The student is able to work with a high degree of independence with geodata, to visualize them and create new layers, has all the prerequisites for independent creation of digital map output with available software support within GIS. The student is fully competent in the composition of the map - setting its compositional elements. When creating a map output, the student is able to independently or in cooperation in the relevant work team to communicate and collaborate with other experts, formulate opinions and recommendations in the creation and use of GIS in cartography.

Brief outline of the course:
Lectures: Cartography, basic concepts and position in the geosciences system. History and development of cartography. Geoinformatization cartography, digital cartography. Cartography and geoinformatics and their correlation. Geoinformatics, basic terms and definitions of GIS; online maps. Digital representation of objects and phenomena in GIS, vector and raster format. Principles of methodologies of cartographic modeling of geographical information in GIS. Design, use and evaluation of cartographic imaging properties in geoinformatics applications. Map - definition, map criteria, basic properties and elements of the map, categorization of maps, map scale. Principles of mapping the Earth, geoid, reference and display areas, global and local coordinate systems, the Earth and geographical lines and their importance for cartography and geoinformatics. Cartographic distortions, classification of cartographic representations, simple (azimuthal, conical, cylindrical) and false representations. Cartographic representations used in the Slovak state map work. Slovak state map work (civil, military), ZB-GIS, samples. Workflow for creating topographic maps, mapping, overview of 3D data collection in the field and used instrumentation. Map creation - basics of map language, cartographic characters, map markers - point, line and area phenomena. Cartographic expression methods - cartogram, cartodiagram, classification and types of cartograms and cartodiagrams. Map composition, map content, map colors, map description, geographical nomenclature, map design. Basics of cartometry - positioning, measuring and determining distances, measuring and determining the size of surfaces, measuring oriented directions and angles, determining altitudes, determining the slope, profile construction, hypsometric curve. Classification of field formations. Thematic maps of various scales, applications, interpretation of maps. Maps on the Internet, map servers, Google Maps / Earth, Openstreetmaps. Office of Geodesy, Cartography and Cathars of the Slovak Republic - Geoportal.
Exercises: Basic introduction to ArcGIS, its purpose and control, program structure, data formats (* .mxd, * .shp), basic terminology - project, data layer - point, line, area, "features" and "graphics". Basic orientation in ArcMap, introduction of basic tools of the "Standard" and "Tools" packages, window "Table of contents", arrangement and properties of layers, tool "Select features" and "Data - Export Data". Defining a coordinate system, cartographic representations in ArcGIS. Introducing the options of the "Layer Properties" dialog box, working with the attribute table, working with files. Basic table editing, preparation and connection of databases (excel / shapefile) using the "Join" function. Working with paper maps, scale and measurement on maps. Orientation in the field using a map, compass, azimuth determination. Georeferencing. Point layer formation; principles of expressing point phenomena in ArcGIS. Linear layer formation; principles of expressing linear phenomena in ArcGIS, isolines. Merge lines, Split lines. Formation; principles of expressing surface phenomena in ArcGIS, Polygon, Auto Complete Polygon, Cut Polygon Tools, Merge polygons. Cartogram, cartodiagram. Map output creation - Layout view, page settings, Map export and output

parameters settings. Map composition - setting the map composition elements and creating map output.

Recommended literature:

HOFIERKA, J., J. KAŇUK, M. GALLAY, 2014. Geoinformatika. Košice: Univerzita Pavla Jozefa Šafárika v Košiciach. ISBN 978-80-8152-178-2.
HOJOVEC, V. et al., 1987. Kartografie. Praha: Geodetický a kartografický podnik v Praze. ISBN 29-621-87.
LONGLEY, P.A., M. GOODCHILD, D. J. MAGUIRE, D. W. RHIND, 2010. Geographic Information Systems and Science. 3rd ed. Hoboken: Wiley & Sons, ISBN 978-0-470-72144-5.
PRAVDA, J., D. KUSENDOVÁ, 2004. Počítačová tvorba tematických máp. Bratislava: Univerzita Komenského v Bratislave. ISBN 80-223-2011-0.
ROBINSON, A. H. et al., 1995. Elements of Cartography. 6th ed. Hoboken: Wiley & Sons. ISBN 0-471-55579-7.
VOŽENÍLEK, V. et al., 2011. Metody tematické kartografie - Vizualizace prostorových jevů. Olomouc: Univerzita Palackého v Olomouci. ISBN 978-80-24427-90-4.

Course language:

Notes:

Course assessment

Total number of assessed students: 130

A	B	C	D	E	FX
13.08	16.15	29.23	24.62	16.15	0.77

Provides: doc. RNDr. Ján Kaňuk, PhD.

Date of last modification: 19.09.2023

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ KRT2/21	**Course name:** Cartography and Geoinformatics 2

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 2.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 62

A	B	C	D	E	FX
59.68	22.58	9.68	4.84	0.0	3.23

Provides: Mgr. Ján Šašak, PhD., doc. RNDr. Ján Kaňuk, PhD., Mgr. Daniela Buchalová

Date of last modification: 27.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: KPPaPZ/ECo-C4/14	**Course name:** Communication ECo-C4

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: combined, present

Number of ECTS credits: 4

Recommended semester/trimester of the course: 4., 6.

Course level: I., N

Prerequisities:

Conditions for course completion:
1. Active participation in lessons (absence is allowed max. 90 min.), 2. Realization of assignments according to the teacher's instructions.
Detailed information in the electronic board of the course in AIS2. The teaching of the subject will be realized by a combined method.

Learning outcomes:
The student understands theoretical information about the basics of verbal and nonverbal communication, rhetoric and methods of visualization and interprets them adequately. Student is able to use the acquired communication skills in practice, can apply effective principles of communication with others, is able to anticipate and thus prevent possible misunderstandings, which will contribute to the development of his social and professional skills.

Brief outline of the course:
Basics of communication (Transmitter-receiver principle, "What is said is not equal to what is heard", "Internal dialogue", The concept of communication)
Active listening (The most important criteria for active listening)
Misunderstandings (How Misunderstandings Arise, How to Avoid Misunderstandings)
Body language (What is body language, Active / passive body language, Dress psychology)
Signs of Physical Expression, Disadvantages of Fake Physical Expression, Difference Between Active and Passive Body Expression
Personality development (Voices in us, "child in me" - identification of one's own personality)
Rhetoric (History of rhetoric, What is rhetoric, Vigor, alertness - assumptions, techniques, prompt reactions)
Visualization - optical display (Classic media - whiteboard, magnetic whiteboard, bulletin board, flipchart, Based on computer technology - PC + Beamer)

Recommended literature:
VÝROST, Jozef - SLAMĚNÍK, Ivan. Sociální psychologie. 2., přepr. a rozš. vyd. Praha : GRADA, 2008. 408 s.
VÝROST, Jozef - SLAMĚNÍK, Ivan. Aplikovaná sociální psychologie I : Člověk a sociální instituce. 1. vyd. Praha : Portál, 1998. 384 s. ISBN 80-7178-269-6.

KOMÁRKOVÁ, Růžena - SLAMĚNÍK, Ivan - VÝROST, Jozef. Aplikovaná sociální psychologie III : Sociálněpsychologický výcvik. 1. vyd. Praha : Grada Publishing, 2001. 224 s.
VÝROST, Jozef - SLAMĚNÍK, Ivan. Aplikovaná sociální psychologie II. 1. vyd. Praha : Grada Publishing, 2001. 260 s.

Course language:
slovak

Notes:
After passing the certification exams from all 4 modules (Teamwork, Selfmarketing, Conflict Management, Communication) the student will receive an ECo-C card and an ECo-C certificate.

Course assessment
Total number of assessed students: 137

abs	n
86.13	13.87

Provides: Mgr. Lucia Barbierik, PhD.

Date of last modification: 24.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: CJP/ PFAJKKA/07	**Course name:** Communicative Competence in English

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course:

Course level: I.

Prerequisities:

Conditions for course completion:
Active participation in class and completed homework assignments. Students are allowed to miss two classes at the most.
2 credit tests (presumably in weeks 6/7 and 12/13) and an oral presentation in English.
Final evaluation consists of the scores obtained for the 2 tests (50%) and the presentation (50%).
Final grade will be calculated as follows: A 93-100 %, B 86-92%, C 79-85%, D 72-78%, E 65-71%, FX 64 % and less.

Learning outcomes:

Brief outline of the course:

Recommended literature:
www.bbclearningenglish.com
Štěpánek, Libor a kol. Academic English-Akademická angličtina. Praha: Grada Publishing, a.s., 2011.
McCarthy M., O'Dell F.: English Vocabulary in Use, Upper-Intermediate. CUP, 1994.
Fictumova J., Ceccarelli J., Long T.: Angličtina, konverzace pro pokročilé. Barrister and Principal, 2008.
Peters S., Gráf T.: Time to practise. Polyglot, 2007.
Jones L.: Communicative Grammar Practice. CUP, 1985.
Additional study materials.

Course language:
English language, B2-C1 level according to CEFR

Notes:

Course assessment
Total number of assessed students: 299

A	B	C	D	E	FX
45.48	20.74	17.39	7.69	6.02	2.68

Provides: Mgr. Ivana Kupková, PhD.

Date of last modification: 11.02.2024
Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: CJP/ PFAJGA/07	**Course name:** Communicative Grammar in English

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course:

Course level: I.

Prerequisities:

Conditions for course completion:
Active classroom participation (maximum 2 absences tolerated), homework assignments completed by given deadlines.
Powerpoint presentation of a topic related to the study field.
Final Test - end of semester, no retake
Final assessment = average of test and presentation.
Grading scale: A 93-100%, B 86-92%, C 79-85%, D 72-78%, E 65-71%, FX 64% and less

Learning outcomes:
The development of students´ language skills - reading, writing, listening, speaking, improvement of their communicative linguistic competence. Students acquire knowledge of selected phonological, lexical and syntactic aspects, development of pragmatic competence. Students can efectively use the language for a given purpose, with focus on Academic English and English on level B2.

Brief outline of the course:
Selected aspects of English grammar and pronunciation
Word formation
Contrast of tenses in English
The passive voice
Types of Conditionals
Phrasal verbs and English idioms
Words order and collocations, prepositional phrases

Recommended literature:
Vince M.: Macmillan Grammar in Context, Macmillan, 2008
McCarthy, O'Dell: English Vocabulary in Use, CUP, 1994
www.linguahouse.com
esllibrary.com
bbclearningenglish.com
ted.com/talks

Course language:

English language, level B2 according to CEFR.

Notes:

Course assessment
Total number of assessed students: 446

A	B	C	D	E	FX
41.48	19.51	15.7	7.85	5.61	9.87

Provides: Mgr. Lenka Klimčáková

Date of last modification: 20.09.2023

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: KGER/ NJKG/07	**Course name:** Communicative Grammar in German Language

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course:

Course level: I.

Prerequisities:

Conditions for course completion:
Active participation in class and completed homework assignments. Students are allowed to miss 2 classes at the most (2x90 min.). 2 control tests during the semester. Final grade will be calculated as follows: A 93-100 %, B 86-92%, C 79-85%, D 72-78%, E 65-71%, FX 64 % and less.

Learning outcomes:
The aim of the course is to identify and eliminate the most frequent grammatical errors in oral and written communication, learning language skills of listening comprehension, speaking, reading and writing, increasing students 'language competence (acquisition of selected phonological, lexical and syntactic knowledge), development of students' pragmatic competence (acquisition of the ability to express selected language functions), development of presentation skills, etc.

Brief outline of the course:
The course is aimed at practicing and consolidating knowledge of morphology and syntax of German in order to show the context in grammar as a whole. The course is intended for students who often make grammatical errors in oral as well as written communication. Through the analysis of texts, audio recordings, tests, grammar exercises, monologic and dialogical expressions of students focused on specific grammatical structures, problematic cases are solved individually and in groups. Emphasis is placed on the balanced development of grammatical thinking in the communication process, which ultimately contributes to the development of all four language skills.

Recommended literature:
Dreyer, H. – Schmitt, R.: Lehr- und Übungsbuch der deutschen Grammatik. Hueber Verlag GmbH & Co. Ismaning, 2009.
Krüger, M.: Motive Kursbuch, Lektion 1 – 30. Huebert Verlag GmbH & Co. Ismaning, 2020.
Brill, L.M. – Techmer, M.: Deutsch. Großes Übungsbuch. Wortschatz. Huebert Verlag GmbH & Co. Ismaning, 2011.
Földeak, Hans: Sag's besser!. Grammatik. Arbeitsbuch für Fortgeschrittene. Huebert Verlag GmbH & Co. Ismaning, 2001.
Geiger, S. – Dinsel, S.: Deutsch Übungsbuch Grammatik A2-B2. Huebert Verlag GmbH & Co. Ismaning, 2018.
Dittelová, E. – Zavatčanová, M.: Einführung in das Studium der deutschen Fachsprache. Košice: ES UPJŠ, 2000.

Course language:
German, Slovak language

Notes:

Course assessment
Total number of assessed students: 57

A	B	C	D	E	FX
61.4	10.53	8.77	3.51	8.77	7.02

Provides: Mgr. Ulrika Strömplová, PhD.

Date of last modification: 12.07.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚGE/ KRS/08	**Course name:** Complex geographic characteristics of selected world regions

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities:

Conditions for course completion:
At the beginning of the semester, students choose a region from provided list. During the semester, they elaborate presentation reflecting formal and content requirements explained by teacher at the beginning of the semester. This part constitute 50% of total total evaluation. Another 10% represents the activity at the seminars. Remaining 40 % of evaluation is represented by written verification of acquired knowledge. Evaluation of all - the presentation, activity and written verification must reach at least 50% to complete the course. To get an A grade, it is necessary to obtain at least 90% of weighted average. 80% to grade B, 70% to C, 60% to D, and at least 50% to grade E.

Learning outcomes:
Understanding of causal relations between individual geographic phenomena in spatial and temporal context of individual regions; extended knowledge about selected regions.

Brief outline of the course:
Geographic location, geologic history and structure, orography and shapes of coast, climate, hydrology, soils and biogeography, protection of nature, current landscape and its transformation, historical and political development, population and sites, economy and integration groupings in selected regions of the world.

Recommended literature:
DE BLIJ, H. J. et al: 2013: The World Today - Concepts and Regions in Geography, 6th edition. New York (Wiley), 528 p.
HOBBS, J. J. 2010: Fundaments of World Regional Geography, 2nd edition. Belmont (Brooks/ Cole), 438 p.
WEIGHTMAN, B. 2010: Dragons and Tigers – A Geography of South, East and Southeast Asia, 3rd edition. Hoboken (Wiley), 523 p.
BAAR, V. 2002: Národy na prahu 21. století. Emancipace nebo nacionalismus? Ostrava (Ostravská univerzita), 416 s.
BRADSHAW, W. et al. 2012: Contemporary World Regional Geography, 4th edition. New York (McGrawHill), 620 p.

Course language:
Slovak and English

Notes:

Course assessment
Total number of assessed students: 507

A	B	C	D	E	FX
27.22	35.5	22.68	8.88	5.13	0.59

Provides: doc. Mgr. Ladislav Novotný, PhD.

Date of last modification: 01.04.2020

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚFV/ PPFM/15	**Course name:** Computer-Based Physical Measurement

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities:

Conditions for course completion:
Terms and conditions of assessment during the semester
-participation in laboratory exercises in accordance with study regulations and teacher´s instructions
-active participation at laboratory exercises
-submitting all the laboratory reports in accordance with teacher´s instruction
Final assessment:
-based on assessment during the semester
Conditions for successful completion of the course:
-participation in lessons in accordance with the study regulations and teacher's instructions
-achieving the level higher than 50 % in assessment during the semester and in final assessment

Learning outcomes:
By the end of the course student is able to measure physical quantities, process and analyze data with the help of computer. He is able to interpret results, draw conclusions and elaborate formal report about the gained resuls. He is able to explain the physical principles of conducted laboratory exercises to demostrate his conceptual understanding.

Brief outline of the course:
The content of the course involves labworks in physics aimed at selected problems of General Physics I,II,III.
1. Motion in the Earth´s homogenous gravitational field
2. Bungee jumper
3. Ideal gas behaviour
4.Molar mass of gas
5.Thermal expansion of water
6.Electrical resistance and temperature
7.Ohm´s law for closed electric circuit
8.Bulbs´ behaviour in dc electric circuit
9.Planck constant
10. Transient phenomena in RC ana RL circuit
11.Alternating current electric circuit
12. Forced oscillations and resonance

Recommended literature:
CUMMINGS, Karen, LAWS, Priscilla, REDISH, Edward, COONEY, Patrick: Understanding Physics, John Wiley & Sons, 2004

Course language:
English

Notes:

Course assessment
Total number of assessed students: 44

A	B	C	D	E	FX
72.73	9.09	18.18	0.0	0.0	0.0

Provides: doc. RNDr. Zuzana Ješková, PhD.

Date of last modification: 15.09.2021

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: KPPaPZ/ECo-C3/14	**Course name:** Conflict Management ECo-C3

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: combined, present

Number of ECTS credits: 4

Recommended semester/trimester of the course: 3., 5.

Course level: I., N

Prerequisities:

Conditions for course completion:
The conditions for completing the course are as follows:
1. Active participation in exercises
2. Submission of reflection within the set deadline on the selected topic.
Attendance at seminars is mandatory - the student may have two absences during the semester.
The evaluation of the course and its subsequent completion will be based on clearly and objectively set requirements, which will be set in advance and will not change. The aim of the assessment is to ensure an objective and fair mapping of the student's knowledge while adhering to all ethical and moral standards. There is no tolerance for students' fraudulent behavior, whether in the teaching process or in the assessment process.

Learning outcomes:
Successful mastery and demonstration of knowledge in the field of conflict management and control of basic rules.
The method of teaching the subject will be oriented to the student. Lecturers will be interested in students' needs, expectations and opinions so as to encourage them to think critically by expressing respect and feedback on their opinions and needs.
The content of the curriculum will be based on primary and high-quality sources that will reflect the topicality of the topics so as to ensure the connection of the curriculum with other subjects and also the connection of the curriculum with practice. Students will be expected to take an active approach in lectures and seminars with an emphasis on their independence and responsibility.
The student is able to demonstrate an understanding of an individual's behavior in various conflict situations. The student is able to describe, explain and evaluate their own internal resources, competencies as well as limitations and weaknesses that are directly related to conflict management.
The student is able to apply theoretical knowledge and principles of conflict resolution to everyday situations.

Brief outline of the course:
Disputes and their causes (Types of disputes, External influences, Be able to reveal the causes of disputes), Dispute origin (Levels of disputes, Escalation warning signals, Escalation removal strategies, Know how to explain escalation stages; How do I approach a dispute?) Dispute Resolution, Dispute Resolution Strategies, Dispute Discussion, Dispute Settlement Initiatives,

Knowing how to handle a dispute and how to effectively resolve it), Dispute Resolution (Options, Public Struggle, Covert Struggle, Indefinite Postponement, Agreement, “Fair play ”, compromise, cooperation, capitulation, escape or separation), Prevention (Structures that produce disputes, The meaning and purpose of disputes, Stages and steps of dispute resolution, What does a positive corporate culture mean? Dispute is an incentive for change)

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 145

abs	n
94.48	5.52

Provides: Mgr. Ondrej Kalina, PhD.

Date of last modification: 24.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ KULG/21	**Course name:** Cultural Geography

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 1 **Per study period:** 28 / 14
Course method: present

Number of ECTS credits: 4

Recommended semester/trimester of the course: 5.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 30

A	B	C	D	E	FX
63.33	13.33	20.0	3.33	0.0	0.0

Provides: Mgr. Marián Kulla, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

Date of last modification: 27.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚGE/ KUL/12	**Course name:** Cultural geography
Course type, scope and the method: **Course type:** Lecture / Practice **Recommended course-load (hours):** **Per week:** 2 / 1 **Per study period:** 28 / 14 **Course method:** present	
Number of ECTS credits: 4	
Recommended semester/trimester of the course: 3.	
Course level: I.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature: ANDĚL. J. 1998: Kultúrní geografie. UJEP Ústí nad Labem, 146 s. ANDERSON, K. et al. 2003: Handbook of cultural geography. 601 p. BARŠA, P. 1999: Politická teorie multikulturalismu, CDK. BERGMAN, E. F. 1995: Human Geography. Cultures, Connections and Landscapes. Prentice Hall, Engewood Cliffs. BONNEMAISON, J. 2005: Culture and Space. I. B. Tauris. DIAMOND, J. 1997: Guns, germs and steel: the fates of human societies. Norton & co., New York. DIAMOND, J. 2019: Otrasy – Ako národy riešia svoje krízy. Premedia, 408 s. DOSTÁL, P. 1999: Ethnicity, mobilization and territory: an overview of recent experien-ces. Acta UC, Geographica, XXXIV, 1, s. 45-58. HEŘMANOVÁ, E., CHROMÝ, P. a kol. 2009: Kulturní regiony a geografie kultury. 1. vyd. Praha: ASPI, a. s., 292-301. KRUPA, V., GENZOR, J. 1996: Jazyky sveta v priestore a čase. Veda, SAV Bratislava, 356 s. MACDONALD, F., MASON, A. 2009: Kultúra ľudstva. Ottova encyklopédia. Ottovo nakladatelství, s. r. o. Praha, 256 s. MURRAY, W, E. 2006: Geographies of Globalization. Routledge Contemporary Human Geography. Routledge Taylor & Francis Group London and New York, 32 s. ROGERS, A. 1994: Lidé a kultúry. Nakladatelský dům Praha, 256 s.	
Course language: Slovak	
Notes:	

Course assessment
Total number of assessed students: 577

A	B	C	D	E	FX
54.07	32.58	10.05	2.95	0.35	0.0

Provides: Mgr. Marián Kulla, PhD., Mgr. Štefan Kolečanský, prof. Mgr. Jaroslav Hofierka, PhD.

Date of last modification: 09.10.2020

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚGE/ DTG/21	**Course name:** Digital technologies in geography

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 1.

Course level: I.

Prerequisities:

Conditions for course completion:
Assessment is based on a combination of midterm (30%) and final assessment (70%) at the end of the semester. The overall evaluation is calculated as a weighted average of the final and midterm evaluation. The evaluation scheme applies to the overall evaluation: A (100-90 points), B (80-89 points), C (70-79 points), D (60-69 points), E (50-59 points), FX (0 -49 points).

Learning outcomes:
Knowledge: The student will gain knowledge in the field of information and communication technologies specific to the study of geography and geoinformatics. The student will learn to search for and sort different types of information. The acquired knowledge will be used in working with professional literature published in scientific databases and selected geospatial databases.
Skills: The student will learn to work with selected WebGIS portals publishing geodata and use databases of scientific journals and citation manager. They will learn the basic methods of modifying different types of data in order to prepare them for integration into GIS. They will get acquainted with the license conditions of the used software within the department. Gain advanced knowledge of using Office.
Competences: The student will acquire basic competencies in the field of ICT needed for the study of geography. The result is the student's ability to manage the study fluently and smoothly in terms of ICT literacy. The student is able to independently use ICT tools.

Brief outline of the course:
Important and useful information regarding the study, standards and services provided by the university for students (WiFi, information retrieval, websites, citation manager - CitacePro) operating systems, data types, file types, software used. Work with statistical data, DataCube, SO SR, Soil portal, ŠGÚDŠ, Geoenviroportal, Geoportal and similar web applications. Explanation of the essence of vector and raster graphics, graphic formats and their use. Work with spreadsheet and databases (formulas, contingency tables and graphs), advanced work and formatting in MS Word. Using MS PowerPoint to create presentations and posters.

Recommended literature:
KAŇUK, J., 2015. Priestorové analýzy a modelovanie. Vysokoškolské učebné texty. Prírodovedecká fakulta Univerzity Pavla Jozefa Šafárika v Košiciach. 114 s.

ŽITNIAK, J., 2017. Microsoft Office 2016. Podrobná uživatelská příručka. Computer Press. 464 s.
KLATKOVSKÝ, K., 2016. Word 2016 nejen pro školy. Computer Media. 124 s.
KLATKOVSKÝ, K., 2016. Powerpoint 2016 nejen pro školy. Computer Media. 80 s.
LAURENČÍK, M., 2019. Excel 2016 a 2019 - pokročilé nástroje, Grada, 256 s.

