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University: P. J. Šafá	rik University in Košice			
Faculty: Faculty of Science				
Course ID: CJP/ PFAJAKA/07	Course name: Academic English			
Course type, scope a Course type: Practic Recommended cour Per week: 2 Per stu Course method: pre	nd the method: ce rse-load (hours): dy period: 28 esent			
Number of ECTS cr	edits: 2			
Recommended seme	ster/trimester of the course:			
Course level: I.				
Prerequisities:				
Conditions for cours Active classroom par 1 test (13th week), no Presentation on chose Final evaluation- ave Grading scale: A 93-	ticipation, assignments handed in on time, 2 absences tolerated o retake. en topic rage assessment of test (50%), and presentation (50%). 100%, B 86-92%, C 79-85%, D 72-78%, E 65-71%, FX 64% and less			
Learning outcomes: The development of so of their linguistic cor syntactic aspects, dev for a given purpose, v	students' language skills - reading, writing, listening, speaking, improvement npetence - students acquire knowledge of selected phonological, lexical and relopment of pragmatic competence - students can effectively use the language with focus on Academic English, level B2.			
Brief outline of the c Formal and informal Academic English an Key academic verbs a Linking words in aca Word-formation - aff abstract Selected aspects of E Selected functional a paraphrasing	ourse: English Id its specific features and nouns demic writing, writing a paragraph, word-order, topic sentences ixation nglish pronunciation, academic vocabulary grammar structures - defining, classifying, epressing opinion, cause-effect,			
Recommended litera Seal B.: Academic En T. Armer :Cambridge M. McCarthy M., O' Zemach, D.E, Rumis Olsen, A. : Active Vo www.bbclearningeng Cambridge Academic	ncounters, CUP, 2002 English for Scientists, CUP 2011 Dell F Academic Vocabulary in Use, CUP 2008 ek, L.A: Academic Writing, Macmillan 2005 ocabulary, Pearson, 2013 lish.com c Content Dictionary, CUP, 2009			

Course langua English langua	Course language: English language level B2 according to CEER				
Notes:					
Course assessn Total number o	nent of assessed studen	ts: 416			
А	В	С	D	Е	FX
36.54	21.63	15.14	9.38	6.01	11.3
Provides: Mgr.	Viktória Mária S	lovenská	-	•	
Date of last mo	odification: 20.09	0.2023			
Approved: doc	. RNDr. Zuzana J	ešková, PhD., do	oc. RNDr. Peter	Pristaš, CSc.	

University: P. J.	. Šafárik Univers	ity in Košice			
Faculty: Faculty of Science					
Course ID: KPI ALP/06	E/ Course na	ame: 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 EC	TS credits: 2				
Recommended	semester/trimes	ster of the cours	e: 4.		
Course level: I.					
Prerequisities:					
Conditions for	course completi	on:			
Learning outcomes:					
Brief outline of	Brief outline of the course:				
Recommended literature:					
Course languag	ge:				
Notes:					
Course assessm Total number of	ent f assessed studen	ts: 327			
А	В	С	D	Е	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.	Approved: doc. RNDr. Zuzana Ješková, PhD., doc. RNDr. Peter Pristaš, CSc.				

University: P. J.	. Šafárik Univer	sity in Košice			
Faculty: Faculty	y of Science				
Course ID: ÚB BZNm/22	EV/ Course n	ame: Animal Bio	logy		
Course type, sc Course type: Recommended Per week: Per Course metho	ope and the me d course-load (h r study period: d: present	thod: nours):			
Number of EC	FS credits: 2				
Recommended	semester/trime	ster of the cours	e:		
Course level: I.					
Prerequisities: ÚBEV/ZOO1/1	ÚBEV/CYT1/1: 5) and (ÚBEV/Z	5 and ÚBEV/FZ1 201/03 or ÚBEV/	/10 and ÚBEV/F /ZO1/15)	PMZ/10 and (ÚB	EV/ZOO1/03 or
Conditions for	course complet	ion:			
Learning outco	mes:				
Brief outline of	the course:				
Recommended	literature:				
Course languag	ge:				
Notes:					
Course assessm Total number of	ent f assessed studer	nts: 10			
А	В	C	D	Е	FX
0.0	30.0	40.0	20.0	10.0	0.0
Provides:				-	
Date of last mo	dification: 15.0	5.2023			
Approved: doc.	RNDr. Zuzana	Ješková, PhD., do	oc. RNDr. Peter l	Pristaš, CSc.	

University: P. J.	Šafárik Universit	y in Košice
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Faculty: Faculty of Science

Course ID: ÚBEV/	Course name: Animal Physiology
FZ1/10	

Course type, scope and the method:

Course type: Lecture / Practice

Recommended course-load (hours): Per week: 3 / 3 Per study period: 42 / 42

Course method: present

Number of ECTS credits: 7

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities: ÚBEV/HIS1/15 or ÚBEV/HISE1/15

Conditions for course completion:

Active participation on practicals.

Passing the test in recognition of microscopical preparations (min. 50% of correct identification and description)

Passing the final examination of knowledge and practical skills from the content of practicals. Oral examination.

Learning outcomes:

To provide students with basic knowledge on the physiological processes in animals on different levels of the phylogenesis. Learn the principles of their control, aimed to secure the inner integrity of the animal and to its adaptation to the environment. To point out the unity of the structure (on the molecular, cellular, tissue and organ levels) and of the functions of the body.

Brief outline of the course:

- 1. Basic physiological principles. Homeostatic mechanisms.
- 2. Physiology of blood and hemopoetic organs.
- 3. Physiology of respiration.
- 