Course language:

Notes:

Course assessment
Total number of assessed students: 132

A	B	C	D	E	FX
52.27	25.76	13.64	4.55	1.52	2.27

Provides: doc. RNDr. Ján Kaňuk, PhD., Mgr. Daniela Buchalová

Date of last modification: 27.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: KPPaPZ/PUDB/15	**Course name:** Drug Addiction Prevention in University Students

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 3., 5.

Course level: I.

Prerequisities:

Conditions for course completion:
1st of the evaluation: active participation in the training part (30p). 2nd part of the evaluation: active participation in workshops (20p). In total, students can get 50p and the final evaluation is as follows: 50 - 45: A; 44 - 40: B; 39-35: C; 34-30: D; 29 - 25: E 24 and less: FX. Detailed information in the electronic bulletin board of the course in AIS2. The teaching of the subject will be realized by a combined method.

Learning outcomes:
The student understands the principals of research data based prevention of risk behavior, can describe and explain the determinants of risk behavior as well as protective and risk factors for substance use. Student understands and adequately interprets the theory explaining the background of substance and non-substance addictions.
The student is also able to state and classify the types and forms of prevention, strategies and approaches in prevention, can distinguish effective strategies from ineffective ones.
The student is able to adequately interpret their experience with preventive activities in the group and assume their positive effect as well as limitations and threats.

Brief outline of the course:

Recommended literature:
Orosová, O. a kol. (2012). Základy prevencie užívania drog a problematického používania internetu v školskej praxi. Košice: UPJŠ.
Sloboda, Z., & Bukoski, J. (Eds.). (2006). Handbook of Drug Abuse Prevention: Theory, Science, and Practice. New York: Springer.
National and international scientific journals.

Course language:
slovak

Notes:

Course assessment
Total number of assessed students: 616

A	B	C	D	E	FX
78.41	15.91	3.73	1.46	0.16	0.32

Provides: prof. PhDr. Oľga Orosová, CSc., Mgr. Lucia Barbierik, PhD., Mgr. Viera Čurová, PhD., Mgr. Janka Liptáková

Date of last modification: 24.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ EKG/21	**Course name:** Economic geography

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 3 / 1 **Per study period:** 42 / 14
Course method: present

Number of ECTS credits: 6

Recommended semester/trimester of the course: 3.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 70

A	B	C	D	E	FX
10.0	12.86	22.86	27.14	24.29	2.86

Provides: Mgr. Marián Kulla, PhD., doc. Mgr. Ladislav Novotný, PhD.

Date of last modification: 27.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/ EDS/15	**Course name:** Educational software
Course type, scope and the method: **Course type:** Practice **Recommended course-load (hours):** **Per week:** 2 **Per study period:** 28 **Course method:** present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 5.	
Course level: I.	
Prerequisities:	
Conditions for course completion: Conditions for ongoing evaluation: 1. Creation of a worksheet for student. 2. Creation of a multimedia educational game. 3. Creation of an interactive educational quiz. 4. Creation of an instructional educational video. Conditions for the final evaluation: Creation and presentation of final project on the use of educational software in education. Conditions for successful completion of the course: Obtaining at least 50% of points for ongoing and final assignments.	
Learning outcomes: Students will receive, resp. deepen their basic skills in working with: a) presentation software, programs for creating and editing images, animations, diagrams, sounds, conceptual maps, b) programs for the creation of didactic tests, questionnaires, surveys, c) simulation and modeling software, d) selected subject-oriented educational programs, Students present and discuss their idea of the use of educational software and educational Internet resources and tools in the selected school subject.	
Brief outline of the course: 1. Overview of educational software and educational web resources and tools. 2. Creating and processing of materials for teaching aid . 3. Creation and use of electronic and interactive educational documents (worksheets, presentations, textbooks and workbooks). 4. Creation of instructional educational video. 5. Electronic voting and questionnaire creation. 6. Creation of didactic tests and educational games. Gamification elements, tools and environments. 7. Collaborative web applications. 8. Online communication tools. 9. Complex online learning environments.	

10. Online educational platforms, repositories, projects and competitions.
11. Simulations and modelling. Subject-focused educational programmes.
12. Use digital tools to plan, monitor, differentiate and personalise learning. Accessibility of digital tools and learning resources.

Recommended literature:

SOLOMON, Gwen and Lynne SCHRUM, 2014. Web 2.0 How-to for Educators. Second. International Society for Technology in Education, 314 p. ISBN 978-1564843517.
STOBAUGH, Rebecca, 2019. Fifty Strategies to Boost Cognitive Engagement: Creating a Thinking Culture in the Classroom (50 Teaching Strategies to Support Cognitive Development). Solution Tree Press, 176 p. ISBN 978-1947604773.
LEMOV, Doug, 2015. Teach Like a Champion 2. 0: 62 Techniques That Put Students on the Path to College [online]. 2nd edition. John Wiley & Sons, Incorporated, 509 p. [cited 2021-7-10]. ISBN 9781118898628. Available from: https://ebookcentral.proquest.com/lib/upjs-ebooks/detail.action?docID=1895720
European Schoolnet: Transforming education in Europe [online]. [cited 2021-7-10]. Available from: http://www.eun.org/home
Science On Stage Europe [online]. Science on Stage Europe e.V. [cited 2021-7-10]. Available from: https://www.science-on-stage.eu/

Course language:
Slovak and partly English due to selected programs and information sources

Notes:
By default, teaching is carried out face to face. If this is not possible (eg due to a pandemic), teaching is provided at a distance through video conferencing programs and LMS.

Course assessment
Total number of assessed students: 91

A	B	C	D	E	FX
73.63	13.19	7.69	0.0	5.49	0.0

Provides: doc. RNDr. Ľubomír Šnajder, PhD., Mgr. Katarína Brinziková

Date of last modification: 16.03.2024

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ ELP1/01	**Course name:** Electonics Practical

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 3 **Per study period:** 42
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities: ÚFV/ELE1/07 or ÚFV/ELEM1/15

Conditions for course completion:
For successful exam of the subject, the student must demonstrate sufficient understanding of selected problems from electronics. Knowledge of student will be tested by talk during practices. It is necessary to properly process the theoretical preparation of the topic for the preparation of the experiment. Subsequently analyze and interpret experimental results. Condition for obtaining credits is to perform all tasks and passing protocols from measurements. Credit assessment of the subject takes into account the following student burden: performing experimental measurements (1 credit), self-study and theoretical preparation (1 credits) and drafting protocols (1 credits). The minimum boundary for completing the subject is to obtain at least 50% of the total point evaluation, using the following evaluation scale: A (90-100%), B (80-89%), C (70-79%), D (60- 69%), E (50-59%), F (0-49%).

Learning outcomes:
Practical work of students in the design, construction and properties of the measurements of electronic circuits and interpretation of the results obtained to verify and consolidate the theoretical knowledge acquired in lectures on the subject Electronics.

Brief outline of the course:
1. Combinatorial logical circuits.
2.Logical memory circuits.
3. Logical sequence circuits.
4. Rectifiers, filters, stabilizers.
5. Generators of harmonic signals.
6. Operational amplifiers and operational network interfaces.
7. Digital-to-analog converters.
8. Analog-to-digital converters.
9. Reserve.

Recommended literature:
1. Delaney C.F.G.: Electronics for the Physicist with Aplications. John Willey & Sons, New York, 1980.
2. Zbar P.B., Malvino A.P., Miller M.A.: Basic Electronics: a Text-Lab Manual. Macmillan/ McGraw – Hill, New York, 1994.

Course language:
1. Slovak
2. English

Notes:

Course assessment
Total number of assessed students: 42

A	B	C	D	E	FX
92.86	0.0	2.38	4.76	0.0	0.0

Provides: RNDr. Vladimír Tkáč, PhD.

Date of last modification: 20.09.2021

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ ELEM1/15	**Course name:** Electronics

Course type, scope and the method:
Course type: Lecture
Recommended course-load (hours):
Per week: 3 **Per study period:** 42
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 5.

Course level: I.

Prerequisities: ÚFV/VF1b/03 or ÚFV/VFM1b/15

Conditions for course completion:
Exam

Learning outcomes:
To explain physical principles of classical electronic components and systems and technologies of their realization. To perform analysis of properties and functions of basic electronic elements, electronic circuits and information transmission and processing systems. To introduce student into basic elements and devices in area of nanoelectonics and to explain methods of their fabrication and principles of their functioning.

Brief outline of the course:
1. Introduction to electronics: Basic components of electronic circuits, basic electrical laws
2. Passive components, basic properties of semiconductors
3. Semiconductors without PN junction, components with PN junction
4. Semiconductors with PN junction
5. Transistor phenomenon, transistor
6. Electronic circuit with transistor
7. Operational amplifiers
8. Sources and generators
9. Two-value logic algebra, combinational logic circuits
10. Digital memory circuits
11. Sequential logic circuits
12. Digital-analog converters, analog-digital converters

Recommended literature:
1. Brown P.B., Frantz G.N., Moraff H.: Electronics for the Modern Scientist. Elsevier, 1982.
2. Delaney C.F.G.: Electronics for the Physicist with Aplications. John Willey & Sons, 1980.
3. Wolt E. L.: Quantum Nanoelectronics, An introduction to electronic nanotechnology and quantum computing, Wiley-VCh, 2009

Course language:
Slovak

Notes:

Course assessment Total number of assessed students: 169					
A	B	C	D	E	FX
23.67	24.85	28.4	11.24	5.33	6.51
Provides: RNDr. Vladimír Tkáč, PhD.					
Date of last modification: 02.09.2021					
Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: CJP/ PFAJ4/07	**Course name:** English Language of Natural Science

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities:

Conditions for course completion:
Active participation in class and completed homework assignments. Students are allowed to miss 2 classes at the most
Continuous assessment:
1 credit test taken presumably in weeks 6/7
1 project (quiz on the topic of the student´s field of study) 25% of the continuous assessment
5 LMS quizzes (25% of the continuous assessment)
In order to be admitted to the final exam, a student has to score at least 65 % from the continuous assessment
The exam test results represent 50% of the final grade for the course, continuous assessment results represent the other 50% of the final grade.
The final grade for the course will be calculated as follows:
A 93-100, B 86-92, C 79-85, D 72-78, E 65-71, FX 64 and less.

Learning outcomes:
Enhancement of students' language skills (speaking, writing, reading and listening comprehension) in English for specific and academic purposes and development of students' linguistic competence. Students obtain knowledge of selected phonological, lexical and syntactic aspects of professional English, improve their pragmatic competence - students can effectively use the language for a given purpose, and acquire presentation skills at B2 level (CEFR) with focus on terminology of natural sciences.

Brief outline of the course:
1. Introduction to studying language
2. Selected aspects of scientific language
3. Talking about academic study
4. Discussing science
5. Defining scientific terminology and concepts
6. Expressing cause and effect
7. Describing structures
8. Explaining processes
9. Comparing objects, structures and concepts

10. Talking about problem and solution
11. Referencing authors
12. Giving examples
13. Visual aids and numbers
14. Referencing time and place
Presentation topics related to students´study fields.

Recommended literature:

lms.upjs.sk - e-kurz Odborný anglický jazyk pre prírodné vedy.
Redman, S.: English Vocabulary in Use, Pre-intermetdiate, Intermediate. Cambridge University Press, 2003.
Armer, T.: Cambridge English for Scientists. CUP, 2011.
Wharton J.: Academic Encounters. The Natural World. CUP, 2009.
P. Fitzgerald : English for ICT studies. Garnet Publishing, 2011.
https://worldservice/learningenglish, https://spectator.sme.sk
www.isllibrary.com
linguahouse.com

Course language:
English, level B2 (CEFR)

Notes:

Course assessment
Total number of assessed students: 3075

A	B	C	D	E	FX
38.44	26.08	16.46	9.53	7.45	2.05

Provides: Mgr. Viktória Mária Slovenská, Mgr. Lenka Klimčáková

Date of last modification: 06.02.2024

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ ENG1/21	**Course name:** Environmental Geology

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 1 / 1 **Per study period:** 14 / 14
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 3.

Course level: I., II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 8

A	B	C	D	E	FX
0.0	50.0	37.5	12.5	0.0	0.0

Provides: doc. Ing. Katarína Bónová, PhD.

Date of last modification: 27.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚGE/ MHG1/07	**Course name:** Fieldwork in Human Geography
Course type, scope and the method: **Course type:** Practice **Recommended course-load (hours):** **Per week: Per study period:** 4d **Course method:** present	
Number of ECTS credits: 3	
Recommended semester/trimester of the course: 6.	
Course level: I.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Notes:	

Course assessment
Total number of assessed students: 572

A	B	C	D	E	FX
93.71	2.27	1.57	1.4	0.87	0.17

Provides: RNDr. Stela Csachová, PhD., Mgr. Marián Kulla, PhD., RNDr. Janetta Nestorová-Dická, PhD., univerzitná docentka, Mgr. Loránt Pregi, PhD.
Date of last modification: 31.03.2020
Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ HYP/15	**Course name:** Fieldwork in Hydrology

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 80

A	B	C	D	E	FX
93.75	5.0	0.0	1.25	0.0	0.0

Provides: RNDr. Dušan Barabas, CSc.

Date of last modification: 27.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ GEP2/18	**Course name:** Fundamentals of Geology for Geographers

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 2 **Per study period:** 28 / 28
Course method: present

Number of ECTS credits: 6

Recommended semester/trimester of the course: 1.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:
Courses have following objectives: firstly, to introduce the current theories of processes which occur in the Earth (global tectonics, species of magmatism), secondly, to describe the rock-forming minerals, taxology of intrusive rocks, taxology of sedimentary rocks and rocks which had overcame metamorphosis, basics of the regional geology of Slovakia, basics of the historical geology and paleontology.

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 1205

A	B	C	D	E	FX
7.88	17.76	32.53	26.14	10.12	5.56

Provides: doc. Ing. Katarína Bónová, PhD., Ing. Ján Bóna

Date of last modification: 30.09.2021

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ ZMF2/22	**Course name:** Fundamentals of Mathematics for Physicists 2

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 3.

Course level: I.

Prerequisities:

Conditions for course completion:
Summary evaluation based on ongoing assessment:
1. Two written tests of knowledge and skills during semester (at least 50% needed)
2. Two group assignments - solving of two sets of problems (at least 50% needed)
3. Active participation during face-to-face learning (3 absences allowed) and during online learning (no absence, all individual ongoing assignments)

Learning outcomes:
The student should deepen and extend the basic ideas, knowledge and skills of mathematical concepts and methods in theoretical physics necessary for the study of theoretical disciplines (Theoretical Mechanics, Electromagnetic Field Theory, Quantum Mechanics and Statistical Physics) in the interdisciplinary study of Physics with another subject.

Brief outline of the course:
01.- 02. Linear algebra and geometry: basic concepts and methods - update (matrices, determinants, systems of equations); curvilinear coordinate systems, transformations of coordinates
03.- 06. Vector and tensor analysis: basic concepts and theorems of vector analysis - update (flow, circulation, divergence, rotation, Gaussian and Stokes' theorem); basic identities of vector analysis, their proofs; tensors - algebraic operations, contractions, invariants; partial differential equations, wave equation
07.- 09. Special functions and distributions: functional series, Taylor and Fourier series; Dirac distribution and its representations; Legendre polynomials and other polynomial systems
10.- 13. Operators: basic concepts and classification (concept, linearity, eigenvalue and eigenfunction, commutativity); eigenfunctions and eigenvalues of linear Hermitian operators; matrix representation of operators, Dirac symbolism

Recommended literature:
1. Kvasnica, J., Mathematical apparatus of Physics [in Czech], Academia, Praha, 1997
2. Shankar, R. Basic Training in Mathematics: A Fitness Program for Science Students, Springer, New York, 1995
3. Martin, B. R., & Shaw, G. Mathematics for Physicists. John Wiley & Sons, 2015
4. Zimmermann et al., Computational Mathematics with SageMath, Creative Commons, 2018

Course language:
Slovak

Notes:
The course builds on the course Fundamentals of Mathematics for Physicists I. The course is mainly aimed at gaining a clear idea of the concepts and their properties and to develop the ability to solve and apply knowledge in tasks related to the physical context using digital technologies (CAS software SageMath) as a discovery and verifying tool.

Course assessment
Total number of assessed students: 15

A	B	C	D	E	FX
40.0	26.67	26.67	0.0	6.67	0.0

Provides: doc. RNDr. Jozef Hanč, PhD.

Date of last modification: 11.05.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚFV/ ZMF/22	**Course name:** Fundamentals of Mathematics for Physicists I

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 1 / 2 **Per study period:** 14 / 28
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 1.

Course level: I.

Prerequisities:

Conditions for course completion:
Summary evaluation based on ongoing assessment:
1. Two written tests of knowledge and skills during semester (at least 50% needed)
2. Two group assignments - solving of two sets of problems (at least 50% needed)
3. Active participation during face-to-face learning (3 absences allowed) and during online learning (no absence, all individual ongoing assignments)

Learning outcomes:
Student should obtain and know to apply basic mathematical concepts and skills
of the vector, differential and integral calculus (single-variable and multi-variable) and ordinary differential equations
required for introductory physics courses: Mechanics &
Molecular Physics and Electricity & Magnetism. At the same time, student should adapt to blended learning in higher education (face-to-face and online) with the help of today's digital technologies.

Brief outline of the course:
01.-02. Introduction to the subject, the concept of a function of single variable and several variables, elementary functions, modeling real processes using functions
03.-04. Concept of ordinary and partial derivative, properties, rules and formulas, interpretation (geometric and physical) and applications of derivatives
05.-06. Concept of vector, directional derivative and gradient of a function of several variables
Vector operations, rules for the directional derivative and the gradient of a function
07.-08. Test of knowledge and skills 1
Concept of integral, properties, rules, interpretation (geometric and physical)
and applications of integrals
09.-10. Concept of differential equation (first and second order), DE solution procedures (separation of variables, variation of constants), application of DEs
11.-12. Test of knowledge and skills 2
Concept and forms of a complex number, arithmetic operations with complex numbers
Concept of a vector function (field), circulation and flux of a vector field
13. Divergence, curle of a vector field, fundamental theorems of vector analysis

Recommended literature:

1. Kvasnica, J., Mathematical apparatus for physics [in Czech], Academia, Praha, 1997
2. Stewart, J., Calculus - Early Transcendentals, Brooks Cole, 8th ed., 2016
3. Hugh-Hallet, D. a kol., Calculus - Single Variable, Multivariable, 7th ed., Wiley, 2017
4. Zeľďovič, J.B., Jaglom, I.M., Higher Math for Beginners (Mostly Physicists and Engineers) [also in Slovak], Mir, Moskva, 1987
5. Zimmermann a kol., Computational Mathematics with SageMath, Creative Commons, 2018
6. Bard, G. V., Sage for Undergraduates. AMS, Providence, 2015
7. Hall, J., & Lingefjärd, T., Mathematical Modeling: Applications with GeoGebra. Wiley, 2016

Course language:
slovak

Notes:
The course does not expect any knowledge of differential and integral calculus or complex numbers from a secondary school. The course is mainly aimed at gaining (1) clear idea and conceptual understanding of the concepts and their properties and (2) developing skills to model, solve and apply knowledge in problems related to the physics context and modelling using digital technologies as a discovery and verfying tool.

Course assessment
Total number of assessed students: 217

A	B	C	D	E	FX
39.63	21.66	18.43	10.14	9.22	0.92

Provides: doc. RNDr. Jozef Hanč, PhD.

Date of last modification: 26.01.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚFV/ VBFM1/15	**Course name:** General Biophysics I

Course type, scope and the method:
Course type: Lecture
Recommended course-load (hours):
Per week: 3 **Per study period:** 42
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 3.

Course level: I.

Prerequisities:

Conditions for course completion:
Exam.
During an exam, a student should be able to demonstrate his/her knowledge from the parts of Biophysics which are described in the brief outline of the course.

Learning outcomes:
To provide information about the object, significance and role of biophysics in science. The main emphasis will be given on the understanding of the principles determining the structure and function of the most important biological structures (nucleis acids, proteins, biomembranes) as well as on the thermodynamics and kinetics of selected chemical and biophysical processes.

Brief outline of the course:
Week 1
Areas of interest of biophysics and its importance and position in science. Structure of biophysics. Characterization of molecular, cellular, medical, environmental and radiation biophysics. Scientific disciplines related to biophysics. The future of biophysics.
Week 2
Intra-molecular and intermolecular interactions. Covalent bonds. Coulomb (ionic) interactions. Van der Waals forces. Lennard - Jones potential. Hydrogen bonds. The role of hydrogen bonds in biological macromolecules. Hydrophobic interactions. Hydrating forces. Empirical analytical form for the potential energy of intramolecular interactions. Stabilizing non-covalent interactions in biopolymers (proteins, nucleic acids, biological membranes).
Week 3
Thermodynamics in biological systems. Definition of thermodynamics. Thermodynamic system. 1st law of thermodynamics (law of conservation of energy). Internal energy and enthalpy. Heat capacity. Examples of the use of the study of enthalpy change in biological processes. 2nd law of thermodynamics (law of process spontaneity). Entropy. 3rd law of thermodynamics. Gibbs energy. Dependence of Gibbs energy on temperature - Gibbs - Helmoltz equation. Dependence of Gibbs energy on pressure. Chemical potential. Chemical potential in liquids. Equilibrium constant of chemical reaction. Influence of temperature on the equilibrium constant - van‘t Hoff's equation. Calorimetric and van’t Hoff enthalpy of protein and nucleic acid denaturation.
Week 4

Molecular associations. Examples of molecular associations in biological systems. Dissociation and association equilibrium constants. Determination of equilibrium constants of ligand - macromolecule interactions. Langmuir isotherm. Graphical analysis of equilibrium binding data. Multiple independent binding sites. Ligand-macromolecule binding cooperativity. Cooperativity - simultaneous ligand binding, Hill's equation. Cooperativity - gradual binding of ligands. Allosteric interactions.
Week 5
Kinetics of biological and physico-chemical processes. Importance of the study of the kinetics of chemical processes. Rates of chemical reactions. Rate constants and rate law of chemical reactions. Order of chemical reaction. First order chemical reactions. Second order chemical reactions. Consecutive reactions - the rate determining step of the reactions. Reverse chemical reactions. Relaxation processes. Temperature dependence of rate constants - Arrhenius equation. Experimental techniques for determining the rate of chemical reactions.
Week 6
Physical kinetics. Macroscopic diffusion. 1st Fick's law. 2nd Fick's law - diffusion equation. Solutions of the diffusion equation for specific cases. Influence of external forces on diffusion processes. Einstein - Smoluchowski equation. Stokes' law. Kinetics of photophysical and photochemical processes. Jablonski diagram. Quantum yields of photophysical processes. Quenching of the excited state of molecules by external factors. Fluorescence quenching. Stern - Volmer equation. Förster resonant energy transfer.
Week 7
Proteins. Functions and significance of proteins. Chemical structure and properties of amino acids. Peptide bond. Polypeptide chain. Protein structures. Relationship between individual structures. Ramachandra map. Protein solubility. Stability of protein structure. Protein denaturation. Thermal denaturation. Calorimetric and van‘t Hoff enthalpy of denaturation. Chemical denaturation. Molten - globular state of proteins. Protein folding. Levinthal paradox. Physiological consequences of incorrectly folded and aggregated proteins.
Week 8
Nucleic acids. Nucleic acid building blocks (nitrogenous bases, ribose, deoxyribose, phosphoric acid). Chemical structures of nucleotides. Primary and secondary structure of nucleic acids. Polynucleotide strand. Complementarity of bases in DNA. DNA conformations. Circular DNA. RNA structures. Functions of individual RNAs. Forces determining the structure and conformation of nucleic acids. DNA denaturation and renaturation.
Week 9
Biological membranes. Chemical composition of biological membranes. Lipids, cholesterol. Lipid representation in membranes. Membrane proteins. Micelles and liposomes. Structure of biological membranes. Liquid mosaic model. Phase transition in the membrane. Interactions between the lipid and protein part of the biological membrane. Transport of molecules across membranes. Membrane channels. Membrane transporters. Energetics of membrane transport. Nernst potential. Donnan's equilibrium.
Week 10
Biophysical bases of imaging examination methods. Basic principles of bio-imaging. Ultrasound diagnostic methods. Optical imaging methods. Luminescence microscopy. X-ray diagnostic technique. Computed tomography (CT). Principles of magnetic resonance. Magnetic resonance imaging.
Week 11
Biophysical bases of some treatment methods. Photodynamic therapy. Molecular mechanisms of photodynamic action. Biological response to photodynamic action. Photosensitizers. Singlet oxygen. Light sources in photodynamic therapy. Drug transport systems.

Week 12
Radiation and environmental biophysics. Radiobiology. Radiation protection. Effects of physicochemical stimuli on biological organisms (pressure, temperature, humidity). Influence of electromagnetic field on biological systems. Interaction of ionizing and non - ionizing radiation with biological systems.

Recommended literature:

1. R. Glaser. Biophysics (2nd Edition), Springer-Verlach Berlin, 2012.
2. M.B. Jackson. Molecular and Cellular Biophysics, Cambridge University Press, 2006.
3. M. Daune. Molecular biophysics (Structures in motion), Oxford University Press, 2004.
4. J. P. Allen. Biophysical Chemistry, Wiley-Blackwell, 2008.
5. J.A. Tuszynski. Molecelar and Cellular Biophysics, Chapman & Hall/CRC, 2008.
6. D.J. Dowsett, P.A. Kenny and R.E. Johnston. The Physics of Diagnostic Imaging, Hodder Arnold, 2006.
7. P. Nelson. Biological Physics.W.H. Freeman and Company, 2008.
8. G. S. Campbell and J. M. Norman. Introduction to Environmental Biophysics (2nd Edition). Springer Science, 1998.
9. R. Splinter (Ed.). Handbook of Physics in Medicine and Biology. CRC Press, Taylor & Francis Group, 2010.
10. R.K. Hoobbie and B.J. Roth. Intermediate Physics for Medicine and Biology (4th Edition), Springer Science, 2007.

Course language:
English language

Notes:

Course assessment
Total number of assessed students: 12

A	B	C	D	E	FX
16.67	58.33	25.0	0.0	0.0	0.0

Provides: doc. Mgr. Daniel Jancura, PhD.

Date of last modification: 17.09.2021

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ VF1a/12	**Course name:** General Physics I

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 4 / 2 **Per study period:** 56 / 28
Course method: present

Number of ECTS credits: 7

Recommended semester/trimester of the course: 1.

Course level: I.

Prerequisities:

Conditions for course completion:
Terms and conditions of assessment during the semester
-participation in classes in accordance with study regulations and teacher´s instructions
-active participation at seminars and exercises
-submitting all the assignments in accordance with teacher´s instruction
-tests during the semester
-project group work and its successful presentation and defence
Final assessment:
-final oral examination
Conditions for successful completion of the course:
-participation in lessons in accordance with the study regulations and teacher's instructions
-achieving the level higher than 50 % in assessment during the semester and in final assessment

Learning outcomes:
By the end of the course student masters basic knowledge connected with mechanics, molecular physics and thermodynamics. Student will be able to solve various problems connected with the course content and apply gained knowledge in different situations.

Brief outline of the course:
1. Basic knowledge of the calculus, vector algebra. Standards and units.
2. Mechanics of particle.
3. Gravitational field.
4. Work, power and energy.
5. Mechanics of system of particles.
6. Mechanics of rigid body.
7. Mechanics of elastic body.
8. Mechanics of fluids.
9. Basics of molecular physics. Structure and properties of gases.
10. Basics of thermodynamics.
11. Heat transfer. Thermal expansion.
12. Structure and properties of liquids
13. Changes of state.

Recommended literature:
CUMMINGS, Karen, LAWS, Priscilla, REDISH, Edward, COONEY, Patrick: Understanding Physics, John Wiley & Sons, 2004

Course language:
English

Notes:

Course assessment
Total number of assessed students: 350

A	B	C	D	E	FX
23.71	15.14	21.14	14.86	16.29	8.86

Provides: doc. RNDr. Zuzana Ješková, PhD.

Date of last modification: 15.09.2021

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ VF1b/03	**Course name:** General Physics II

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 4 / 2 **Per study period:** 56 / 28
Course method: present

Number of ECTS credits: 7

Recommended semester/trimester of the course: 2.

Course level: I.

Prerequisities: ÚFV/VF1a/12

Conditions for course completion:
To successfully complete the course (presence, if necessary distance), the student must demonstrate sufficient understanding of the basic concepts and laws of electromagnetism, so that it is possible to continue the study of general physics III, IV and the discipline of electromagnetic field theory. Knowledge of individual laws of electricity and magnetism and their generalization in the form of Maxwell's equations is required. Knowledge of these laws in nature and in practical use is required. Another requirement is adequate skills in solving the problems of electricity and magnetism.
Credit evaluation takes into account the scope of teaching (4 hours of lectures, 2 hours of numerical exercises, 4 credits), self-study (1 credit), evaluation (2 credits) and the fact that it is a basic subject that is part of the bachelor's state exam.The minimum limit for successful completion of the course is to obtain 50 points from the subsequent point evaluation, while it is necessary to obtain at least 50% of points from each part:
Numerical exercises maximum number of 20 points (usually 2 written tests of 10 points each, the student must obtain at least 5 points from each test)
Oral exam with a maximum of 80 points (answer to three questions, each of which must reach a level of at least 50%).
Rating scale
A 100-91
B 90-81
C 80-71
D 70-61
E 60-50
Fx 49-0

Learning outcomes:
After completing lectures and exercises, the student will have sufficient knowledge of the basics of electricity and magnetism and will be able to solve numerical problems of electromagnetism. He will also gain adequate knowledge about electromagnetic phenomena in nature and the use of electromagnetic phenomena in technical applications.

Brief outline of the course:

1. Week: Electrostatic field in vacuum. Culomb's law. Electric field. Electric dipole. Flux of electric field. Gauss' law.
2. Week: Work of forces in the electrostatic field. Potential. Relationship between electric fiel and electric potential. Potential and its measurement. Capacity of conductor and conductor system. Energy of electrostatic field.
3. Week: Stationary electric field and steady electric current. Ohm's law. Superconductivity. Equation of continuity of electric current. Electrical circuits with steady voltage. Kirchhoff's laws and their application. Work, power, energy and efficiency of the source of electromotive voltage.
4. Week: Electric current in electrolytes, semiconductors, gases and in vacuum. Thermoelectric phenomena and their use.
5. Week: Origin, properties and basic quantities of a stationary magnetic field in vacuum. Biot-Savart law and its application. Magnetic flux density.
6. Week: Interactions of a magnetic field with moving electrically charged particles and with electric currents. Ampere's law. Interaction between current conductors. Definition of ampere as current unit. Lorentz force.
7. Week: Quasi-stationary electric field. Capacitor charging and discharging process (R-C circuit). The phenomenon of electromagnetic induction. Faraday's law. Phenomenon of self-induction and mutual induction, inductance, mutual inductance. Potential of magnetic field.
8. Week: Transient in the R-L circuit. Energy of magnetic field. Energy conservation law. Magnetic dipole. Alternating currents and basic circuits of alternating electric current. RLC circuit
9. Week: Serial and parallel resonance. Multiphase currents. Rotating magnetic field. Formation of multiphase currents. Electric motor. Power of alternating electric current.
10. Week: Electrical phenomena in the material environment. Dielectric polarization, mechanisms. Electric field in dielectric. Interaction of electric charges stored in a dielectric. Gauss' law. Polarization vector and electrical induction vector and their mutual relationship. Linear and nonlinear dielectrics.
11. Week: Magnetic properties of substances. Elementary magnetic field of an atom. Magnetic state of substances. Magnetic polarization. Diamagnetism and paramagnetism. Arranged magnetic structure. Ferromagnets.
12. Week: Unsteady electromagnetic field. Maxwell's equations.

Recommended literature:
T. Matsushita: Electricity and Magnetism, Springer, 2017

Course language:
english

Notes:
Presence form represents a standart form for the course, if a need arises, the course is performed using MS Teams.

Course assessment
Total number of assessed students: 368

A	B	C	D	E	FX
34.78	14.95	15.76	12.23	9.78	12.5

Provides: prof. RNDr. Peter Kollár, DrSc., doc. RNDr. Adriana Zeleňáková, PhD., doc. RNDr. Erik Čižmár, PhD.

Date of last modification: 10.02.2023

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ VF1c/22	**Course name:** General Physics III

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 4 / 2 **Per study period:** 56 / 28
Course method: present

Number of ECTS credits: 7

Recommended semester/trimester of the course: 3.

Course level: I.

Prerequisities: ÚFV/VF1b/03 or ÚFV/VFM1b/15

Conditions for course completion:
Written test (2x) from seminars during the semester.
Oral examination.

Learning outcomes:
The objective is to acquaint the students with the basis of oscilations, waves and optics.

Brief outline of the course:
Undamped oscilations, Mathematical, Physical and Torsional pendulum, Damped oscilations, Fourier transformation, Forced oscilations. Waves, their generation, waves equation.Interference. Huyghens principle. Reflection, difraction. Doppler effect. Waves speed in materials. Acoustics. Geometrical optics. Mirrors, lens. Fotometry.
Light as electromagnetic wave. Dispersion, absorption, interference, difraction, polarization. Photon's theory of light. Law of emision and absorption, Planck's law of radiation. Lasers.

Recommended literature:
1. A. Hlavička et al., Fyzika pro pedagogické fakulty, SPN, 1971
2. R.P. Feynman et al., Feynmanove prednášky z Fyziky I,II,III, ALFA, 1985
3. D. Halliday et al.,Fyzika-Vysokoškolská učebnice obecné fyziky, VUTIUM, 2010
4. J. Fuka, B. Havelka, Optika a atómová fyzika, SPN,1961
5. A. Štrba, Všeobecná Fyzika 3 – Optika, ALFA, 1979

Course language:
slovak

Notes:

Course assessment
Total number of assessed students: 70

A	B	C	D	E	FX
31.43	24.29	24.29	17.14	2.86	0.0

Provides: doc. RNDr. Ján Füzer, PhD., RNDr. Samuel Dobák, PhD.

Date of last modification: 17.09.2021

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ VF1d/22	**Course name:** General Physics IV

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 3 / 1 **Per study period:** 42 / 14
Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities: ÚFV/VF1c/10 or ÚFV/VF1c/12 or ÚFV/VF1c/22

Conditions for course completion:
- active participation in lectures and excersises
- submission of solved tasks
- 2x test
- an exam

Credit evaluation of the subject: direct teaching and consultations (2credits), self-study (1credit), practical activities- solved tasks (1redits), evaluation (1credits), a total of 5credits. Minimum limit for completion of the course is to obtain at least 51% of the total evaluation.

Learning outcomes:
The student will get basic information about the structure of the atom, atomic spectra, atomic nucleus and elementary particles. He will become familiar with the basic experimental methods and with the passage of ionizing radiation through the environment, he will gain an overview of the applications of nuclear radiation methods in practice. He will be able to independently solve tasks and problems in the field of atomic and nuclear physics.

Brief outline of the course:
1.-6. week Atomic Physics - A.Kravčáková (P):
Corpuscular-wave dualism: De Broglie waves. Experimental confirmation of de Broglie's hypothesis. Uncertainty principle.
Atom structure: Atomic hypothesis. Rutherford's experiment. Bohr model of the atom.
Hydrogen radiation spectra. Combination principle. Quantum mechanical description of a hydrogen atom.
Electron shell: Spectra of hydrogen type atoms. Experimental verification of the existence of discrete levels of atoms (Franck-Hertz experiment). Angulat momentum of electron motion. Stern-Gerlach experiment. Quantum states of electrons. Atoms with more electrons. Alkali metal spectra. Total angular momentum of an atom. Magnetic momentum of an atom. An atom in an external magnetic and electric field. Zeeman's phenomenon. Selection rules. Pauli's principle. Periodic table of elements. X-ray spectra.
7.-12. week Nuclear Physics - J.Vrláková (P):
Basic characteristics of atomic nuclei: Mass and electric charge. Radius of the atomic nucleus. Binding energy. Spin and magnetic momentum of the nucleus.

Nuclear forces and models of atomic nuclei: Properties of nuclear forces. Meson theory of nuclear forces. Models of atomic nuclei (droplet, layer and generalized model).
Radioactive radiation: Basic laws of radioactive decay. Law of decay. Alpha decay. Beta decay. Processes taking place in the nucleus during beta conversion. Neutrino existence hypothesis. Fermi's theory. Internal conversion. Gamma radiation.
Nuclear reactions: Basic terms and definitions. Classification of nuclear reactions. Conservation laws. Effective cross section. Mechanisms of nuclear reactions. Basic types of reactions. Reactions with neutrons. Fission of atomic nuclei. Thermonuclear reactions.
Week 13 Subnuclear physics - A.Kravčáková (P):
Elementary particles: Basic characteristics of particles. Conservation laws. Types of interactions. Classification of elementary particles. Quark model of hadrons.
Week 14 Experimental methods - A.Kravčáková (P):
Passage of radiation through matter.
Detectors: Basic characteristics of detectors. Gas detectors, Scintillation, Cherenkov and semiconductor detectors. Track detectors.
Particle accelerators: Linear accelerator. Cyclic accelerators. Colliders.

Recommended literature:

1. Beiser A., Úvod do moderní fyziky, Praha, 1975.
2. Úlehla I., Suk M., Trka Z.: Atómy, jádra, částice, Praha, 1990.
3. Síleš E., Martinská G.: Všeobecná fyzika IV, skriptá PF UPJŠ, 2. vydanie, Košice, 1992.
4. Vrláková J., Kravčáková A., Vokál S.: Zbierka príkladov z atómovej a jadrovej fyziky, skriptá PF UPJŠ, Košice, 2016.
5. Kravčáková A., Vokál S., Vrláková J., Všeobecná fyzika IV, 1.časť Atómová fyzika, skriptá PF UPJŠ, Košice, 2020.
6. Yang F., Hamilton J.H., Modern Atomic and Nuclear Physics, WSC Singapore, 2010.

Course language:
slovak and english

Notes:

Course assessment
Total number of assessed students: 115

A	B	C	D	E	FX
40.87	28.7	13.04	8.7	8.7	0.0

Provides: doc. RNDr. Janka Vrláková, PhD., doc. RNDr. Adela Kravčáková, PhD.

Date of last modification: 23.08.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ GIS/15	**Course name:** Geographic Information Systems

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 2 **Per study period:** 28 / 28
Course method: present

Number of ECTS credits: 6

Recommended semester/trimester of the course: 3., 5.

Course level: I.

Prerequisities:

Conditions for course completion:
The assessment is a combination of continual control during the practicals and the final exam in the examination period. The continual assessment is performed during the semester and it involves 2 written tests in the mid-term and end of the semester and a project report generated according to the assignment and practical skills acquired during the practicals. The student can proceed to the final exam in case he or she acquired at least 50 points of 100 in all elements of the the continual assessment. The final assessment mark is based on the average number points received in the mid-term test, project report, practicals assessment, and final exam. The final exam is a written test comprising 3-4 questions. The credits are given in case the student had reached at least the E mark in continual assessment and final exam. The following marking scheme is applied in the assessment: A (100-90 points), B (80-89 points), C (70-79 points), D (60-69 points), E (50-59 points), FX (0-49 points).

Learning outcomes:
The students gain knowledge on the intermediate levele in the theory of geoinformation science, GIS, and Remote Sensing, GIS data models, methods of data processing and spatial analysis.
They gain practical skills in processing of geographic data, management, analysis, and visualisation of the geographic data in a GIS project.
Students acquire competence in defining a GIS project, suitabla data models, methods of data acquisition, data processing, analysis and visualisation, presentation skills and skills in team work.

Brief outline of the course:
The course is focused on the following topics: geoinformatics as a scientific discipline, components of geographic information system, digital landscape representation and data models, GIS standards for coordinate systems and transformations, collection of geographic data for GIS (GNSS, photogrammetry, multispectral satellite imagery, lidar, radar) , data management in GIS, attribute and spatial demands, layer overlap, map algebra, spatial prediction, quality and uncertainty of geographic data, GIS web solutions, legislative aspects in GIS, GIS applications in practice.
Exercises are focused on working in ArcGIS Pro: basic and advanced vectorization, data organization in the geodatabase, import / export of various data formats to GIS, creation of color compositions from satellite images, mapping, 3D visualization and animation of geographic data, geoprocessing, map algebra, spatial and attribute demands, spatial prediction, analysis of digital

elevation models (DEM). Students learn the topics of the semester project in the middle of the semester and solve the assigned task in the team using the skills and knowledge acquired during the semester.

Recommended literature:

Course language:
Slovak or Czech or English

Notes:

Course assessment
Total number of assessed students: 392

A	B	C	D	E	FX
28.06	26.79	27.04	12.5	5.61	0.0

Provides: doc. Mgr. Michal Gallay, PhD., Mgr. Michaela Nováková, PhD.

Date of last modification: 27.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ GEOM1/21	**Course name:** Geography

Course type, scope and the method:
Course type:
Recommended course-load (hours):
Per week: Per study period:
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course:

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 19

A	B	C	D	E	FX
21.05	10.53	5.26	31.58	26.32	5.26

Provides:

Date of last modification: 27.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ GNB/21	**Course name:** Geography of Religion

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 1 / 1 **Per study period:** 14 / 14
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 3.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 20

A	B	C	D	E	FX
20.0	10.0	30.0	25.0	15.0	0.0

Provides: doc. Mgr. Ladislav Novotný, PhD.

Date of last modification: 27.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/GPOL/21	**Course name:** Geography of agriculture and industry

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 1 / 1 **Per study period:** 14 / 14
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 13

A	B	C	D	E	FX
30.77	15.38	23.08	15.38	15.38	0.0

Provides: Mgr. Marián Kulla, PhD., doc. Mgr. Ladislav Novotný, PhD.

Date of last modification: 14.02.2023

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚGE/ MG/18	**Course name:** Geography of mining

Course type, scope and the method:
Course type: Lecture
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 3.

Course level: I.

Prerequisities:

Conditions for course completion:
The evaluation is based on a combination of continuous and final control. The continuous control is carried out during the teaching part by written test with a share of 30 % of the final evaluation. The final control is written and constitutes 70 % of the final evaluation. The resulting evaluation is a weighted average of the continuous (30 %) and final (70 %) controls. Credits will be awarded only to student who achieves the evaluation at the minimum level of the mark E in every part of the evaluation.

Learning outcomes:
To acquaint students with basic facts and knowledge of the history of mining science from the view of geographic aspect to obtain information overview of the history of the Slovak and world mning from a geographical point of view.

Brief outline of the course:
Historical foundations of the global mining industry, mining oldest written records of mining heyday in the Middle Ages, the first mining maps, Slovak ore mining in the Austro-Hungarian Empire, First World Mining Academy in Banská Štiavnica mining and migration of the population, the world "gold rush", salt roads Europe, coal mining and electrification of industry, environmental consequences of mining devastation, mining open-air museums in Slovakia and Europe and their importance for the promotion of tourism.

Recommended literature:
Ježek, B. a Hummel, J., 2006: Georgius Agricola, Dvanásť kníh o baníctve a hutníctve. Preklad z českého originálu: Petr, K. a Petrová, M., Ostrava: Montanex a.s., 2006, 546s., ISBN 80-7225-218-6.
Puzder, J., 2000: Samuel Mikovíni, život a dielo. Košice: FBERG TU Košice, 115s.
Vozár, J., 2000: Zlatá kniha baníctva. Košice: Tibor Turčan/Banská agentúra, 2000, 263s., ISBN 80-968421-4-5.
Vozár, J., 2002: Kódex mestského a banského práva Banskej Štiavnice. Košice: Tibor Turčan/ Banská agentúra, 2002, 71s., ISBN 80-968621-2-X.
Zícha, Z., 2005: Back to the past. The history of technology and manpower in the mining is a legacy which cannot be forgotten. Ústí nad Labem: CDL Design s.r.o., 2005, 98p., ISBN 80-902278-9-9.

Course language:
Slovak

Notes:
without notes

Course assessment
Total number of assessed students: 9

A	B	C	D	E	FX
77.78	11.11	11.11	0.0	0.0	0.0

Provides: doc. Ing. Katarína Bónová, PhD.

Date of last modification: 19.08.2020

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ MOG/21	**Course name:** Geography of mining

Course type, scope and the method:
Course type: Lecture
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 2.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 7

A	B	C	D	E	FX
71.43	14.29	14.29	0.0	0.0	0.0

Provides: doc. Ing. Katarína Bónová, PhD., Mgr. Imrich Sládek, PhD.

Date of last modification: 16.02.2023

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚGE/ OBY2/18	**Course name:** Geography of population and settlements

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 2 **Per study period:** 28 / 28
Course method: present

Number of ECTS credits: 6

Recommended semester/trimester of the course: 3.

Course level: I.

Prerequisities:

Conditions for course completion:
Evaluation of student performance is carried out by combining ongoing review during the term of examination for the period of the semester. Continuous control consists of min. 80 % of the active participation of students in teaching and successfully solving assignments. If a student does not reach required active participation of teaching and successfully does not solve the given problem can not log on to the test.

Learning outcomes:
The student will acquire theoretical and methodological basis of Geography of Population and Settlements. Students will acquire a basic spatial differentiation of population and settlements in the world according to basic characteristics.

Brief outline of the course:
Population geography as a science discipline; Trends and forecasts of the world population; Distribution of population; Natural and mechanical movement of population (natality, mortality, balance natural movement of the population, model of demographic cycle, population migration); Population structure on the basis of biological, cultural and economic characteristics;
Geography settlements as a scientific discipline; Settlement development and settlement systems; Geographical location of settlements; The structure of settlements by size, dynamics and morphology; Urban geography (definition of city, creation of city and functions cities); The hierarchy of settlements and Gravity; Urbanization (basic concepts, indicators, aspects and methods of research); Rural settlement systems (compact and scattered rural settlements and their geographical interpretation).
Seminars
Seminars during the semester are oriented to problem solving in order to practice, resp. demonstrate phenomena studied in different regional units of Slovakia, Europe or Worldwide.

Recommended literature:
BAŠOVSKÝ, O., MLÁDEK, J. 1989: Geografia obyvateľstva a sídel. Prírodovedecká fakulta UK, Bratislava, 221.
CHALUPA, P., TARABOVÁ, Z. 1990: Geografie obyvatelstva, demografie, geografie sídel. MU, Brno.

MATLOVIČ, R. 2001: Geografia relígií. Fakulta humanitných a prírodných vied Prešovskej univerzity v Prešove. Prešov, 375.
MLÁDEK, J. 1992: Základy geografie obyvateľstva. SPN Bratislava, 230.
MLÁDEK, J. a kol. 2006: Atlas obyvateľstva Slovenska. UK Bratislava, 168.
MLÁDEK, J., KUSENDOVÁ, D., MARENČÁKOVÁ, J., PODOLÁK, P., VAŇO, B. 2006: Demogeografická analýza Slovenska. UK Bratislava, 222.
PAVLÍK, Z., RYCHTAŘÍKOVÁ, J., ŠUBRTOVÁ, A. 1986: Základy demografie. Academia Praha.
VOTRUBEC, C. 1980: Lidská sídla, jejich typy a rozmístnění ve světe. Academia Praha.
SHORT, J. R. 1994: Lidská sídla. Velká geografická encyklopedie světa. Nakladatelský dům OP Praha

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 867

A	B	C	D	E	FX
9.11	14.42	21.68	22.61	28.6	3.58

Provides: RNDr. Janetta Nestorová-Dická, PhD., univerzitná docentka, doc. Mgr. Michal Gallay, PhD.

Date of last modification: 21.02.2018

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/GST/21	**Course name:** Geography of services and tourism

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 1 / 1 **Per study period:** 14 / 14
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 5.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 11

A	B	C	D	E	FX
18.18	36.36	27.27	9.09	9.09	0.0

Provides: Mgr. Marián Kulla, PhD., doc. Mgr. Ladislav Novotný, PhD., doc. Mgr. Michal Gallay, PhD.

Date of last modification: 27.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/GCR/12	**Course name:** Geography of the Czech Republic

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 1 **Per study period:** 28 / 14
Course method: present

Number of ECTS credits: 4

Recommended semester/trimester of the course: 5.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:
Introduction, location, basic FG features of the Czech Republic. Geological structure of the Czech Republic, main geological entities according to the newest classification. Geomorphological structure and the relief evolution, geomorphological entities and units. Climate, hydrography of the Czech Republic, underground waters and mineral waters. Soils, phytogeography and zoogeography, present landscape types.
History of settlements in the Czech Republic from the historical perspective. National, linguistic and religious structure. Urban and rural settlements. Administrative division and its historical development. Economiy of the country - natural resouces, agriculture, industry, transport, education and tourism.

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 295

A	B	C	D	E	FX
51.86	31.19	14.24	2.71	0.0	0.0

Provides: Mgr. Marián Kulla, PhD., Mgr. Imrich Sládek, PhD.

Date of last modification: 27.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ GCR1/21	**Course name:** Geography of the Czech Republic

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 1 **Per study period:** 28 / 14
Course method: present

Number of ECTS credits: 4

Recommended semester/trimester of the course: 5.

Course level: I., II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 11

A	B	C	D	E	FX
18.18	18.18	45.45	18.18	0.0	0.0

Provides: Mgr. Marián Kulla, PhD., doc. Mgr. Ladislav Novotný, PhD.

Date of last modification: 27.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ GAH/21	**Course name:** Geography of the atmosphere and hydrosphere

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 3 / 1 **Per study period:** 42 / 14
Course method: present

Number of ECTS credits: 6

Recommended semester/trimester of the course: 3.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 68

A	B	C	D	E	FX
2.94	22.06	35.29	33.82	5.88	0.0

Provides: RNDr. Dušan Barabas, CSc., RNDr. Alena Gessert, PhD., univerzitná docentka, prof. Mgr. Jaroslav Hofierka, PhD., Mgr. Tomáš Fedor, Mgr. Jozef Šupinský, PhD.

Date of last modification: 27.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ GPED/21	**Course name:** Geography of the pedosphere and biosphere

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 3 / 1 **Per study period:** 42 / 14
Course method: present

Number of ECTS credits: 6

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 41

A	B	C	D	E	FX
0.0	4.88	14.63	34.15	24.39	21.95

Provides: RNDr. Dušan Barabas, CSc., doc. Mgr. Michal Gallay, PhD.

Date of last modification: 13.02.2023

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚGE/ SGI2/21	**Course name:** Geoinformatics seminar
Course type, scope and the method: **Course type:** Practice **Recommended course-load (hours):** **Per week:** 2 **Per study period:** 28 **Course method:** present	
Number of ECTS credits: 3	
Recommended semester/trimester of the course: 6.	
Course level: I.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Notes:	

Course assessment
Total number of assessed students: 0

abs	n
0.0	0.0

Provides: doc. Mgr. Michal Gallay, PhD., doc. RNDr. Ján Kaňuk, PhD.
Date of last modification: 27.06.2022
Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ GEX1/07	**Course name:** Geological excursion

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: Per study period: 3d
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 2.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:
Visiting of different localities in the Western Carpathian tectonic units - Flysh belt, Klippen belt, Central Western Carpathians. Visiting of several localities of mining in Slovakia and getting to know the process of manufacturing of the rocks.

Recommended literature:
Regionálne geologické mapy Slovenska (1:50 000) + Vysvetlivky.
ŽEC, B. et al., 2005: Exkurzný sprievodca ku kongresu Slovenskej geologickej spoločnosti Zemplínska šírava - Medvedia hora. CompuGraph, Košice, 138s.
BIELY, A. et al., 1996: Geologická mapa Slovenska, 1 : 500 000. MŽP SR, ŠGÚDŠ, Bratislava.
COE, A. L. (ed.) et al., 2010: Geological Field techniques. Wiley-Blackwell, UK, 323 pp.

Course language:

Notes:

Course assessment
Total number of assessed students: 477

A	B	C	D	E	FX
82.18	13.42	2.73	0.0	0.0	1.68

Provides: doc. Ing. Katarína Bónová, PhD.

Date of last modification: 26.08.2020

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚGE/ GEX2/21	**Course name:** Geological excursion
Course type, scope and the method: **Course type:** Practice **Recommended course-load (hours):** **Per week: Per study period:** 3d **Course method:** present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 2.	
Course level: I.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Notes:	

Course assessment
Total number of assessed students: 55

abs	n
100.0	0.0

Provides: doc. Ing. Katarína Bónová, PhD.
Date of last modification: 27.06.2022
Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚGE/ GMAP/13	**Course name:** Geomorphological mapping

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities:

Conditions for course completion:
The evaluation of the subject consists of assesment of one main semestral work - geomorphological map of the area (50 p), 1 partial work (10 p) and report from the field mapping (40 p) , the total amount of points is 100. The student has to aquire minimum of half points from each work. For successful graduation of the subject the student has to aquire 51 points and more.

Learning outcomes:
after the graduation of the subject the student should information applied to the praxis and be able to map area with the main aim of high quality map and the legenda.

Brief outline of the course:
The main of the subject is to understand the topic of the geomorphological mapping, geomorphological map and its importance. It deals with the history of the geomorphological mapping, maps in slovak and foreign literature, about theory and praxis of field works and maps compilation, creating of the geomorphological map legenda for different relief types. With help of graphical softwers we are working with morphometric and morphographic relief characeter, the morphogenetical nad morphodynamical interpretation of the geomorphological map. After the theoretical part of seminars there is practical field mapping in the scale of 1: 10 000 at the and of the semester.

Recommended literature:
DEMEK, J. (edit.), 1972: Manual of detailed geomorphological mapping. Academia, Brno, 344 s.
MINÁR, J., 1995: Niektoré teoreticko-metodologické problémy geomorfológie vo väzbe na tvorbu komplexných geomorfologických máp. Acta Facultatis Rerum Naturalium Universitatis Comenianae, Geographica Nr. 36, Bratislava, 7-125.
SMITH, M., PARON P., GRIFFITHS, J., 2011: Geomorphological mapping – methods and applications. School of Geography, Geology and the Environment, Kingston University, UK. 610 s.
URBÁNEK, J., 1997: Geomorfologická mapa: niektoré problémy geomorfologického mapovania na Slovensku. Geografický časopis, 49, 3-4, 175-186.
ZAŤKO, M. et al. 1986: Obecná geomorfologická mapa a jej legenda. In: Cvičenia z fyzickej geografie. Prírodovedecká fakulta Univerzity Komenského, Bratislava. 43-53.

Course language:

Notes:

Course assessment
Total number of assessed students: 13

A	B	C	D	E	FX
84.62	0.0	15.38	0.0	0.0	0.0

Provides: RNDr. Alena Gessert, PhD., univerzitná docentka

Date of last modification: 13.02.2023

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/GMP/21	**Course name:** Geomorphological mapping

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 9

A	B	C	D	E	FX
0.0	0.0	100.0	0.0	0.0	0.0

Provides: RNDr. Alena Gessert, PhD., univerzitná docentka

Date of last modification: 27.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ GEM2/18	**Course name:** Geomorphology

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 2 **Per study period:** 28 / 28
Course method: present

Number of ECTS credits: 6

Recommended semester/trimester of the course: 2.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 1329

A	B	C	D	E	FX
10.53	20.92	21.52	17.23	19.86	9.93

Provides: RNDr. Alena Gessert, PhD., univerzitná docentka, Mgr. Imrich Sládek, PhD., doc. Ing. Katarína Bónová, PhD.

Date of last modification: 13.02.2023

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: KPE/ POŽ/21	**Course name:** Getting to know the Student in Education

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 53

A	B	C	D	E	FX
75.47	13.21	3.77	0.0	0.0	7.55

Provides: PaedDr. Michal Novocký, PhD.

Date of last modification: 12.03.2024

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/EXH/21	**Course name:** Human Geography Excursion

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: Per study period: 6d
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 49

A	B	C	D	E	FX
55.1	30.61	14.29	0.0	0.0	0.0

Provides: Mgr. Marián Kulla, PhD., doc. Mgr. Ladislav Novotný, PhD.

Date of last modification: 27.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ EXHG1/15	**Course name:** Human Geography Excursion

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: Per study period: 6d
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 5.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 790

A	B	C	D	E	FX
78.99	11.14	7.59	0.89	0.76	0.63

Provides: RNDr. Stela Csachová, PhD., Mgr. Marián Kulla, PhD., doc. Mgr. Ladislav Novotný, PhD., RNDr. Janetta Nestorová-Dická, PhD., univerzitná docentka

Date of last modification: 03.05.2015

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚGE/ HGS/15	**Course name:** Human Geography of Slovakia

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 3 / 1 **Per study period:** 42 / 14
Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 543

A	B	C	D	E	FX
4.24	10.5	18.97	34.99	26.89	4.42

Provides: Mgr. Marián Kulla, PhD., RNDr. Janetta Nestorová-Dická, PhD., univerzitná docentka, Mgr. Loránt Pregi, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

Date of last modification: 31.03.2020

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚGE/ HGS1/21	**Course name:** Human Geography of Slovakia

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 1 **Per study period:** 28 / 14
Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 5.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 40

A	B	C	D	E	FX
2.5	7.5	27.5	25.0	37.5	0.0

Provides: RNDr. Janetta Nestorová-Dická, PhD., univerzitná docentka, Mgr. Marián Kulla, PhD., doc. Mgr. Ladislav Novotný, PhD.

Date of last modification: 27.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ HUGN/15	**Course name:** Human geography (Non-production Systems)

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 1 **Per study period:** 28 / 14
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 5.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

BOROVSKÝ, J. a kol., 2008: Cestovný ruch, trendy a perspektívy. Iura Edition, 280 s.
GOELDNER, CH.R., BRENT RICHIE, J.R., 2014: Cestovní ruch - principy, příklady, trendy. Biz books, 545 s.
HALÁS, M., 2000: Zahraničný obchod SR s ČR. Geographical Studies 7, Constantine the Philosopher University Nitra, s. 98-107.
HALL, C.M. - PAGE, S.J. 2002: The geography of tourism and recreation, 2. edition, London and New York, 399 p.
HAVRLANT, J., 2007: Geografie cestovního ruchu I. Základy geografie cestovního ruchu, Ostravská univerzita, 41 s.
MARIOT, P., 1983: Geografia cestovného ruchu. Veda, Bratislava, 224 s.
OTRUBOVÁ, E., 2003: Humánna geografia II (Geografia zahraničného obchodu, Geografia cestovného ruchu). Prírodovedecká fakulta UPJŠ, Košice, 105 s.
ŠTEPÁNEK, KOPAČKA, ŠÍP, 2001: Geografie cestovního ruchu, Vydalo Karolinum Praha, 228s.

Course language:

Notes:

Course assessment
Total number of assessed students: 519

A	B	C	D	E	FX
17.15	22.93	27.55	20.81	10.4	1.16

Provides: Mgr. Marián Kulla, PhD., prof. RNDr. Peter Spišiak, CSc., Bc. Martina Gregáňová

Date of last modification: 20.09.2018

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚGE/ HUG2a/05	**Course name:** Human geography (productive sphere)
Course type, scope and the method: **Course type:** Lecture / Practice **Recommended course-load (hours):** **Per week:** 3 / 1 **Per study period:** 42 / 14 **Course method:** present	
Number of ECTS credits: 5	
Recommended semester/trimester of the course: 4.	
Course level: I.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course: Location theories, factors and methods of industry evaluation. Territorial industrial units and regionalisation of the industry in Slovakia. Geographical characteristics of selected types of industry. Relationship of industry and environment. Trends in development and problems of the world economy. Development of agriculture and regularities of distribution of agricultural lands. The agricultural countries and their typology. The land use map. Geography of forests and its typology.	
Recommended literature: FALKOWSKI, J., KOSTROWICKI, J., 2001: Geografia rolnictwa świata. PWN, Warszawa, 516 p. KNOX, P., L., et al. 2010: Human geography. Places and regions in Global Context. pearson International Edition., 513 p. KOREC, P. 1994: Humánna geografia 1. Prírodovedecká fakulta, Univerzita Komenského, Bratislava, 120 s. MIRVALD, S., 2002: Geografie dopravy II. ZČU Plzeň, 56 s. MIRVALD, S., 2002: Geografie dopravy III. ZČU Plzeň, 43 s. POPJAKOVÁ, D., 1997: Základné kapitoly z geografie priemyslu, Prešov: PU, 144 s. SPIŠIAK, P., 2005: Základy geografie poľnohospodárstva a lesného hospodárstva. Prírodovedecká fakulta, Univerzita Komenského, Bratislava. 140 s. TOUŠEK, V. a kol., 2008: Ekonomická a sociální geografie, Plzeň, 2008, 411 s.	
Course language:	
Notes:	

Course assessment Total number of assessed students: 688					
A	B	C	D	E	FX
8.14	20.64	28.92	27.47	12.21	2.62
Provides: Mgr. Marián Kulla, PhD., Bc. Martina Gregáňová					
Date of last modification: 29.03.2020					
Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: KPE/ INP/17	**Course name:** Inclusive Pedagogy
Course type, scope and the method: **Course type:** Practice **Recommended course-load (hours):** **Per week:** 2 **Per study period:** 28 **Course method:** present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 5.	
Course level: I.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Notes:	

Course assessment
Total number of assessed students: 107

A	B	C	D	E	FX
69.16	22.43	3.74	1.87	2.8	0.0

Provides: PaedDr. Michal Novocký, PhD.
Date of last modification: 12.03.2024
Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: KPE/ IIŠP/21	**Course name:** Integration and Inclusion in School Practice

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 3.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 52

A	B	C	D	E	FX
36.54	38.46	15.38	7.69	1.92	0.0

Provides: PaedDr. Michal Novocký, PhD.

Date of last modification: 12.03.2024

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ZAE1/18	**Course name:** International Excursion 1

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: Per study period: 10d
Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 22

A	B	C	D	E	FX
50.0	18.18	18.18	9.09	4.55	0.0

Provides:

Date of last modification: 27.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚGE/ZEX1/21	**Course name:** International Excursion 1
Course type, scope and the method: **Course type:** Practice **Recommended course-load (hours):** **Per week: Per study period:** 10d **Course method:** present	
Number of ECTS credits: 4	
Recommended semester/trimester of the course: 4.	
Course level: I.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Notes:	

Course assessment
Total number of assessed students: 14

abs	n
92.86	7.14

Provides: doc. Mgr. Ladislav Novotný, PhD., Mgr. Marián Kulla, PhD.
Date of last modification: 27.06.2022
Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚFV/ UVF/05	**Course name:** Introduction to General Physics

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 1.

Course level: I.

Prerequisities:

Conditions for course completion:
Terms and conditions of assessment during the semester
-participation in classes in accordance with study regulations and teacher´s instructions
-active participation at seminars and exercises
-submitting all the assignments in accordance with teacher´s instruction
-tests during the semester
Final assessment:
-based on assessment during the semester
Conditions for successful completion of the course:
-participation in lessons in accordance with the study regulations and teacher's instructions
-achieving the level higher than 50 % in assessment during the semester and in final assessment

Learning outcomes:
By the end of the course student is able to solve problems connected with mechanics, molecular physics and thermodynamics. In solving problems student is able to apply digital tools for data collection, videomeasurement and computer modelling and data processing and their analysis.

Brief outline of the course:
The course is an auxiliary subject to the course General physics 1 - Mechanics, Molecular Physics and Thermodynamics aimed to development of conceptual understanding and problem solving connected with the following areas:
1. Kinematics and dynamics of motion along a line and two-dimensional motion of particle. Equation of motion.
2. Gravitational field. Projectile motion.
3. Work, power and energy. Law of energy conservation.
4. Rotational motion. Equation of rotational motion.
5. Law of momentum conservation and angular momentum conservation.
6. Deformation. Hook´s law.
7. Fluid mechanics.
8. Gases. Ideal gas laws.
9.Basics of thermodynamics. First law of thermodynamics.
10.Heat and heat exchange.

11. Liquids. Surface tension.
12. Changes of state.

Recommended literature:
CUMMINGS, Karen, LAWS, Priscilla, REDISH, Edward, COONEY, Patrick: Understanding Physics, John Wiley & Sons, 2004

Course language:
English

Notes:

Course assessment
Total number of assessed students: 349

A	B	C	D	E	FX
36.96	20.34	24.64	13.18	4.58	0.29

Provides: doc. RNDr. Zuzana Ješková, PhD.

Date of last modification: 15.09.2021

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ UVF2/07	**Course name:** Introduction to General Physics II

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 2.

Course level: I.

Prerequisities:

Conditions for course completion:
Terms and conditions of assessment during the semester
-participation in classes in accordance with study regulations and teacher´s instructions
-active participation at seminars and exercises
-submitting all the assignments in accordance with teacher´s instruction
-tests during the semester Final assessment:
-based on assessment during the semester
Conditions for successful completion of the course:
-participation in lessons in accordance with the study regulations and teacher's instructions
-achieving the level higher than 50 % in assessment during the semester and in final assessment

Learning outcomes:
By the end of the course student is able to solve problems and explain phemomena and experiments connected with selected areas of Electricity and Magnetism.

Brief outline of the course:
The course is an auxiliary subject to the course General physics 2 - Electricity and Magnetism aimed to development of conceptual understanding and problem solving connected with the following areas:
1. Electric field. Coulomb´s law.
2. Work, electric potential energy, electric potential.
3. Electric capacitance and capacitors.
4. Electric current. Ohm´s law, Kirchhoff´s laws.
5. Work and power. Energy and efficiency of sources of electromotive force
6. Magnetic field.
7. Interaction between magnetic field and electric charge.
8. Transient phenomena in RC circuit.
9. Electromagnetic induction.
10. Transient phenomena in RL circuit.
11. Alternating current circuits.
12. Resonance in series and paralel circuits.

Recommended literature:

Matsushita, Teruo. Electricity and Magnetism, Springer 2017
CUMMINGS, Karen, LAWS, Priscilla, REDISH, Edward, COONEY, Patrick: Understanding Physics, John Wiley & Sons, 2004

Course language:
English

Notes:

Course assessment
Total number of assessed students: 272

A	B	C	D	E	FX
38.97	22.43	20.96	8.46	9.19	0.0

Provides: doc. RNDr. Zuzana Ješková, PhD.

Date of last modification: 15.09.2021

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚGE/ UGIS/15	**Course name:** Introduction to Geographic Information Systems

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 2.

Course level: I.

Prerequisities:

Conditions for course completion:
During the semester, students will need to hand in the outputs of the practicals. The resulting assessment is based on the final practical skills verification and delivery of the outputs of practicals. From the practical skills verification, students must obtain at least 90 points to get the A mark, at least 80 points to get B, at least 70 points to get C, at least 60 points to get D, at least 50 points to get E. The credits shall not be granted to a student who does not hand in one or more outputs of the practicals or he/she will get less than 50 points out of 100.

Learning outcomes:
The main learning outcomes include understanding of GIS terminology, practical skills in basic geodata processing in GIS software. In particular, the skills involve data edtiting and creation of map layouts.

Brief outline of the course:
- Basic GIS terminology (eg. geodata layer, geodata formats, structure of GIS, graphics map elements, attribute table, structure of relational databases)
- Basic control elements of GIS software (add and configure a data layer and properties, zooming, adjusting color data layer, display and basic work with attribute tables)
- Prepare and connect an external database with the data layer
- Set the legend (selection of cartographic methods of spatial information)
- Creating map layouts and advanced graphics tools for creating map layouts

Recommended literature:
BOLTIŽIAR M. 2008: Geografické informačné systémy pre geografov I. Univerzita Konštantína Filozofa v Nitre, Fakulta Prírodných vied. 120 s.
BOLTIŽIAR, M. VOJTEK M. 2009. Geografické informačné systémy pre geografov II. Univerzita Konštantína Filozofa v Nitre, Fakulta Prírodných vied. 140 s.
MICHAEL D. KENNEDY. 2013:Introducing Geographic Information Systems with ArcGIS: A Workbook Approach to Learning GIS, 3rd Edition. Wiley. 672 p.
LAW M, COLLINS A. 2013:Getting to Know ArcGIS for Desktop. Edition 3. Esri Press. 768 p.

Course language:

Notes:

Course assessment
Total number of assessed students: 884

A	B	C	D	E	FX
13.91	14.03	25.9	22.85	20.48	2.83

Provides: doc. Mgr. Michal Gallay, PhD., doc. RNDr. Ján Kaňuk, PhD.

Date of last modification: 27.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ UGP/18	**Course name:** Introduction to Geography and Planetary Geography

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 1 / 1 **Per study period:** 14 / 14
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 1.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 448

A	B	C	D	E	FX
35.94	27.9	18.08	12.05	5.8	0.22

Provides: prof. Mgr. Jaroslav Hofierka, PhD., Mgr. Štefan Kolečanský

Date of last modification: 27.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚFV/ UFMI/07	**Course name:** Introduction to Microworld Physics

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 1 **Per study period:** 28 / 14
Course method: present

Number of ECTS credits: 4

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities:

Conditions for course completion:
1. Active participation in lectures and excersises
2. Written semester task and its presentation, exam.
Credit evaluation of the subject: direct teaching and consultations (1 credit), self-study (1 credit), practical activities - semester task (1 credit) and evaluation (1 credit). Total 4 credits.
The minimum threshold for completing the course is to obtain at least 51% of the total evaluation, using the following rating scale: A (91-100%), B (81-90%), C (71-80%), D (61-70 %), E (51-60%), F (0-50%).

Learning outcomes:
After completing the course, students will get a qualitative overview of the discoveries and advances in elementary particle physics (PEP) from its beginning to the present. They will become familiar with the latest theories of particle physics and their connections with cosmology. At the same time, they will acquire the ability to independently solve simple problems from the mentioned areas.

Brief outline of the course:
1. Atom and nucleus: Atoms as a composed particles, electron discovery, Thomsons model, natural radioactivity.
2. Discovery of the nucleus, Rutherfords model, Bohrs model of the atom, neutron discovery, the structure of the nucleus.
3. Interactions in nature: gravity, electromagnetic, weak and strong - strenght, range, intermediators.
4. Units in particle physics - length, mass a energy.
5. Latest knowledges about the structure of matter and forces: Nuclear particles - particle "ZOO".
6. Classification of particles, eightfold way, quark model
7. Standart model: strong interaction – quarks, gluons and colour charge.
8. Theory of elektroweak interactions.
9. New discoveries, Grand Unification.
10. Cosmology, particle physics and Big Bang.
11. Experimental methods in Particle Physics: basic principles of acceleration and detection of particles.
12. Experiments on LHC collider.

Recommended literature:

1. M.Veltman: Facts and Mysteries in Elementary Particle Physics, World Scientific Publishing, 2003.
2. F. Close: Particle Physics, A Very Short Introduction, Oxford, 2004.
3. F. Close: The cosmic onion, Quarks and the Nature of the Universe, Heinemann Educational Books, 1990.
4. R. Mackintosh, J. Al-Khalili, B. Jonson, T. Pena: Jádro, Cesta do srdce hmoty, Academia Praha, 2003.
5. S. Brandt: The Harvest of a Century, Oxford, 2009.

Course language:
slovak and english

Notes:

Course assessment
Total number of assessed students: 24

A	B	C	D	E	FX
83.33	12.5	4.17	0.0	0.0	0.0

Provides: doc. RNDr. Adela Kravčáková, PhD.

Date of last modification: 23.08.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: Dek. PF UPJŠ/USPV/13	**Course name:** Introduction to Study of Sciences
Course type, scope and the method: **Course type:** Lecture / Practice **Recommended course-load (hours):** **Per week: Per study period:** 12s / 3d **Course method:** present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 1.	
Course level: I.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Notes:	
Course assessment Total number of assessed students: 2196	

abs	n
89.34	10.66

Provides: doc. RNDr. Marián Kireš, PhD.
Date of last modification: 30.08.2022
Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ UDID/21	**Course name:** Introduction to the didactics of geography

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 1 / 1 **Per study period:** 14 / 14
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 8

A	B	C	D	E	FX
50.0	50.0	0.0	0.0	0.0	0.0

Provides: RNDr. Stela Csachová, PhD., doc. RNDr. Ján Kaňuk, PhD.

Date of last modification: 27.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ LOS/18	**Course name:** Linux and open source GIS

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 3.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 70

A	B	C	D	E	FX
61.43	34.29	4.29	0.0	0.0	0.0

Provides: Mgr. Michaela Nováková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

Date of last modification: 30.09.2021

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/ MTFa/15	**Course name:** Mathematics I for physicists

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 2 **Per study period:** 28 / 28
Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 1.

Course level: I.

Prerequisities:

Conditions for course completion:
To complete the course, it is necessary to demonstrate the acquirement of basic mathematical terms and the ability to solve problems from selected thematic units. The evaluation of the subject is according to the results from the semester and in view of the results of the written final test. During the semester, students write tests at all seminars (together 20 points) and two extensive tests (together 50 points). It is necessary to obtain at least 28 points during the semester. Then students may write the exam. To pass the exam, it is necessary to obtain at least 12 points from the maximum number of 30 points. The scale for student evaluation is as follows: 100-80-A, 79-70-B, 69-60-C, 59-50-D, 49-40-E. If a student does not achieve the required mninimal number of points from the exam test (12 points) and during the semester (together 28 points), he/she is evaluated by FX.

Learning outcomes:
After completing the course, the student can use basic mathematical terms, can solve various equations and inequations, and is acquainted with basic mathematical knowledge from the differential and integral calculus, and is able to apply the theory in concrete excercises.

Brief outline of the course:
Week 1-6: Definition of function. Domain and range of functions. Elementary functions. Inverse functions. Compositions of functions.
Week 7-14: Limit of functions. Continuity of functions. Derivation and its geometric aplications. Indefinite integrals, basic methods of integration. Definite integral and its applications.

Recommended literature:
Huťka, Benko, Ďurikovič: Matematika, Alfa, Bratislava 1991
D. Studenovská, T. Madaras, S. Mockovčiak: Zbierka úloh z matematiky pre nematematické odbory, UPJŠ 2006
D. Studenovská, T. Madaras: Matematika pre nematematické odbory, UPJŠ 2006
S. Lang: A First Course in Calculus, Springer Verlag, 1998

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 101

A	B	C	D	E	FX
21.78	12.87	19.8	15.84	18.81	10.89

Provides: RNDr. Jana Borzová, PhD., RNDr. Miriam Kleinová, Mgr. Miriama Kmeciková, RNDr. Monika Krišáková

Date of last modification: 18.04.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/MTFb/22	**Course name:** Mathematics II for physicists

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 2 **Per study period:** 28 / 28
Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 2.

Course level: I.

Prerequisities: ÚMV/MTFa/15 or ÚMV/MTCb/13

Conditions for course completion:
Mastering standard procedures for solving systems of linear equations. Understanding the concept of function of several variables, mastering the definitions of limit of function, partial derivation of a function, differential of a function, local and global extrema of a function and acquiring skills associated with their use in calculations focused mainly on functions of two variables. Mastering standard procedures for solving basic types of ordinary differential equations of the 1st order. Understanding the concept of infinite series and acquiring skills to use the basic criteria of convergence of number series for deciding on the convergence or divergence of number series.
Assessment is given on the basis of a continuous assessment and a written exam, which also includes an oral exam.
Ongoing evaluation:
Two tests during the semester - 32 p.
Small written tests during the semester - 10 p.
Solving homework - 4 p.
Active participation in exercises - 4. p.
An exam:
Final test and oral exam - 30 p.
Classification scale:
A: 91 % - 100 %, B: 81 % - 90 %, C: 71 % - 80 %, D: 61 % - 70 %, E: 51 % - 60 %, FX: 0 % - 50 %.

Learning outcomes:
The student should be able to explain the basic concepts and gain skills in using standard procedures for solving systems of linear equations using matrices and determinants. The student will expand his knowledge of the function of one variable and master the concept of a function of several variables, and will be able to explain the definitions of function limit, partial derivation of a function, differential of a function, local and global extrema of a function and acquire knowledge and skills oriented mainly on the functions of two variables. The student will learn standard procedures for solving basic types of ordinary differential equations of the 1st order. He will be able to use the acquired knowledge about solving differential equations in modeling and solving problems derived from real situations. The student will gain skills to use the basic criteria of convergence of number series when deciding on the convergence or divergence of number series.

The student will be able to use the acquired knowledge and skills in creating a mathematical model and will learn to effectively use the commands of the mathematical program Maple for routine calculations and visualization for solving created model.

Brief outline of the course:

1. - 3. Systems of linear equations, matrices, determinants.
4. - 7. Functions of several variables, continuity and limit, partial derivatives, differential, local and global extrema of a function of two variables.
8. - 11. Modeling of relations between quantities using differential equations. Methods for solving ordinary differential equations of the 1st order.
12. - 13. Sequences, infinite number series, convergence criteria of infinite number series, infinite functional series, Taylor series.

Recommended literature:

Huťka, V., Benko, E., Ďurikovič, V.: Matematika, Alfa, Bratislava 1991.
Kluvánek, I., Mišík, L., Švec, M.: Matematika II, Bratislava, 1961.
Osička, J.: Matematika pro chemiky, Brno, 2004.
Došlá, Z.: Matematika pro chemiky, Masarykova univerzita, Brno, 2011.
Hughes-Hallett, D., et al.: Applied Calculus. John Wiley & Sons, Inc., 2010.
Rogers, R., C.: The Calculus of Several Variables. 2011.

Course language:

Slovak

Notes:

Course assessment

Total number of assessed students: 25

A	B	C	D	E	FX
52.0	24.0	16.0	4.0	4.0	0.0

Provides: doc. RNDr. Stanislav Lukáč, PhD., Mgr. Miriama Kmeciková, RNDr. Barbora Hennelová

Date of last modification: 18.04.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: KPE/ MKŠP/21	**Course name:** Mentoring and Coaching in School Practice

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 5.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 62

A	B	C	D	E	FX
83.87	12.9	3.23	0.0	0.0	0.0

Provides: Mgr. Katarína Petríková, PhD.

Date of last modification: 12.03.2024

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/MPG/21	**Course name:** Metageography and planetary geography

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 1 / 1 **Per study period:** 14 / 14
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 1.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 132

A	B	C	D	E	FX
42.42	45.45	9.09	0.76	0.0	2.27

Provides: prof. Mgr. Jaroslav Hofierka, PhD., Mgr. Katarína Onačillová, PhD.

Date of last modification: 27.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ SDFM1/15	**Course name:** Methods of Data Processing in Physics

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 1 **Per study period:** 28 / 14
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 3.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:
1. Numerical processes and their errors. Particular properties of computer representation of numerical data. Introduction in Matlab/Octave.
2. Approximation and interpolation of a function. Algebraic multinomials. Newton, Lagrange, Hermit and spline interpolation. Selection of interpolation knots.
3. Numerical methods for calculation of definite integral – rectangular, trapezoidal, Simpson.
4. Numerical differentiation.
5. Numerical solution of ordinary differential equations – Euler's method and modifications, Runge-Kutta method.
6. Approximate solution of non-linear equations. Roots separation, simple iteration and its convergency. Tangent, secant and combined methods.
7. Iterative solution of linear system of algebraic equations, Gauss method.
8. Linear regression. Regression models, least-square criterion.
10. Non-linear regression models.
8. Basics of probability theory and mathematical statistics - systematic and random errors, Gaussian distribution, three-sigma rule, central limit theorem.
11. Computer simulation of real processes - Monte-Carlo method (principles, random quantities, pseudo-random number generators).
12. Simulation of particle transport through solid.

Recommended literature:
1. Buchanan J. L., Turner P. R.: Numerical Methods and Analysis. McGraw-Hill, Inc., New York, 1992.
2. Hrach R.: Počítačová fyzika I,II. Skriptum PF UJEP. Ed. stredisko UJEP, Ústí nad Labem, 2003.
3. Petrovič P., Nadrchal J., Petrovičová J.: Programovanie a spracovanie dát I, II. Edičné stredisko UPJŠ, Košice 1989.
4. Petrovič P.: Fyzika I – Vybrané kapitoly z klasickej fyziky a počítačovej fyziky. Vydavateľstvo equilibria, Košice, 2009.

4. Siegel A. F.: Statistics and Data Analysis. An Introduction. J. Wiley&Sons, NY, 1988.

Course language:
slovak, basics of english

Notes:

Course assessment
Total number of assessed students: 4

A	B	C	D	E	FX
50.0	50.0	0.0	0.0	0.0	0.0

Provides: doc. RNDr. Erik Čižmár, PhD.

Date of last modification: 21.09.2021

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚFV/ MFYU/15	**Course name:** Methods of Physical Problems Solving

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 5.

Course level: I.

Prerequisities:

Conditions for course completion:
Summary evaluation based on ongoing assessment:
1. Practical ongoing assignments for given topics and their defense (at least 50% needed)
2. Active participation during face-to-face contact learning in classical or virtual classroom (3 absences allowed) and during online learning (no absence, uploading all ongoing assignments)

Learning outcomes:
The student will gain the following knowledge and skills
1. overview of qualitative, quantitative and experimental methods of solving physical problems
2. can model a given physical problem and apply appropriate methods of solution according to the nature of the physical problem
3. can effectively use digital technologies on PC, mobile and tablet in solving physical problems.

Brief outline of the course:
Introduction to the subject
1. Overview of approaches, methods and means, sources of physical problems, competitions
Qualitative approaches in solving
2. Simple thought modeling and Fermi estimates,
3. Dimensional analysis, scaling
4. Application of symmetry and conservation laws
5. Graphic methods
Experiment and digital technologies in solving
6. Animations and simple simulations
(Geogebra, Phet, Workbench, Physlets)
7. Video analysis (Tracker), iconographic modeling (VnR, Coach)
8. Computer-aided, remote and virtual experiments (PC, tablet, mobile)
Quantitative approaches in solving
9. Models in the form of differential equations - computer modeling (Sage, Jupyter)
10. Symbolic and numerical solutions (Sage, Jupyter),
More advanced approaches to solutions
11. Qualitative approach through the theory of dynamical systems
12. Variational approaches (Lagrange, Hamilton)

13. 2D and 3D visualization and verification of solutions using a computer (Sage, Vpython)

Recommended literature:

1. Halliday, D., Resnick, R., Walker, J.: Fyzika 1-5, Akademické nakladatelství, VUTIUM, ISBN: 8021418680, 2007
2. Moore, T. A. Six Ideas that Shaped Physics: Units C, N, R, E, Q, T. 3rd ed., McGraw-Hill, Boston, 2017, http://www.physics.pomona.edu/sixideas/
3. Mahajan, S. The Art of Insight in Science and Engineering: Mastering Complexity. MIT Press, Boston, 2014.
4. Weinstein, L. Guesstimation: Solving Today's Problems on the Back of a Napkin. Princeton University Press Princeton, 2012.
5. Morin, D. Introduction to Classical Mechanics: With Problems and Solutions. Cambridge University Press. 2008
6. current information from web sites related to collections of physics problems and competitions, digital technologies for problem solving

Course language:
Slovak, English

Notes:

Course assessment
Total number of assessed students: 11

A	B	C	D	E	FX
81.82	9.09	9.09	0.0	0.0	0.0

Provides: doc. RNDr. Jozef Hanč, PhD.

Date of last modification: 27.01.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/HGV/21	**Course name:** Methods of human geographical research

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 3 **Per study period:** 42
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 15

A	B	C	D	E	FX
100.0	0.0	0.0	0.0	0.0	0.0

Provides: RNDr. Stela Csachová, PhD., Mgr. Marián Kulla, PhD., RNDr. Janetta Nestorová-Dická, PhD., univerzitná docentka, doc. Mgr. Ladislav Novotný, PhD., Mgr. Loránt Pregi, PhD.

Date of last modification: 27.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/FGV/21	**Course name:** Methods of physical geographical research

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 3 **Per study period:** 42
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 5.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 13

A	B	C	D	E	FX
100.0	0.0	0.0	0.0	0.0	0.0

Provides: RNDr. Dušan Barabas, CSc., RNDr. Alena Gessert, PhD., univerzitná docentka, doc. Ing. Katarína Bónová, PhD.

Date of last modification: 27.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚGE/ MTK/21	**Course name:** Methods of thematic cartography

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 2.

Course level: I.

Prerequisities:

Conditions for course completion:
The evaluation is based on the submitted assignments from the exercises.
Exercises are realized in the form of regular teaching, the introduction of the exercise is devoted to the theoretical basis, followed by the practical part of the exercise, which aims to work with spatial data in order to create a thematic map. During the semester, students will receive assignments aimed at creating a thematic map using selected methods of thematic cartography. Students submit assignments on an ongoing basis. Each assignment is evaluated separately. In order for the assignment to be accepted, it is necessary to obtain a minimum grade E from each assignment. The final evaluation is the average of the evaluation of individual assignments. Credits will be awarded only to a student who achieves a grade of at least E in the overall evaluation. Rating scale: A (100-91%), B (81-90%,) C (71-80%), D (61-70 %), E (51-60%).

Learning outcomes:
Knowledge: The student will gain knowledge and skills from thematic cartography. They will get acquainted with the theoretical aspects of the content and principles of creating thematic maps. He will gain theoretical foundations and an overview of various aspects of thematic cartography, such as color theory in cartography, types of scales and division of the statistical file into intervals. They will get acquainted with the means of expression cartographic and methods of thematic cartography and gain an overview of the use of dynamic elements of cartographic visualization. Skills: The student will learn to create thematic maps using GIS professionally and cartographically correctly. Can evaluate the suitability of the cartographic method for the representation of various geographical phenomena and determine the optimal procedure for creating thematic maps. Competences: The student is able to evaluate the thematic maps and the suitability of the methods of thematic cartography with a high degree of independence. He will get acquainted with professional terminology in the field of thematic cartography of geodesy, which will enable him to communicate and collaborate with other experts in the field of geodesy, geoinformatics and cartography.

Brief outline of the course:
Exercises: Introduction to thematic cartography (content and types of thematic maps, phases and principles of creating thematic maps, compiling the content of the thematic map); Means of expression; Colors in maps; Scales (data evaluation, division of scales, creation of interval and

functional scales, methods for plotting extremes in a statistical file); Legend of thematic maps; Point character method; Line character method; Area character method; Comma method; Isolinia method; Cartographs and cartograms method; Cartographic anamorphosis and cartotypogram method; methods for expressing the dynamics of spatial phenomena; Description in maps; composition of thematic maps; Geospatial data topology control and map generalization. Evaluation of maps and atlases; Animations, interactive maps and virtual reality in cartography.

Recommended literature:

VOŽENÍLEK, V. (2005). Cartography for GIS: geovisualization and map communication. Olomouc, Vydavatelství UP.
KRAAK, M.J., ORMELING, F. (2003). Cartography. Visualization of Geospatial Data. Harlow. Prentice Hall, Pearson Education.
PETERSON, M. P. ET AL. (1995). Interactive and Animated Cartography. Upper Saddle River Prentice Hall.
VOŽENÍLEK, V., KAŇOK, J. A KOL. (2012). Metody tematické kartografie: vizualizace prostorových informací. Olomouc, Univerzita Palackého v Olomouci.
SLOCUM, T.A. ET AL. (2002). Thematic Cartography and Visualization. Upper Saddle River, Pearson/Prentice Hall.

Course language:

Notes:

Course assessment

Total number of assessed students: 10

A	B	C	D	E	FX
70.0	20.0	0.0	0.0	0.0	10.0

Provides: doc. RNDr. Ján Kaňuk, PhD., Mgr. Jozef Šupinský, PhD.

Date of last modification: 27.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/MKR/21	**Course name:** Microgeography

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 23

A	B	C	D	E	FX
60.87	39.13	0.0	0.0	0.0	0.0

Provides: Mgr. Imrich Sládek, PhD., doc. Mgr. Ladislav Novotný, PhD.

Date of last modification: 27.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ NSGE/15	**Course name:** Mineral Resources - geological and environmental relations

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 1 **Per study period:** 28 / 14
Course method: present

Number of ECTS credits: 4

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 151

A	B	C	D	E	FX
41.72	25.17	21.19	9.27	0.66	1.99

Provides: doc. Ing. Katarína Bónová, PhD.

Date of last modification: 30.09.2021

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚFV/ MTFM/20	**Course name:** Modern Trends in Physics
Course type, scope and the method: **Course type:** Lecture **Recommended course-load (hours):** **Per week:** 2 **Per study period:** 28 **Course method:** present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 4.	
Course level: I.	
Prerequisities:	
Conditions for course completion: To successfully complete the course (full-time, if necessary distance), the student must demonstrate a sufficient understanding of the basic concepts and laws of physics, which were focused on lectures, elaboration of semester work on specified topics and successful oral examination and written processing and presentation of one topic, which is in the content of the subject. Credit assessment takes into account the scope of teaching (2 hours of lectures and self-study 2 credits). Rating scale complied with 100-50 failed 49-0	
Learning outcomes: After completing the lectures and exercises, the student will have sufficient knowledge of those parts of physics that have been included in the content of lectures.	
Brief outline of the course: Week 1-3: Selected lectures in theoretical physics and astrophysics Week 4-6: Selected lectures in nuclear physics Weeks 7-9: Selected lectures in biophysics Week 10-12: Selected lectures on condensed matter physics Week 13.-14: Presentation of students' work and discussion.	
Recommended literature: The literature is specified at the beginning of the semester according to selected topics.	
Course language: english	
Notes: Presence form represents a standart form for the course, if a need arises, the course is performed using MS Teams.	

Course assessment Total number of assessed students: 16	
abs	n
100.0	0.0
Provides: prof. RNDr. Peter Kollár, DrSc.	
Date of last modification: 22.11.2021	
Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.	

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: KPE/ MMKV/17	**Course name:** Multiculturalism and Multicultural Education

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 202

A	B	C	D	E	FX
41.09	44.06	13.37	0.99	0.5	0.0

Provides: PaedDr. Michal Novocký, PhD.

Date of last modification: 12.03.2024

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: KPE/Pg/15	**Course name:** Pedagogy

Course type, scope and the method:
Course type: Lecture
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 3.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 1139

A	B	C	D	E	FX
23.97	28.8	22.91	13.78	8.6	1.93

Provides: PaedDr. Michal Novocký, PhD., doc. PaedDr. Renáta Orosová, PhD.

Date of last modification: 12.03.2024

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚGE/ EXF/21	**Course name:** Physical Geography Excursion
Course type, scope and the method: **Course type:** Practice **Recommended course-load (hours):** **Per week: Per study period:** 6d **Course method:** present	
Number of ECTS credits: 3	
Recommended semester/trimester of the course: 4.	
Course level: I.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Notes:	

Course assessment
Total number of assessed students: 18

abs	n
100.0	0.0

Provides: RNDr. Dušan Barabas, CSc., RNDr. Alena Gessert, PhD., univerzitná docentka, Mgr. Imrich Sládek, PhD.
Date of last modification: 27.06.2022
Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/EXFG/15	**Course name:** Physical Geography Excursion

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: Per study period: 6d
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 798

A	B	C	D	E	FX
88.85	8.9	1.13	0.13	0.38	0.63

Provides: RNDr. Dušan Barabas, CSc., RNDr. Alena Gessert, PhD., univerzitná docentka

Date of last modification: 19.08.2020

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ FGS/15	**Course name:** Physical Geography of Slovakia

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 1 **Per study period:** 28 / 14
Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 5.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 544

A	B	C	D	E	FX
20.4	28.68	30.88	13.42	3.86	2.76

Provides: RNDr. Alena Gessert, PhD., univerzitná docentka, Mgr. Jozef Šupinský, PhD.

Date of last modification: 28.09.2021

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ FGS1/21	**Course name:** Physical Geography of Slovakia

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 1 **Per study period:** 28 / 14
Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 41

A	B	C	D	E	FX
21.95	29.27	31.71	7.32	2.44	7.32

Provides: RNDr. Alena Gessert, PhD., univerzitná docentka, doc. Ing. Katarína Bónová, PhD.

Date of last modification: 14.02.2023

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/FYG1/18	**Course name:** Physical geography 1

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 3 / 1 **Per study period:** 42 / 14
Course method: present

Number of ECTS credits: 6

Recommended semester/trimester of the course: 3.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:
Hydrology of the running water, genesis and development of river basins, measuring of water and its flow. Genesis and the main types of lakes, temperatures, water movements. Sea and water currents, its chemical properties, relief of the sea-floor. Subsurface waters, glaciers.
In the section of soil science and soil geography, physical and chemical nature of soils will be treated as well as actual and presently used systens of the soil classification. Distribution of different soil types in the world and Slovakia, principles of the soil zonality.

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 767

A	B	C	D	E	FX
2.35	5.61	21.12	27.25	36.25	7.43

Provides: RNDr. Dušan Barabas, CSc., RNDr. Alena Gessert, PhD., univerzitná docentka, Mgr. Imrich Sládek, PhD., Mgr. Ján Šašak, PhD.

Date of last modification: 19.08.2020

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ FYG2/05	**Course name:** Physical geography 2

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 3 / 1 **Per study period:** 42 / 14
Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:
Atmosphere:
1. Introduction to the study of meteorology and climatology (basic terms and definitions, history of meteorology and climatology in the world and in Slovakia, methods of obtaining data on weather and climate)
2. Atmosphere (composition and vertical division of the atmosphere, temperature and radiation balance)
3. Meteorological elements (solar radiation, air temperature, water in the atmosphere - air humidity, air pressure, air flow - wind)
4. Global atmospheric circulation (tropical and mimotropic circulation, air masses and atmospheric fronts)
5. Global climate (Earth's climate system, climate classifications in the world and in Slovakia)
6. Climate change (climate change in the geological history of the Earth, current climate change)
In the study of biogeography we will focus on the biosphere as a part of the physical-geographic sphere. Further focus will be put on the function and position of organisms on the surface, as well as the main regularities of their distribution throughout the world. Phytogeographical and zoogeographical regions of the world and Slovakia. In the practical part students acquaint with the soil profiles and important kinds of plants in Slovakia.

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 717

A	B	C	D	E	FX
28.17	27.62	26.08	11.44	6.14	0.56

Provides: RNDr. Alena Gessert, PhD., univerzitná docentka, Mgr. Imrich Sládek, PhD., RNDr. Dušan Barabas, CSc.
Date of last modification: 01.02.2022
Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ ZFP1a/22	**Course name:** Physics Practical I

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 3 **Per study period:** 42
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 2.

Course level: I.

Prerequisities:

Conditions for course completion:
Summary evaluation based on ongoing assessment:
1. Theoretical preparatory assignments (at least 50% of performance)
2. Group realization of experimental laboratory measurements, reporting their results in the protocol forms and their defense (at least 50% needed)
3. Active participation during group work in the classical or virtual laboratory (3 absences allowed) and during online learning (no absence, all individual theoretical assignments and laboratory protocols needed)

Learning outcomes:
Student should obtain and know to apply basic concepts and skills in
1. Designing and realizing classical and virtual physical experiments to improve or supplement new theoretical knowledge connected to introductory physics course: Mechanics &
Molecular Physics.
2. Processing, visualizing, analyzing, evaluating and scientific presenting experimental data according to Guide to the Expression of Uncertainty in Measurement (GUM) and using modern digital technology (computer probes and simulations, Jupyter notebooks, Google spreadsheets).

Brief outline of the course:
01.-02. Introduction, the concept of measurement error and uncertainty,
new SI units, the basic task of the experimenter
03.-04. Processing direct measurements, type A uncertainties, data visualization using digital technologies
05.- 06. Processing indirect measurements, type B uncertainties, uncertainty budget for the experiment, data analysis using digital technologies, temple and contents of laboratory protocols
07.-09. Laboratory tasks:
A. Measuring density of liquids and solids
B. Measuring spherical radius and area
C. Measuring moment of inertia
10. Defense of protocols
11.-13. Laboratory tasks:
D. Measuring dynamic fluid viscosity

E. Measuring state variables of thermal processes in air
F. Measuring thermal capacity of solids
14. Defense of protocols, final evaluation

Recommended literature:

1. RATCLIFFE, C.P. a RATCLIFFE, B., 2015. Doubt-Free Uncertainty In Measurement: An Introduction for Engineers and Students. London: Springer International Publishing. ISBN 978-3-319-12062-1.
2. DEGRO, J., JEŠKOVÁ, Z., ONDEROVÁ, Ľ. a KIREŠ, M., 2006. Základné fyzikálne praktikum I. Košice: Univerzita Pavla Jozefa Šafárika v Košiciach. ISBN 80-7097-649-7.
3. BUFFLER, A. ALLIE, S., LUBBEN F., CAMPBELL R., 2009. Introduction to Measurement in the Physics Laboratory: A probabilistic approach, University of York, York.
4. TAYLOR, J.R., 1997. Introduction To Error Analysis: The Study of Uncertainties in Physical Measurements. Sausalito CA: University Science Books. ISBN 978-0-935702-75-0.

Course language:
slovak

Notes:

Course assessment
Total number of assessed students: 19

A	B	C	D	E	FX
42.11	15.79	15.79	15.79	10.53	0.0

Provides: doc. RNDr. Jozef Hanč, PhD.

Date of last modification: 26.01.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚFV/ ZFP1b/03	**Course name:** Physics Practical II

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 3 **Per study period:** 42
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 3.

Course level: I.

Prerequisities: (ÚFV/ZFP1a/03 or ÚFV/ZFP1a/22)

Conditions for course completion:
To successfully complete the course, the student must measure at least 11 experimental tasks, process and analyze the measured results and evaluate the experimental results in the form of a protocol.
The condition for the implementation of another experimental task is the submission of a protocol from the previous exercise.
The condition for the implementation of the practical task is sufficient theoretical training at home. If the student is not ready for the task in advance, the teacher can send him home and the student must replace the exercise at another time.
The credit evaluation of the course takes into account the following student workload:
1 credit: self-study of recommended literature and subsequent direct teaching
1 credits: realization of experimental exercise and subsequent defense of measuring procedure - it is obligatory to complete all practical tasks in the semester,
1 credit: elaboration and submission of protocols from measurements, which are evaluated.

Learning outcomes:
By completing the course, the student will get acquainted with selected physical experiments in the field of electricity and magnetism and supplement the theoretical knowledge acquired in the course General Physics in a practical way.
The result of education is:
a) Complementing and summarizing knowledge and experimental skills in the field of electricity and magnetism.
b) Gaining practical experience with recording, analysis and interpretation of experimental data from practical measurements.
c) Gaining experience with the presentation of experimental results in the form of a measurement protocol.

Brief outline of the course:
Students on practical exercises are working in pairs experimental tasks in the field of electrical, electromagnetic and magnetic properties of matters.
1. Electrical Resistivity
2. Self - and Mutual Inductance and Capacity

3. Serial and Parallel Resonance
4. Thermal Dependence of Selected Electrical Phenomena in Solids
5. The Characteristics of Semiconductor Diod
6. The Characteristics of Semiconductor Bipolar Transistor
7. Magnetic Hysteresis
8. Hall Constant Measurements
9. Measurements of Horizontal Component of Earth Magnetic Field
10. Measuring characteristics of switching components
11. Measuring the properties of optoelectronic components
12. Electric current in liquids and electrolysis

Recommended literature:

1. Tumanski S, Handbook of magnetic measurements, CRC press, 2011.
2. Fiorillo F, Characterization and Measurement of Magnetic Materials, Elsevier, 2004.

Course language:
english

Notes:
Teaching is carried out in person. If necessary, part of the teaching can be realized remotely using the MS Teams or BBB tool. At the beginning of the semester, the teacher sets the conditions for completing and mastering the course.

Course assessment
Total number of assessed students: 264

A	B	C	D	E	FX
67.42	18.94	11.74	1.52	0.0	0.38

Provides: doc. RNDr. Adriana Zeleňáková, PhD., doc. RNDr. Ján Füzer, PhD.

Date of last modification: 30.09.2021

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ ZFP1c/14	**Course name:** Physics Practical III

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 3 **Per study period:** 42
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities:

Conditions for course completion:
Measurements of experimental tasks, their evaluation in the form of a written report, which must be defended. As a part of evaluation there is is also a good theoretical preparation for the measurement of the task.

Learning outcomes:
To gain some physical inside into some of the concepts presented in the lectures. b. To gain some practice in data collection, analysis and interpretation of resumance. c. To gain experience and report writing presentation and results.

Brief outline of the course:
Oscilations. Pendulum. Composition and decomposition of oscillations. Resonance. The speed of sound. Refractive index. Lense's focal length. Interference. Diffraction. Diffraction and reflection of waves. Polarization. The speed of light. Quantum optics.

Recommended literature:
Degro,J., Ješková, Z., Onderová,Ľ., Kireš,M.: Základné fyzikálne praktikum I, PF UPJŠ Košice, 2006
P. Kollár a kol. Základné fyzikálne praktikum II, PF UPJŠ Košice, 2006
J. Brož Základy fysikálních měření, SPN Praha, 1981.

Course language:
slovak, english

Notes:

Course assessment
Total number of assessed students: 99

A	B	C	D	E	FX
66.67	21.21	7.07	2.02	3.03	0.0

Provides: doc. RNDr. Marián Kireš, PhD., doc. RNDr. Ján Füzer, PhD., RNDr. Samuel Dobák, PhD.

Date of last modification: 01.02.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚFV/ ZFP1d/14	**Course name:** Physics Practical IV
Course type, scope and the method: **Course type:** Practice **Recommended course-load (hours):** **Per week:** 3 **Per study period:** 42 **Course method:** present	
Number of ECTS credits: 3	
Recommended semester/trimester of the course: 5.	
Course level: I.	
Prerequisities:	
Conditions for course completion: - a check of the theoretical preparation for measuring the given task - tests for tasks no. 2 (2x), 4,5,6,8, tests from the theoretical part - basic characteristics of radiation and detectors, each test with a minimum success rate of 51%, - measurement of tasks, elaboration and submission of protocols of measured tasks - the overall evaluation is the sum of the evaluations of the individual tasks	
Learning outcomes: The student will acquire knowledge and practical skills about the registration of various types of ionizing radiation and verify the knowledge acquired in the subject General Physics IV - Atomic and Nuclear Physics.	
Brief outline of the course: 1. Introduction to measurements. 2. Dosimetry measurements. 3. Statistic distribution of measured quantities. 4. Measurement time scale selection. 5. Absorption of beta rays. 6. Backward scattering of beta rays. 7. Scintillation gamma spectrometer. 8. Emulsion detector. 9. Franck Hertz experiment. 10. Beta - spectroscopy. 11. Energy dependence of the gamma-absorption coefficient. 12. MEDIPIX. 13. Interaction of photons with matter.	
Recommended literature: 1. J.Vrláková, S.Vokál: Základné fyzikálne praktikum III, skriptá PF UPJŠ, Košice, 2012, dostupné na http://www.upjs.sk/public/media/5596/Zakladne-fyzikalne-praktikum-III.pdf	

Course language:
slovak

Notes:

Course assessment
Total number of assessed students: 111

A	B	C	D	E	FX
82.88	8.11	5.41	2.7	0.0	0.9

Provides: doc. RNDr. Janka Vrláková, PhD., doc. RNDr. Adela Kravčáková, PhD., RNDr. Dominika Švecová

Date of last modification: 23.08.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/FDE/15	**Course name:** Physics in Demonstration Experiments

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 3.

Course level: I.

Prerequisities:

Conditions for course completion:
Seminar work – a project dealing with hands-on experiments and their role in Physics teachig.

Learning outcomes:
The goal of the course is to get better the understanding of basic physical concepts and phenomena through demonstrational physical experiments.

Brief outline of the course:
The course is aimed at the conceptual understanding of basic physical concepts and phenomena with the help of selected demonstrational experiments. The experiments concern the content of the subject Introductory physics and their realization is based on students´ active participation.

Recommended literature:
1. D.Halliday, R.Resnick, J.Walker: Fyzika, VUTIUM, Brno, 2000
2.K.Cummings, P.W.Law, E.F.Redish, P.J.Cooney: Understanding Physics,
John Wiley & Sons, Inc., 2004
3.P.G.Hewitt: Conceptual Physics, tenth edition, Pearson, Addison Wesley, 2006
4.Ľ.Onderová, M.Kireš, Z.Ješková, J.Degro: Praktikum školských pokusov II, PF UPJŠ, 2004

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 51

A	B	C	D	E	FX
82.35	11.76	3.92	1.96	0.0	0.0

Provides: doc. RNDr. Marián Kireš, PhD.

Date of last modification: 15.04.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/POL2/21	**Course name:** Political geography

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 1 / 2 **Per study period:** 14 / 28
Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 14

A	B	C	D	E	FX
21.43	35.71	42.86	0.0	0.0	0.0

Provides: RNDr. Stela Csachová, PhD., doc. Mgr. Ladislav Novotný, PhD.

Date of last modification: 27.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚGE/ POL1/18	**Course name:** Political geography and geopolitics
Course type, scope and the method: **Course type:** Lecture / Practice **Recommended course-load (hours):** **Per week:** 1 / 2 **Per study period:** 14 / 28 **Course method:** present	
Number of ECTS credits: 5	
Recommended semester/trimester of the course: 6.	
Course level: I.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Notes:	

Course assessment
Total number of assessed students: 341

A	B	C	D	E	FX
43.4	31.96	15.54	6.74	2.05	0.29

Provides: RNDr. Stela Csachová, PhD., doc. Mgr. Ladislav Novotný, PhD.
Date of last modification: 12.09.2020
Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/GOBY/21	**Course name:** Population Geography

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 2 **Per study period:** 28 / 28
Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 2.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 79

A	B	C	D	E	FX
6.33	5.06	26.58	37.97	20.25	3.8

Provides: doc. Mgr. Ladislav Novotný, PhD., RNDr. Janetta Nestorová-Dická, PhD., univerzitná docentka

Date of last modification: 19.02.2024

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚGE/ PVS/18	**Course name:** Population growth in Slovakia
Course type, scope and the method: **Course type:** Lecture / Practice **Recommended course-load (hours):** **Per week:** 2 / 1 **Per study period:** 28 / 14 **Course method:** present	
Number of ECTS credits: 5	
Recommended semester/trimester of the course: 4.	
Course level: I.	
Prerequisities:	
Conditions for course completion: The evaluation of student´s performance is implemented through a combination of current, random control during the term and the examination part within a particular period of the semester. This type of continuous control includes at least 80% of students´ active participation in teaching and successful solutions of given assignments. If a student does not follow and fullfil these two conditions, i. e. compulsory active learning part of the course, together with active participation and in addition will not solve assigned tasks successfully cannot register, assign for the examination (oral/written). If the student receives more than 51% in the written form may proceed to the oral form. If a student does not demonstrate particular knowledge during the oral examination student has to take both forms of the examination once again.	
Learning outcomes: The Student shall acquires deeper knowledge of the population of Slovakia in terms of time and 3-D.	
Brief outline of the course: Development of the population and its spatial differentiation, population Dynamics (natural, migration, the total movement); Reproduction of the population; Migration for work, Foreign and internal migration; The ageing of the population; The specificities of the Roma population in Slovakia; The educational structure of the population; Economic, social, according to the marital status of the population structure; Ethnic and religions structure of the population ; Slovakia in the EU in terms of population processes; The demographic future of Slovakia. Seminars Workshops during the semester are focused on filling the solution of tasks in order to practice or demonstrate the phenomena studied in the different regional units.	
Recommended literature:	
Course language:	
Notes:	

Course assessment Total number of assessed students: 155					
A	B	C	D	E	FX
54.19	7.1	16.77	9.68	9.68	2.58
Provides: RNDr. Janetta Nestorová-Dická, PhD., univerzitná docentka					
Date of last modification: 29.03.2020					
Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: KPPaPZ/PP/15	**Course name:** Positive Psychology

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 4., 6.

Course level: I.

Prerequisities:

Conditions for course completion:
Assessment is based on interim evaluation. The subject will be taught in both present and distance format. Up-to-date information concerning the subject for the given academic year can be found on the electronic board of the subject in the Academic information system of the UPJŠ.

Learning outcomes:
Students will acquire basic knowledge concerning the reasons for founding Positive psychology, its main theory, current research, as well as application of Positive psychology as a new and rapidly developing field within psychology. Students will also gain experience in applying critical thinking to the challenges and issues that Positive psychology brings and raises in the context of the individual in contemporary society. Emphasis is placed on the ability to critically evaluate current topics of positive psychology.

Brief outline of the course:
1. Different perspectives on well-being nad happiness in psychology
2. Main theoretical approaches to positive psychology
3. Positive emotions and positivity
4. Meaningfulness
5. Positive interpersonal relations
6. Post-traumatic growth
7. Hope and optimism
8. Gratitude
9. Spirituality as a personality dimension
10. Wisdom
11. Positive institutions
12. New themes and topics in PP

Recommended literature:
Brewer, M. B, Hwestone, M: Emotion and Motivation, Blackwell, 2004
Deci, E., Ryan R. M., Handbook of Self – Determination Reasearch, Rochester, 2002
Křivohlavý, J.: Pozitivní psychologie. Praha, Portál, 2003
Křivohlavý, J.: Psychologie vděčnosti a nevděčnosti. Praha, Grada, 2007
Křivohlavý, J.: Psychologie moudrosti a dobrého života, Praha, Grada, 2012

Křivohlavý, J.: Psychologie pocitu štěstí, Grada, 2013
McAdams, D. P., The Person, New York, 2002
Seligman, M. E. P., & Csikszentmihalyi, M. (Eds.). (2000). Positive psychology [Special issue] American Psychologist, 55(1).
Říčan, P.: Psychologie náboženství a spirituality, Praha, Portál, 2007
Slezáčková, A.:Pruvodce pozitivní psychologií, Praha, Grada, 2012

Course language:

Notes:

Course assessment
Total number of assessed students: 457

A	B	C	D	E	FX
98.25	1.31	0.22	0.0	0.22	0.0

Provides: Mgr. Jozef Benka, PhD.

Date of last modification: 24.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: KPPaPZ/Ps/15	**Course name:** Psychology

Course type, scope and the method:
Course type: Lecture
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 3.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 858

A	B	C	D	E	FX
37.41	20.98	16.2	12.59	11.07	1.75

Provides: PhDr. Anna Janovská, PhD., Mgr. Ondrej Kalina, PhD.

Date of last modification: 24.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: KPPaPZ/PKŽ/15	**Course name:** Psychology of Everyday Life

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 3.

Course level: I.

Prerequisities:

Conditions for course completion:
The evaluation of the course and its subsequent completion will be based on clearly and objectively set requirements, which will be set in advance and will not change. The aim of the assessment is to ensure an objective and fair mapping of the student's knowledge while adhering to all ethical and moral standards. There is no tolerance for students' fraudulent behavior, whether in the teaching process or in the assessment process.
1. Active participation in seminars
2. Elaboration and presentation of PPT presentation on the assigned topic. Maximum number of points 20; minimum number of points 11.
3. Elaboration of an essay in the range of 4xA4 (standard pages). Maximum number of points 20; minimum number of points 11.
The final evaluation (grade) is the sum of points for the presentation and the essay.
A 40b - 37b
B 36b - 33b
C 32b - 29b
D 28b - 25b
E 24b - 21b
FX 20b - 0b

Learning outcomes:
The student is able to demonstrate an understanding of the individual's behavior in selected everyday situations such as conflict, group influence, empathy, helping, aggression, etc.
The student is able to describe, explain and evaluate the psychological mechanisms that occur in everyday situations.
The student is able to apply basic psychological knowledge to himself (self-regulation) but also in interaction with others (cooperation).
The method of teaching the subject will be oriented to the student. Speakers will be interested in the needs, expectations and opinions of students so as to encourage them to think critically by expressing respect and feedback on their opinions and needs.
The content of the curriculum will be based on primary and high-quality sources that will reflect the topicality of the topics so as to ensure the connection of the curriculum with other subjects and also

the connection of the curriculum with practice. Students will be expected to take an active approach in lectures and seminars with an emphasis on their independence and responsibility.

Brief outline of the course:
How to understand human behavior (overview of basic approaches in psychology); Basic overview of cognitive processes; Learning processes and their use in practice; Social influences, prosocial and antisocial behavior; How human emotions and motivations work; Deciding - why and when we take risks; Childhood experiences and their relationship to adulthood; Abnormal behavior, mental disorders and therapeutic approaches

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 228

A	B	C	D	E	FX
42.11	25.0	26.32	4.82	1.32	0.44

Provides: Mgr. Ondrej Kalina, PhD.

Date of last modification: 24.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/KMG/17	**Course name:** Quantitative Methods in Geography

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 1 / 2 **Per study period:** 14 / 28
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 2.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 192

A	B	C	D	E	FX
26.04	18.23	20.31	18.75	16.67	0.0

Provides: RNDr. Janetta Nestorová-Dická, PhD., univerzitná docentka, prof. Mgr. Jaroslav Hofierka, PhD., Mgr. Patrícia Gurová

Date of last modification: 29.03.2020

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚFV/ KVM/15	**Course name:** Quantum Mechanics I.

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 3 / 2 **Per study period:** 42 / 28
Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 5.

Course level: I.

Prerequisities:

Conditions for course completion:
To successfully complete the course, the student must demonstrate sufficient understanding of the basics terms, concepts and applications of quantum physics. Knowledge of basic concepts is required from quantum physics at the level of their mathematical definition as well as their physical content and concrete applications. During the semester, the student must continuously master the content of the curriculum in order to gain the acquired knowledge, which he should actively and creatively use in solving specific tasks during exercises and complete continuous written tests taken into account in the overall evaluation of the subject. The condition for obtaining credits is passing 2 continuous written tests in exercises and an oral exam, which consists of one computational task and theoretical questions. The credit evaluation of the course takes into account the following student workload: direct teaching (2 credits), self-study (1 credit), individual consultations (1 credit) and assessment (1 credit). The minimum threshold for completing the course is to obtain at least 50% of the total score, using the following rating scale: A (90-100%), B (80-89%), C (70-79%), D (60-69%), E (50-59%), F (0-49%).

Learning outcomes:
After completing lectures and exercises, the student will have sufficient physical skills, knowledge and mathematical apparatus enabling independent solution of a wide range of traditional scientific problems in quantum physics. At the same time, he will gain an overview of the applications of quantum physics in various areas of physics such as nuclear physics, condensed matter physics, statistical physics, etc.

Brief outline of the course:
1. Subject of study, experimental and theoretical foundations of quantum mechanics (QM).
2. Wave formulation of QM. Postulate about wave function, superposition principle and postulate about operators.
3. Eigenvalues and eigenfunctions of operators. Measurement of quantities and reduction of wave function.
4. Time-independent and time-dependent Schrödinger equation. Ehrenfest equations and integrals of motion. A continuity equation.
5. Matrix formulation of QM, Dirac symbolism, calculation of mean values and density matrix.
6. Current immeasurability of physical quantities, Heisenberg uncertainty relations.

7. Solution of the Schrödinger equation for a particle in an infinitely deep potential well and a particle in the final potential well. Bound and scattering states.
8. Passage of a particle through a potential barrier: tunneling and barrier reflection.
9. Solution of Schrödinger equation for linear harmonic oscillator.
10. Particle motion in the central potential field, angular part of the Schrödinger equation.
11. Particle motion in the central potential field, radial part of the Schrödinger equation. Hydrogen atom.
12. Electron spin, Pauli matrix. Principle of indistinguishability of identical particles, fermions and bosons. Pauli's exclusion principle.

Recommended literature:

1. Ľ. Tóth, M. Tóthová, Kvantová a štatistická fyzika I, Rektorát Univerzity P. J. Šafárika, 1982. (in Slovak language)
2. Ľ. Skála, Úvod do kvantovej mechaniky, Academia, Praha, 2005. (in Czech language)
3. J. Pišút, L. Gomolčák, Úvod do kvantovej mechaniky, Bratislava 1983. (in Slovak language)
4. W. Greiner, Quantum Mechanics, 4th edition, Springer, Berlin, 2000.
5. A. C. Philips, Introduction to Quantum Mechanics, Wiley, Weinheim, 2003.
6. D. J. Griffiths, Introduction to Quantum Mechanics, Prentice Hall, New Jersey, 1995.
7. G. Auletta, M. Fortunato, G. Parisi, Quantum Mechanics, Cambridge University Press, Cambridge, 2009.

Course language:
EN - english

Notes:

Course assessment
Total number of assessed students: 46

A	B	C	D	E	FX
23.91	19.57	26.09	15.22	6.52	8.7

Provides: doc. RNDr. Jozef Strečka, PhD.

Date of last modification: 19.09.2021

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ RGE2/21	**Course name:** Regional Geography of Europe

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 3 / 1 **Per study period:** 42 / 14
Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 12

A	B	C	D	E	FX
8.33	33.33	33.33	25.0	0.0	0.0

Provides: RNDr. Stela Csachová, PhD., RNDr. Alena Gessert, PhD., univerzitná docentka, doc. Mgr. Ladislav Novotný, PhD., doc. RNDr. Ján Kaňuk, PhD.

Date of last modification: 27.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ ADPZ/22	**Course name:** Remote sensing applications

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 1 / 2 **Per study period:** 14 / 28
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 5.

Course level: I., II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 11

A	B	C	D	E	FX
100.0	0.0	0.0	0.0	0.0	0.0

Provides: prof. Mgr. Jaroslav Hofierka, PhD., doc. RNDr. Ján Kaňuk, PhD., Mgr. Katarína Onačillová, PhD., Mgr. Ján Šašak, PhD.

Date of last modification: 20.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: KPPaPZ/RKS/14	**Course name:** Resolving Conflict Situations in Educational Practice
Course type, scope and the method: **Course type:** Lecture / Practice **Recommended course-load (hours):** **Per week:** 1 / 2 **Per study period:** 14 / 28 **Course method:** present	
Number of ECTS credits: 4	
Recommended semester/trimester of the course: 3., 5.	
Course level: I., N	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Notes:	

Course assessment
Total number of assessed students: 178

abs	n
94.38	5.62

Provides: PhDr. Anna Janovská, PhD., Mgr. Lucia Barbierik, PhD.
Date of last modification: 24.06.2022
Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: KPE/ OLŠ/15	**Course name:** School Administration and Legislation

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 3., 5.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 322

A	B	C	D	E	FX
45.65	29.81	14.29	6.52	3.11	0.62

Provides: PaedDr. Michal Novocký, PhD.

Date of last modification: 12.03.2024

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚTVŠ/ ÚTVŠ/CM/13	**Course name:** Seaside Aerobic Exercise

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course:

Course level: I., II.

Prerequisities:

Conditions for course completion:
Completion: passed
Condition for successful course completion:
- active participation in line with the study rule of procedure and course guidelines
- effective performance of all tasks- aerobics, water exercise, yoga, Pilates and others

Learning outcomes:
Content standard:
The student demonstrates relevant knowledge and skills in the field, which content is defined in the course syllabus and recommended literature.
Performance standard:
Upon completion of the course students are able to meet the performance standard and:
- perform basic aerobics steps and basics of health exercises,
- conduct verbal and non-verbal communication with clients during exercise,
- organise and manage the process of physical recreation in leisure time

Brief outline of the course:
Brief outline of the course:
1. Basic aerobics – low impact aerobics, high impact aerobics, basic steps and cuing
2. Basics of aqua fitness
3. Basics of Pilates
4. Health exercises
5. Bodyweight exercises
6. Swimming
7. Relaxing yoga exercises
8. Power yoga
9. Yoga relaxation
10. Final assessment

Students can engage in different sport activities offered by the sea resort – swimming, rafting, volleyball, football, table tennis, tennis and other water sports in particular.

Recommended literature:
1. BUZKOVÁ, K. 2006. Fitness jóga. Praha: Grada. 167 s.

2. ČECHOVSKÁ, I., MILEROVÁ, H., NOVOTNÁ, V. Aqua-fitness. Praha: Grada. 136 s.
3. EVANS, M ., HUDSON, J., TUCKER, P. 2001. Umění harmonie: meditace, jóga, tai-či, strečink. 192 s.
4. JARKOVSKÁ, H., JARKOVSKÁ, M. 2005. Posilováni s vlastním tělem 417 krát jinak. Praha: Grada. 209 s.
5. KOVAŘÍKOVÁ, K. 2017. Aerobik a fitness. Karolium, 130 s.

Course language:
Slovak language

Notes:

Course assessment
Total number of assessed students: 54

abs	n
11.11	88.89

Provides: Mgr. Agata Dorota Horbacz, PhD.

Date of last modification: 29.03.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: KF/ VKFV/07	**Course name:** Selected Topics in Philosophy of Education (General Introduction)

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 32

A	B	C	D	E	FX
68.75	18.75	9.38	3.13	0.0	0.0

Provides: PhDr. Dušan Hruška, PhD.

Date of last modification: 13.04.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: KF/ VKFV/07	**Course name:** Selected Topics in Philosophy of Education (General Introduction)

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 3., 5.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 32

A	B	C	D	E	FX
68.75	18.75	9.38	3.13	0.0	0.0

Provides: PhDr. Dušan Hruška, PhD.

Date of last modification: 13.04.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: KPPaPZ/ECo-C2/14	**Course name:** Self Marketing ECo-C2

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: combined, present

Number of ECTS credits: 4

Recommended semester/trimester of the course: 4., 6.

Course level: I., N

Prerequisities:

Conditions for course completion:
1. Active participation in lessons (absence is allowed max. 90 min.), 2. Realization of assignments according to the teacher's instructions.
Detailed information in the electronic bulletin board of the course in AIS2. The teaching of the subject will be realized by a combined method.

Learning outcomes:
The student is able to understand and explain the basic assumptions of good self-marketing, knows the possibilities for the correct presentation of his own person and understands the related knowledge and principles of personal and communication area. He / she can understand his / her competencies, his / her goals, how to make his / her strengths visible and he / she can apply this knowledge and social and professional skills in the personal and professional sphere of his / her life, which will also improve his / her employment opportunities.

Brief outline of the course:
What is marketing? (Marketing - Mix)
Basics of self-marketing (Personal opinion is crucial, Goal setting, Proper use of opportunity)
Me and my influence (What can I offer? What does he / she have unlike me? How do others see me? Ability to defend one's own opinion, Think positively!, I know how to explore myself - what options do I have?),
Competence (Have your own opinion, How to withstand criticism, Be a team player, Competence at work),
Draw attention to yourself (Voice and word selection, Active in meetings, Present yourself successfully).

Recommended literature:
VÝROST, Jozef - SLAMĚNÍK, Ivan. Sociální psychologie. 2., přepr. a rozš. vyd. Praha : GRADA, 2008. 408 s.
VÝROST, Jozef - SLAMĚNÍK, Ivan. Aplikovaná sociální psychologie I : Člověk a sociální instituce. 1. vyd. Praha : Portál, 1998. 384 s. ISBN 80-7178-269-6.
KOMÁRKOVÁ, Růžena - SLAMĚNÍK, Ivan - VÝROST, Jozef. Aplikovaná sociální psychologie III : Sociálněpsychologický výcvik. 1. vyd. Praha : Grada Publishing, 2001. 224 s.

VÝROST, Jozef - SLAMĚNÍK, Ivan. Aplikovaná sociální psychologie II. 1. vyd. Praha : Grada Publishing, 2001. 260 s.

Course language:
slovak

Notes:
After passing the certification exams from all 4 modules (Teamwork, Selfmarketing, Conflict Management, Communication) the student will receive an ECo-C card and an ECo-C certificate.

Course assessment
Total number of assessed students: 163

abs	n
90.18	9.82

Provides: Mgr. Lucia Barbierik, PhD.

Date of last modification: 24.06.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚGE/ SBP1/13	**Course name:** Seminar for Bachelor Thesis I.
Course type, scope and the method: **Course type:** Practice **Recommended course-load (hours):** **Per week:** 2 **Per study period:** 28 **Course method:** present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 5.	
Course level: I.	
Prerequisities:	
Conditions for course completion: Verification of acquired basic methodologic and formal procedures of the final thesis creation by presentation (70% of rating) and written examination (30%). To obtain A grade, weighted average of the both parts of examination must reach at least 90%, To obtain B it is 80%, for C it is 70%, for D 60% and for E 50%. Credits shall not be granted to a student who obtain less than 50% from any of both parts of examination.	
Learning outcomes: Mastering basic theoretical, methodological and formal scientific procedures of bachelor thesis creation.	
Brief outline of the course: The content and form of selected parts of thesis writing (abstract, introduction, conclusion, etc.) Ethics and culture of writing diploma thesis, citations and references, types of sources (printed, electronic, etc.). Formal aspects of the thesis. Linguistic adjustment (terminology, stylistics, syntax, grammar, typography). Rules of presentation of the thesis. Presentation of current results and state of diploma thesis.	
Recommended literature: ÚTVAR REKTORA UPJŠ 2019: Základné usmernenia a dokumenty k záverečným prácam na UPJŠ v Košiciach. Dostupné na: <https://www.upjs.sk/pracoviska/univerzitna-kniznica/zaverecne-prace/>. ÚSTAV GEOGRAFIE PF UPJŠ 2019: Pokyny na tvorbu záverečných prác na Ústave gego-rafie Prírodovedeckej fakulty UPJŠ v Košiciach. Dostupné na: <https://geografia.science.upjs.sk/images/studium/Pokyny_ZP_UGE_2019.pdf>. HOVORKA, D., KOMÁREK, K., CHRAPAN, J. 2011: Ako písať a komunikovať. Martin (Vydavateľstvo Osveta). KATUŠČÁK, D. 2008: Ako písať záverečné a kvalifikačné práce. Nitra (Enigma).	
Course language: Slovak	
Notes:	

Course assessment
Total number of assessed students: 448

A	B	C	D	E	FX
91.96	6.7	0.67	0.0	0.67	0.0

Provides: prof. Mgr. Jaroslav Hofierka, PhD., doc. Mgr. Ladislav Novotný, PhD.

Date of last modification: 22.09.2020

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ SBP2/13	**Course name:** Seminar for Bachelor Thesis II.

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities:

Conditions for course completion:
Verification of acquired methodological and formal procedures of the creation of bachelor thesis by the presentation of current thesis creation by presentation of own bachelor thesis (100% of rating). To obtain A grade, the rating os student's presentation must reach at least 90%, To obtain B it is 80%, for C it is 70%, for D 60% and for E 50%. Credits shall not be granted to a student who obtain rating less than 50%.

Learning outcomes:
Acquired skills to apply theoretical, methodological and formal scientific procedures of diploma thesis creation.

Brief outline of the course:
The seminary is focused to the topics of individual bachelor thesis. Students present current state of their thesis, its content and its particular parts. Each bachelor thesis is discussed at scientific level.

Recommended literature:
HOVORKA, D., KOMÁREK, K., CHRAPAN, J. 2011: Ako písať a komunikovať. Martin (Vydavateľstvo Osveta), 247 s.
KATUŠČÁK, D. 2008: Ako písať záverečné a kvalifikačné práce. Nitra (Enigma), 162 s.
ÚTVAR REKTORA UPJŠ (2011): Smernica č. 1/2011, Dostupné na internete: <http://www.upjs.sk/public/media/2438/smernica-1-2011.pdf>, 25 s.

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 391

A	B	C	D	E	FX
69.57	21.48	7.67	0.51	0.26	0.51

Provides: prof. Mgr. Jaroslav Hofierka, PhD., doc. Mgr. Ladislav Novotný, PhD., Mgr. Katarína Onačillová, PhD.

Date of last modification: 03.05.2015
Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚGE/SHG/21	**Course name:** Seminar of human geography
Course type, scope and the method: **Course type:** Practice **Recommended course-load (hours):** **Per week:** 2 **Per study period:** 28 **Course method:** present	
Number of ECTS credits: 3	
Recommended semester/trimester of the course: 6.	
Course level: I.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Notes:	

Course assessment
Total number of assessed students: 10

abs	n
90.0	10.0

Provides: Mgr. Marián Kulla, PhD., RNDr. Stela Csachová, PhD., RNDr. Janetta Nestorová-Dická, PhD., univerzitná docentka, doc. Mgr. Ladislav Novotný, PhD.
Date of last modification: 27.06.2022
Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚGE/SFG/21	**Course name:** Seminar of physical geography
Course type, scope and the method: **Course type:** Practice **Recommended course-load (hours):** **Per week:** 2 **Per study period:** 28 **Course method:** present	
Number of ECTS credits: 3	
Recommended semester/trimester of the course: 6.	
Course level: I.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Notes:	

Course assessment
Total number of assessed students: 0

abs	n
0.0	0.0

Provides: RNDr. Dušan Barabas, CSc., doc. Ing. Katarína Bónová, PhD., RNDr. Alena Gessert, PhD., univerzitná docentka
Date of last modification: 27.06.2022
Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: KPO/ SPKVV/15	**Course name:** Social and Political Context of Education

Course type, scope and the method:
Course type: Lecture
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 4., 6.

Course level: I.

Prerequisities:

Conditions for course completion:
Evaluation of the developed assignment.
A ... 100,00% - 91,00%
B ... 90,99% - 81,00%
C ... 80,99% - 71,00%
D ... 70,99% - 61,00%
E ... 60,99% - 51,00%
FX ... 50,99% and less

Learning outcomes:
The aim and purpose of teaching the subject is to impart knowledge and promote reflection on the issues of education and training in the context of social and political change.
Development of knowledge: the student will be able to know the current theoretical background related to the process of education and training in a modern democratic society.
The student will be able to navigate the social and political space - politically, legally, socially and culturally. He/she will be able to look for alternatives and solutions to dysfunctions, while at the same time exploiting opportunities and ways to implement them.

Brief outline of the course:
The status, role and functions of education in human life and society. The political, social and economic objectives of education. Education, learning and social change in the context of globalisation. Macrosocial determinants of education. Current roles of education and training in modern performance and democratic society.

Recommended literature:
Domestic and foreign journal literature
Kudláčová, B.(2007) Človek a výchova v dejinách európskeho myslenia. Trnava: PdF TU
Zeus Leonardo (2010) Handbook of Cultural Politics and Education. Rotterdam, The Netherlands.

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 161

A	B	C	D	E	FX
59.63	21.12	12.42	4.35	1.24	1.24

Provides: Mgr. Ján Ruman, PhD.

Date of last modification: 13.04.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/TRS/03	**Course name:** Special Theory of Relativity

Course type, scope and the method:
Course type: Lecture
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 5.

Course level: I., II.

Prerequisities: ÚFV/TEP1/03

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 184

A	B	C	D	E	FX
50.54	21.2	15.22	8.15	4.89	0.0

Provides: RNDr. Tomáš Lučivjanský, PhD., univerzitný docent

Date of last modification: 16.11.2021

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: KGER/ OJPV1/07	**Course name:** Specialised German Language - Natural Sciences 1

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities:

Conditions for course completion:
Active participation in class and completed homework assignments. Students are allowed to miss 2 classes at the most (2x90 min.). 1 control tests during the semester and written assignments. Final grade will be calculated as follows: A 93-100 %, B 86-92%, C 79-85%, D 72-78%, E 65-71%, FX 64 % and less.

Learning outcomes:
The development of students´ language skills - reading, writing, listening, speaking, improvement of their linguistic competence - students acquire knowledge of selected phonological, lexical and syntactic aspects, development of pragmatic competence - students can efectively use the language for a given purpose, with focus on Academic English and English for specific/professional purposes - Natural Science , level B1.

Brief outline of the course:

Recommended literature:
Duden Basiswissen Schule. Abitur: Enthält die Bände Mathematik, Physik, Chemie, Biologie, Geographie, Geschichte. (2007). ISBN: 978-3411002511.
Zettl, E. et al.: Aus moderner Technik und Naturwissenschaft. Ismaning: Hueber, 2003.
Reiss, K.: Basiswissen Zahlentheorie: Eine Einführung in Zahlen und Zahlbereiche (Mathematik für das Lehramt), Springer, 2007. ISBN: 978-3540453772.
Meyer, L., Schmidt, G.- D.: Basiswissen Ausbildung: Physik. Bildungsverlag EINS, 2008. ISBN: 978-3427799337.
Duden. Schülerduden Biologie: Das Fachlexikon von A-Z. Bibliographisches Institut Berlin, 2009. ISBN: 978-3411054275.
Mortimer, Ch. E., Müller, U., Beck, J.: Chemie: Das Basiswissen der Chemie. Stuttgart: Thieme, 2014. ISBN: 978-313484311
Deutsch perfekt, GEO, MaxPlanck Forschung a iné printové a elektronické médiá

Course language:
German

Notes:

Course assessment Total number of assessed students: 148					
A	B	C	D	E	FX
24.32	22.97	24.32	20.27	7.43	0.68
Provides: Mgr. Ulrika Strömplová, PhD.					
Date of last modification: 09.02.2023					
Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚTVŠ/ TVa/11	**Course name:** Sports Activities I.

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 1.

Course level: I., II.

Prerequisities:

Conditions for course completion:
Min. 80% of active participation in classes.

Learning outcomes:
Sports activities in all their forms prepare university students for their professional and personal life. They have a great impact on physical fitness and performance. Specialization in sports activities enables students to strengthen their relationship towards the selected sport in which they also improve.

Brief outline of the course:
Brief outline of the course:
The Institute of physical education and sport at the Pavol Jozef Šafárik University offers 20 sports activities aerobics; aikido, basketball, badminton, body-balance, body form, bouldering, floorball, yoga, power yoga, pilates, swimming, fitness, indoor football, SM system, step aerobics, table tennis, chess, volleyball, tabata, cycling.
Additionally, the Institute of physical education and sport at the Pavol Jozef Šafárik University offers winter courses (ski course, survival) and summer courses (aerobics by the sea, rafting on the Tisza River) with an attractive programme, sports competitions with national and international participation.

Recommended literature:
BENCE, M. et al. 2005. Plávanie. Banská Bystrica: FHV UMB. 198s. ISBN 80-8083-140-8. [online] Dostupné na: https://www.ff.umb.sk/app/cmsFile.php?disposition=a&ID=571
BUZKOVÁ, K. 2006. Fitness jóga, harmonické cvičení těla I duše. Praha: Grada. ISBN 8024715252.
JARKOVSKÁ, H, JARKOVSKÁ, M. 2005. Posilování s vlastním tělem 417 krát jinak. Praha: Grada. ISBN 9788024757308.
KAČÁNI, L. 2002. Futbal:Tréning hrou. Bratislava: Peter Mačura – PEEM. 278s. ISBN 8089197027.
KRESTA, J. 2009. Futsal.Praha: Grada Publishing, a.s. 112s. ISBN 9788024725345.
LAWRENCE, G. 2019. Power jóga nejen pro sportovce. Brno: CPress. ISBN 9788026427902.
SNER, Wolfgang. 2004. Posilování ve fitness. České Budějovice: Kopp. ISBN 8072322141.

STACKEOVÁ, D. 2014. Fitness programy z pohledu kinantropologie. Praha: Galén. ISBN 9788074921155.
VOMÁČKO, S. BOŠTÍKOVÁ, S. 2003. Lezení na umělých stěnách. Praha: Grada. 129s. ISBN 8024721743.

Course language:
Slovak language

Notes:

Course assessment
Total number of assessed students: 15193

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
86.05	0.07	0.0	0.0	0.0	0.05	8.69	5.15

Provides: Mgr. Patrik Berta, Mgr. Agata Dorota Horbacz, PhD., Mgr. Dávid Kaško, PhD., Mgr. Ladislav Kručanica, PhD., Mgr. Richard Melichar, Mgr. Petra Tomková, PhD., Mgr. Marcel Čurgali, Mgr. Alena Buková, PhD., doc. PaedDr. Ivan Uher, MPH, PhD., prof. RNDr. Stanislav Vokál, DrSc., Mgr. Zuzana Küchelová, PhD.

Date of last modification: 07.02.2024

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚTVŠ/ TVb/11	**Course name:** Sports Activities II.

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 2.

Course level: I., II.

Prerequisities:

Conditions for course completion:
active participation in classes - min. 80%.

Learning outcomes:
Sports activities in all their forms prepare university students for their professional and personal life. They have a great impact on physical fitness and performance. Specialization in sports activities enables students to strengthen their relationship towards the selected sport in which they also improve.

Brief outline of the course:
Brief outline of the course:
The Institute of physical education and sport at the Pavol Jozef Šafárik University offers 20 sports activities aerobics; aikido, basketball, badminton, body-balance, body form, bouldering, floorball, yoga, power yoga, pilates, swimming, fitness, indoor football, SM system, step aerobics, table tennis, chess, volleyball, tabata, cycling.
Additionally, the Institute of physical education and sport at the Pavol Jozef Šafárik University offers winter courses (ski course, survival) and summer courses (aerobics by the sea, rafting on the Tisza River) with an attractive programme, sports competitions with national and international participation.

Recommended literature:
BENCE, M. et al. 2005. Plávanie. Banská Bystrica: FHV UMB. 198s. ISBN 80-8083-140-8. [online] Dostupné na: https://www.ff.umb.sk/app/cmsFile.php?disposition=a&ID=571
BUZKOVÁ, K. 2006. Fitness jóga, harmonické cvičení těla I duše. Praha: Grada. ISBN 8024715252.
JARKOVSKÁ, H, JARKOVSKÁ, M. 2005. Posilování s vlastním tělem 417 krát jinak. Praha: Grada. ISBN 9788024757308.
KAČÁNI, L. 2002. Futbal:Tréning hrou. Bratislava: Peter Mačura – PEEM. 278s. ISBN 8089197027.
KRESTA, J. 2009. Futsal.Praha: Grada Publishing, a.s. 112s. ISBN 9788024725345.
LAWRENCE, G. 2019. Power jóga nejen pro sportovce. Brno: CPress. ISBN 9788026427902.
SNER, Wolfgang. 2004. Posilování ve fitness. České Budějovice: Kopp. ISBN 8072322141.

STACKEOVÁ, D. 2014. Fitness programy z pohledu kinantropologie. Praha: Galén. ISBN 9788074921155.
VOMÁČKO, S. BOŠTÍKOVÁ, S. 2003. Lezení na umělých stěnách. Praha: Grada. 129s. ISBN 8024721743.

Course language:
Slovak language

Notes:

Course assessment
Total number of assessed students: 13318

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
84.37	0.51	0.02	0.0	0.0	0.05	10.78	4.28

Provides: Mgr. Agata Dorota Horbacz, PhD., Mgr. Dávid Kaško, PhD., Mgr. Marcel Čurgali, Mgr. Patrik Berta, Mgr. Ladislav Kručanica, PhD., Mgr. Richard Melichar, Mgr. Petra Tomková, PhD., Mgr. Alena Buková, PhD., doc. PaedDr. Ivan Uher, MPH, PhD., prof. RNDr. Stanislav Vokál, DrSc., Mgr. Zuzana Küchelová, PhD.

Date of last modification: 07.02.2024

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚTVŠ/ TVc/11	**Course name:** Sports Activities III.

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 3.

Course level: I., II.

Prerequisities:

Conditions for course completion:
min. 80% of active participation in classes

Learning outcomes:
Sports activities in all their forms prepare university students for their professional and personal life. They have a great impact on physical fitness and performance. Specialization in sports activities enables students to strengthen their relationship towards the selected sport in which they also improve.

Brief outline of the course:
Brief outline of the course:
The Institute of physical education and sport at the Pavol Jozef Šafárik University offers 20 sports activities aerobics; aikido, basketball, badminton, body-balance, body form, bouldering, floorball, yoga, power yoga, pilates, swimming, fitness, indoor football, SM system, step aerobics, table tennis, chess, volleyball, tabata, cycling.
Additionally, the Institute of physical education and sport at the Pavol Jozef Šafárik University offers winter courses (ski course, survival) and summer courses (aerobics by the sea, rafting on the Tisza River) with an attractive programme, sports competitions with national and international participation.

Recommended literature:
BENCE, M. et al. 2005. Plávanie. Banská Bystrica: FHV UMB. 198s. ISBN 80-8083-140-8. [online] Dostupné na: https://www.ff.umb.sk/app/cmsFile.php?disposition=a&ID=571
BUZKOVÁ, K. 2006. Fitness jóga, harmonické cvičení těla I duše. Praha: Grada. ISBN 8024715252.
JARKOVSKÁ, H, JARKOVSKÁ, M. 2005. Posilování s vlastním tělem 417 krát jinak. Praha: Grada. ISBN 9788024757308.
KAČÁNI, L. 2002. Futbal:Tréning hrou. Bratislava: Peter Mačura – PEEM. 278s. ISBN 8089197027.
KRESTA, J. 2009. Futsal.Praha: Grada Publishing, a.s. 112s. ISBN 9788024725345.
LAWRENCE, G. 2019. Power jóga nejen pro sportovce. Brno: CPress. ISBN 9788026427902.
SNER, Wolfgang. 2004. Posilování ve fitness. České Budějovice: Kopp. ISBN 8072322141.

STACKEOVÁ, D. 2014. Fitness programy z pohledu kinantropologie. Praha: Galén. ISBN 9788074921155.
VOMÁČKO, S. BOŠTÍKOVÁ, S. 2003. Lezení na umělých stěnách. Praha: Grada. 129s. ISBN 8024721743.

Course language:
Slovak language

Notes:

Course assessment
Total number of assessed students: 9100

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
88.37	0.07	0.01	0.0	0.0	0.02	4.46	7.07

Provides: Mgr. Marcel Čurgali, Mgr. Agata Dorota Horbacz, PhD., Mgr. Dávid Kaško, PhD., Mgr. Patrik Berta, Mgr. Ladislav Kručanica, PhD., Mgr. Richard Melichar, Mgr. Petra Tomková, PhD., Mgr. Alena Buková, PhD., doc. PaedDr. Ivan Uher, MPH, PhD., prof. RNDr. Stanislav Vokál, DrSc., Mgr. Zuzana Küchelová, PhD.

Date of last modification: 07.02.2024

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚTVŠ/ TVd/11	**Course name:** Sports Activities IV.

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 4.

Course level: I., II.

Prerequisities:

Conditions for course completion:
min. 80% of active participation in classes

Learning outcomes:
Sports activities in all their forms prepare university students for their professional and personal life. They have a great impact on physical fitness and performance. Specialization in sports activities enables students to strengthen their relationship towards the selected sport in which they also improve.

Brief outline of the course:
Brief outline of the course:
The Institute of physical education and sport at the Pavol Jozef Šafárik University offers 20 sports activities aerobics; aikido, basketball, badminton, body-balance, body form, bouldering, floorball, yoga, power yoga, pilates, swimming, fitness, indoor football, SM system, step aerobics, table tennis, chess, volleyball, tabata, cycling.
Additionally, the Institute of physical education and sport at the Pavol Jozef Šafárik University offers winter courses (ski course, survival) and summer courses (aerobics by the sea, rafting on the Tisza River) with an attractive programme, sports competitions with national and international participation.

Recommended literature:
BENCE, M. et al. 2005. Plávanie. Banská Bystrica: FHV UMB. 198s. ISBN 80-8083-140-8. [online] Dostupné na: https://www.ff.umb.sk/app/cmsFile.php?disposition=a&ID=571
BUZKOVÁ, K. 2006. Fitness jóga, harmonické cvičení těla I duše. Praha: Grada. ISBN 8024715252.
JARKOVSKÁ, H, JARKOVSKÁ, M. 2005. Posilování s vlastním tělem 417 krát jinak. Praha: Grada. ISBN 9788024757308.
KAČÁNI, L. 2002. Futbal:Tréning hrou. Bratislava: Peter Mačura – PEEM. 278s. ISBN 8089197027.
KRESTA, J. 2009. Futsal.Praha: Grada Publishing, a.s. 112s. ISBN 9788024725345.
LAWRENCE, G. 2019. Power jóga nejen pro sportovce. Brno: CPress. ISBN 9788026427902.
SNER, Wolfgang. 2004. Posilování ve fitness. České Budějovice: Kopp. ISBN 8072322141.

STACKEOVÁ, D. 2014. Fitness programy z pohledu kinantropologie. Praha: Galén. ISBN 9788074921155.
VOMÁČKO, S. BOŠTÍKOVÁ, S. 2003. Lezení na umělých stěnách. Praha: Grada. 129s. ISBN 8024721743.

Course language:
Slovak language

Notes:

Course assessment
Total number of assessed students: 5671

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
82.81	0.28	0.04	0.0	0.0	0.0	7.97	8.9

Provides: Mgr. Marcel Čurgali, Mgr. Agata Dorota Horbacz, PhD., Mgr. Dávid Kaško, PhD., Mgr. Patrik Berta, Mgr. Ladislav Kručanica, PhD., Mgr. Richard Melichar, Mgr. Petra Tomková, PhD., Mgr. Alena Buková, PhD., doc. PaedDr. Ivan Uher, MPH, PhD., prof. RNDr. Stanislav Vokál, DrSc., Mgr. Zuzana Küchelová, PhD.

Date of last modification: 07.02.2024

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/ STMG/21	**Course name:** Statistical Methods in Geography

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 1 / 2 **Per study period:** 14 / 28
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 2.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 78

A	B	C	D	E	FX
34.62	21.79	12.82	14.1	16.67	0.0

Provides: prof. Mgr. Jaroslav Hofierka, PhD., RNDr. Janetta Nestorová-Dická, PhD., univerzitná docentka

Date of last modification: 12.02.2023

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ SVL1/03	**Course name:** Structure and Properties of Solids

Course type, scope and the method:
Course type: Lecture
Recommended course-load (hours):
Per week: 3 **Per study period:** 42
Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 5.

Course level: I.

Prerequisities:

Conditions for course completion:
For successful completing of the subject student after taking exam shows adequate knowledge from area of structure and properties of solids, After completing the subject student is able to continue with the lectures from the specialized courses like Magnetism, Low Temperature Physics, Structural analysis, Supercondutors etc. Credits evaluation takes into account taking part at the lectures - 2 credits, study of recommended literature -1 credit, exam - 2 credits. Minimal value to obtain evaluation is reach 50% of each evaluation (test and exam) points. Point ratio exam/test is 70/30. Evaluation scale is: A (90-100%), B (80-89%), C (70-79%), D (60-69%), E (50-59%), F (0-49%)

Learning outcomes:
After completing the lectures and taking the written test, the student will have a deep knowledge which allows her/him to find relationships between structure and physical properties of selected solids. Student is also able to continue with the lectures from the specialized courses like Magnetism, Low Temperature Physics, Structural analysis, Supercondutors etc.metals and also will have the ability to enter into a systematic theoretical and experimental solution of the problems of condenset mater physics.

Brief outline of the course:
Time schedule of the subject contents is updated in electronic board in AiS2 sw. The subject content is focused in the following main topics: Periodic array of atoms. Fundamental type of lattices. Index systems for crystal planes. Simple crystal structure. Symetry and crystal structure. Point and space groups. Crystal binding and elastic constants. Wave diffraction and the reciprocal lattice. X.ray diffractometry. Brag´s law, Laue conditions, scatering of x-rays, Neutrons and neutron scattering, CW - diffractometer, Ewald´s sphere, Diffraction on powder samples, Structure factor, Ocupation factor, Atomic displacement factor. Thermal properties. Phonon heat capacity, thermal conductivity. Free electron Fermi gas. Energy bands. Semiconductor crystals. Superconductivity.

Recommended literature:
1. V. Valvoda: Základy krystalografie, SPN Praha, 1982
2. Z.T. Durski: Podstawy krystalografii strukturalnej i rentgenovskej, PWN, 1994
3. V. Kavečanský: Fyzika tuhých látok, Košice 1983
4. CH. Kittel: Úvod do fyziky Pevných látek, Academia, Praha 1985.
5. W. D. Callister: Materials Science and Engineering, John Willey aand Sons, New York, 1994.

6. Chetan Nayak, Solid State Physics, www.physics.ucla.edu/~nayak/solid_state.pdf
7. Bernard Ruph, X-ray Crystallography, http://www.ruppweb.org/Xray/101index.html

Course language:
English

Notes:
Lectures can be done at presence form or online using MS Teams. Education form is updated at the begining of the subject. All ppt presentations are accesible in LMS UPJŠ.

Course assessment
Total number of assessed students: 56

A	B	C	D	E	FX
37.5	25.0	19.64	10.71	5.36	1.79

Provides: prof. RNDr. Pavol Sovák, CSc., RNDr. Jozef Bednarčík, PhD., univerzitný docent

Date of last modification: 21.09.2021

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ SVKD/04	**Course name:** Student Scientific Conference

Course type, scope and the method:
Course type:
Recommended course-load (hours):
Per week: Per study period:
Course method: present

Number of ECTS credits: 4

Recommended semester/trimester of the course:

Course level: I., II.

Prerequisities:

Conditions for course completion:
presentation of results of studnets´ research work at Students´ scientific conference

Learning outcomes:
Student gains experience and skills in processing and presentation of results of his research work.

Brief outline of the course:
Presentation of results of studnets´ research work at Students´ scientific conference.

Recommended literature:
Based on the recommendations of supervisor

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 9

abs	n
100.0	0.0

Provides:

Date of last modification: 03.05.2015

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚGE/SVG/04	**Course name:** Student Scientific Conference in Geography

Course type, scope and the method:
Course type:
Recommended course-load (hours):
Per week: Per study period:
Course method: present

Number of ECTS credits: 4

Recommended semester/trimester of the course: 6.

Course level: I., II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:
After choosing a topic suggested by supervisors implying a geographical problem, the students will work on the topic, write a thesis and defense it before the committee.

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 11

abs	n
100.0	0.0

Provides: RNDr. Dušan Barabas, CSc., RNDr. Alena Gessert, PhD., univerzitná docentka, RNDr. Janetta Nestorová-Dická, PhD., univerzitná docentka, Mgr. Marián Kulla, PhD., doc. Ing. Katarína Bónová, PhD., RNDr. Stela Csachová, PhD.

Date of last modification: 01.12.2021

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚFV/ DGS/21	**Course name:** Students` Digital Literacy

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 1.

Course level: I.

Prerequisities:

Conditions for course completion:
Summary evaluation based on ongoing assessment:
1. Practical ongoing assignments and their defense (at least 50% needed)
3. Active participation during face-to-face contact learning in classical or virtual classroom (3 absences allowed) and during online learning (no absence, uploading all individual ongoing assignments)

Learning outcomes:
The student should obtain and know to apply basic knowledge and skills in working with current digital technologies (mobile phone, tablet, laptop, web technologies):
1. according to the current European framework for the Digital competence DigComp and ECDL
2. for better and more effective learning, work and active life in higher education, later lifelong learning and further career prospects.

Brief outline of the course:
01.-02. Basic digital skills, DigComp framework, ECDL
- modern web browser and its personalization
- security, privacy, responsible use of DT
03.-05. Search, collection and evaluation of digital content
- scanning, audio recording and speech resolution, optical resolution (OCR)
- digital notebooks (Google keep, Evernote, Onenote)
- evaluation of digital resources (Google forms and sections)
06.-08. Editing and creating digital content
- cloud and interactive documents
(text and spreadsheet editors - Google, Microsoft, Jupyter)
- work with pdf documents, e-books and videos
(Kami, Google books, Screencasting)
09. - 10. Organization, protection and sharing of digital content
- modern LMS and cloud storage
(Google Classroom, Microsoft team, Google Drive, Dropbox)
- time management (Google Calendar)
11.-13. Digital communication and cooperation

- collaborative interactive whiteboards (Jamboard, Whiteboard)
- online presentations and online meetings
(Google presentations, Powerpoint, Google meet, Microsoft teams)

Recommended literature:

1. Carretero Gomez, S., Vuorikari, R. and Punie, Y., DigComp 2.1: The Digital Competence Framework for Citizens with eight proficiency levels and examples of use, Luxembourg, 2017, ISBN 978-92-79-68006-9, https://www.ecdl.sk/
2. Bruff, D. (2019). Intentional Tech: Principles to Guide the Use of Educational Technology in College Teaching (1st edition). Morgantown: West Virginia University Press.
3. Baker, Y. (2020). Microsoft Teams for Education. Amazon Digital Services.
4. Miller, H. (2021). Google Classroom + Google Apps: 2021 Edition. Brentford: Orion Edition Limited.

Course language:
slovak

Notes:

Course assessment
Total number of assessed students: 160

A	B	C	D	E	FX
69.38	4.38	4.38	0.0	21.88	0.0

Provides: doc. RNDr. Jozef Hanč, PhD.

Date of last modification: 26.01.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚTVŠ/ LKSp/13	**Course name:** Summer Course-Rafting of TISA River

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course:

Course level: I., II.

Prerequisities:

Conditions for course completion:
Completion: passed
Condition for successful course completion:
- active participation in line with the study rule of procedure and course guidelines
- effective performance of all tasks: carrying a canoe, entering and exiting a canoe, righting a canoe, paddling

Learning outcomes:
Content standard:
The student demonstrates relevant knowledge and skills in the field, which content is defined in the course syllabus and recommended literature.
Performance standard:
Upon completion of the course students are able to meet the performance standard and:
- implement the acquired knowledge in different situations and practice,
- implement basic skills to manipulate a canoe on a waterway,
- determine the right spot for camping,
- prepare a suitable material and equipment for camping.

Brief outline of the course:
Brief outline of the course:
1. Assessment of difficulty of waterways
2. Safety rules for rafting
3. Setting up a crew
4. Practical skills training using an empty canoe
5. Canoe lifting and carrying
6. Putting the canoe in the water without a shore contact
7. Getting in the canoe
8. Exiting the canoe
9. Taking the canoe out of the water
10. Steering
a) The pry stroke (on fast waterways)
b) The draw stroke

11. Capsizing
12. Commands

Recommended literature:
1. JUNGER, J. et al. Turistika a športy v prírode. Prešov: FHPV PU v Prešove. 2002. ISBN 8080680973.
Internetové zdroje:
1. STEJSKAL, T. Vodná turistika. Prešov: PU v Prešove. 1999.
Dostupné na: https://ulozto.sk/tamhle/UkyxQ2lYF8qh/name/Nahrane-7-5-2021-v-14-46-39#!ZGDjBGR2AQtkAzVkAzLkLJWuLwWxZ2ukBRLjnGqSomICMmOyZN==

Course language:
Slovak language

Notes:

Course assessment
Total number of assessed students: 209

abs	n
37.32	62.68

Provides: Mgr. Dávid Kaško, PhD.

Date of last modification: 29.03.2022

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: KPE/ SSU/15	**Course name:** Teachers´ Support Groups

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 6.

Course level: I., II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 44

A	B	C	D	E	FX
86.36	13.64	0.0	0.0	0.0	0.0

Provides: doc. PaedDr. Renáta Orosová, PhD.

Date of last modification: 12.03.2024

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: KPPaPZ/ECo-C1/14	**Course name:** Team Work ECo-C1
Course type, scope and the method: **Course type:** Practice **Recommended course-load (hours):** **Per week:** 2 **Per study period:** 28 **Course method:** combined, present	
Number of ECTS credits: 4	
Recommended semester/trimester of the course: 3., 5.	
Course level: I., N	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Notes:	
Course assessment Total number of assessed students: 142	

abs	n
97.89	2.11

Provides: PhDr. Anna Janovská, PhD.
Date of last modification: 28.06.2021
Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ TMEU/15	**Course name:** Theoretical Mechanics

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 1 **Per study period:** 28 / 14
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 3.

Course level: I.

Prerequisities: ÚFV/VF1a/12

Conditions for course completion:
To successfully complete the course, the student must demonstrate sufficient understanding of all basic concepts and applications of theoretical mechanics. Knowledge of basic concepts at the level of their mathematical definition is required, as well as their physical content and principled applications. The student must be able to actively master the content of the curriculum continuously during the semester, so that he can actively and creatively use the acquired knowledge in solving specific problems in exercises and independent homework. In addition to direct participation in teaching, the student is obliged to independently study professional topics assigned by the teacher and also to develop and present one home assignments. The condition for obtaining credits is, in addition to participation in teaching, also the successful completion of the two written tests from exercises and lectures and the elaboration of home assignments. The minimum limit for passing the exam is to obtain 51% of the total score, which takes into account all required activities with relevant weight.
Rating scale: A - 91% - 100% points, B - 81% - 90% points, C - 71% - 80% points, D - 61% -70% points, E - 51% - 60% points.

Learning outcomes:
The lecture on Theoretical Mechanics is the first lecture of an extensive university course in theoretical physics, where the student gets acquainted with fundamental theoretical concepts (e.g., generalized coordinates, velocities and momentum, phase space, Hamiltonian Lagrangian ...), which constitute the basis for understanding advanced theoretical methods of advanced courses such as quantum mechanics, statistical physics and quantum field theory. For this reason, attending this lecture is essential for all physics students. In addition to deep physical knowledge, students will also gain practical experience in solving complex problems of mechanics of systems of mass points and mechanics of a rigid body.

Brief outline of the course:
1. Dynamics of a free system of mass points.
2. Motion of a constrained system of mass points. Constrains and their classification. The principle of virtual work and search for equilibrium positions.
3. D'Alembert's principle. Lagrange equations of the first kind. Generalized coordinates and generalized forces.

4. Lagrange equations of the second kind and generalized potential.
5. Basic properties of Lagrange equations. First integrals of equations of motion: Integral of energy and generalized momentum.
6. Integral principles. Variation of functions and integrals. Hamilton's principle.
7. Hamilton's function. Hamilton's canonical equations.
8. Mechanics of a perfectly rigid body. Position of a rigid body in space, independent coordinates. The speed of the points of a rigid body.
9. Center of gravity, linear and angular momentums of a rigid body. Tensor of inertia. Euler angles and Euler kinematic equations.
10. Kinetic energy of a rigid body. Euler's equations of motion of a perfectly rigid body.

Recommended literature:

1. Meirovitch L.: Methods of Analytical dynamics, McGraw-Hill, New York, 1970.
2. Taylor T.T.: Mechanics: Classical and Quantum, Pergamon Press, Oxford, 1976.
3. Strelkov S.P.: Mechanics, Mir Publishers, Moscow, 1985.
4. Greiner W.: Classical Mechanics, Springer-Verlag, Berlin, 2010.
5. Goldstein H.: Classical Mechanics, Addison-Wesley, London, 1970.
6. Barger V., Olsson M.: Classical Mechanics: A Modern Perspective, McGraw-Hill, London, 1973.

Course language:
Slovak, English

Notes:

Course assessment
Total number of assessed students: 55

A	B	C	D	E	FX
49.09	5.45	12.73	21.82	5.45	5.45

Provides: prof. RNDr. Michal Jaščur, CSc.

Date of last modification: 20.09.2021

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: KPE/ TVE/08	**Course name:** Theory of Education

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 4., 6.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 645

A	B	C	D	E	FX
43.72	31.01	16.59	4.96	1.71	2.02

Provides: Mgr. Beáta Sakalová, doc. PaedDr. Renáta Orosová, PhD.

Date of last modification: 12.03.2024

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ TEP1/03	**Course name:** Theory of the Electromagnetic Field

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 3 / 1 **Per study period:** 42 / 14
Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities: ÚFV/VFM1b/15 or ÚFV/VF1b/03

Conditions for course completion:
To successfully complete the course, the student must demonstrate sufficient understanding of the basics terms, concepts and applications of electromagnetic field theory. Knowledge of basic concepts is required at the level of their mathematical definition, as well as their physical content and specific applications. During the semester, the student must continuously master the content of the curriculum so that he can actively and creatively use the acquired knowledge in solving specific tasks during the exercises and pass continuous written tests taken into account in the overall evaluation of the subject. The condition for obtaining credits is passing 2 continuous written tests in exercises and an oral exam, which consists of theoretical questions covering the entire scope of the course. The credit evaluation of the course takes into account the following student workload: direct teaching (2 credits), self-study (1 credit), individual consultations (1 credit) and assessment (1 credit). The minimum threshold for completing the course is to obtain at least 50% of the total score, using the following rating scale: A (90-100%), B (80-89%), C (70-79%), D (60- 69%), E (50-59%), F (0-49%).

Learning outcomes:
After completing lectures and exercises, the student will have sufficient physical skills, knowledge and mathematical apparatus enabling independent solution of a wide range scientific problems in electromagnetic field theory. The student also gets an overview of applications of electromagnetic field theory in various fields of physics such as electricity, magnetism, optics, etc.

Brief outline of the course:
1. Charge density and current density. Continuity equation. Definition of electromagnetic field.
2. System of Maxwell's equations in vacuum: differential formulation of Gauss' law of electrostatics, law of total current. The absence of magnetic monopoles and the law of electromagnetic induction.
3. Scalar and vector potential, gauge transformation. Wave equations for potentials. Energy conservation law in electromagnetic field theory: Poynting vector.
4. Conservation law of momentum of electromagnetic field: Maxwell's stress tensor.
5. Electrostatic field in vacuum and its potential. Potential of charges distributed in space and on surfaces. Boundary conditions on a charged area.

6. Multipole development of charge system potential. Electrostatic field energy. Electrostatic potential energy of a charge system and its multipole development in an external electric field.
7. Dielectric polarization. Vector of electrical induction, dielectric susceptibility and permittivity. Electrostatic field induced by a system of free charges in a dielectric, boundary conditions at the interface of two dielectrics.
8. Magnetic fields of stationary currents in vacuum; Biot-Savart law.
9. Stationary magnetic field of closed elementary current system, magnetic moment. Magnetization of magnets, magnets in the magnetic field of stationary currents.
10. Magnetic field strength, magnetic susceptibility and permeability. Magnetic field of a system of conductive currents in magnetics, boundary conditions at the interface of two magnets.
11. System of Maxwell's equations in the material environment and the conservation law of electromagnetic field energy. Quasi-stationary electromagnetic field.
12. Electromagnetic waves in homogeneous non-conductive medium, plane electromagnetic wave. Monochromatic plane wave and its polarization.
13. Refraction and reflection of a plane monochromatic wave at the interface of two media.

Recommended literature:

Kvasnica J.: Teorie elektromagnetického pole. Academia Praha, 1985.
Bobák A.: Teória elektromagnetického polľa, UPJŠ Košice, 2002.
Bobák A., Vargová E.: Zbierka riešených úloh z elektromagnetického poľa, UPJŠ Košice, 2001.
Greiner W.: Classical Electrodynamics, Springer-Verlag, New York, 1998.

Course language:

1. Slovak,
2. English

Notes:

Course assessment

Total number of assessed students: 333

A	B	C	D	E	FX
26.73	9.01	18.02	21.32	16.82	8.11

Provides: doc. RNDr. Jozef Strečka, PhD.

Date of last modification: 19.09.2021

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ TSF/17	**Course name:** Thermodynamics and Statistical physics

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 3 / 2 **Per study period:** 42 / 28
Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities:

Conditions for course completion:
To successfully complete the course, the student must demonstrate sufficient understanding of all the basic concepts and applications of thermodynamics and classical statistical physics within the syllabus of the course. Knowledge of basic concepts of thermodynamics and classical statistical physics at the level of their mathematical definition, as well as their physical content and principled applications is required. The student must be able to actively master the content of the curriculum continuously during the semester, so that he can actively and creatively use the acquired knowledge in solving specific problems during exercises and for independent homework. In addition to direct participation in lectures, the student is obliged to study within the self-study professional topics assigned by the teacher and also to develop and present two homework assignments. The condition for obtaining credits is, in addition to participation in lectures, also the successful completion of three written tests from exercises and lectures and the elaboration of home assignments. The minimum limit for passing the exam is to obtain 51% of the total score, which takes into account all required activities with relevant weight.
Rating scale: A - 91% -100% points, B - 81% -90% points, C - 71% -80% points, D - 61% -70% points, E - 51% -60% points.

Learning outcomes:
After completing lectures and exercises, the student will acquire fundamental knowledge and skills in thermodynamics and classical statistical physics, which are prerequisites for completing advanced courses in quantum statistical physics, computer physics and condensed matter theory at the master's courses. The graduate of this course masters sufficient physical knowledge and mathematical apparatus to independently solve a wide range of current scientific problems in various fields of classical physics. These are mainly practical applications to systems consisting of a huge number of interacting particles described by the equations of classical physics. The graduate is able to apply the acquired knowledge in the field of life sciences (e.g. the spread of dangerous infectious diseases), but also in the field of big data processing and in the social and political sciences (e.g. prediction of election results).

Brief outline of the course:
1. Historical introduction and basic concepts of thermodynamics. Macroscopic system and macroscopic parameters. Internal, external, extensive and intensive macroscopic parameters. State

of system, state parameters and status functions. Basic division of thermodynamic systems - isolated, closed and open systems. Homogeneous and heterogeneous systems, thermaly homogeneous system. State of thermodynamic equilibrium. The first postulate of thermodynamics, transitivity and the principle of spontaneous inviolability of the equilibrium state.
2. The second postulate of thermodynamics and thermodynamic temperature. Natural, reversible, irreversible and quasi-static processes in thermodynamics. Internal energy, work and heat in thermodynamics. Thermal and caloric equation of state. The first law of thermodynamics. Heat capacity, specific and latent heat. Isothermal, isochoric, isobaric, adiabatic and polytropic processes in thermodynamics and their description.
3. Pfaff differential form, integrating factor, complete differential and their use in thermodynamics. Basic formulations of the second law of thermodynamics. Caratheodory's principle and mathematical formulation of the second law of thermodynamics for quasi-static processes. Introduction of absolute temperature and entropy in thermodynamics.
4. Relationship between thermodynamic and absolute temperature. Entropy and Claussius equation for reversible processes. Thermodynamic potentials for quasi-static processes. Maxwell's relations. The third law of thermodynamics. Unattainability of absolute zero temperature.
5. Dependence of thermodynamic quantities on the mass of the number of particles. Euler's theorem for homogeneous functions and its application. Thermodynamic potentials for systems with variable particle number. Non-static processes and nonequilibrium states. Slow and fast non-static processes. Mathematical formulation of the second law of thermodynamics for non-static processes. Clausius inequality.
6. Thermodynamic potentials of nonequilibrium systems and equilibrium conditions. Maximum work done by the body in the external environment. Heterogeneous systems. Gibbs phase rule.
7. Phase space, configuration space and impulse space. Statistical ensemble and distribution function. Stationary ensemble. Canonical invariance of phase volume. Calculation of mean values of physical quantities in classical statistical physics.
8. Microcanonical, canonical and grand canonical ensembles in classical statistical physics. Canonical and grand canonical partition function, internal energy, entropy, free energy and grand canonical potential.
9. Equipartition and virial theorems. Calculation of ideal gas entropy in a microcanonical ensemble, Gibbs paradox.
10. The ideal gas in the canonical ensemble and the classical theory of paramagnetism. Classical theory of heat capacity - Dulong's-Petit's law.

Recommended literature:

1) J. Kvasnica, Termodynamika, SNTL, Praha (1965).
2) J. Kvasnica, Statistická fyzika, ACADEMIA, Praha (1983).
3) M. Varady, Statisticka fyzika, UJEP Ústi nad Labem, 2007.
4) M. Jaščur, M. Hnatič, Úvod do termodynamiky, Univerzita P.J. Šafárika, Košice (2013).

Course language:

Notes:

Course assessment

Total number of assessed students: 27

A	B	C	D	E	FX
44.44	25.93	25.93	3.7	0.0	0.0

Provides: prof. RNDr. Michal Jaščur, CSc.

Date of last modification: 06.11.2021

Approved: doc. RNDr. Zuzana Ješková, PhD., prof. Mgr. Jaroslav Hofierka, PhD.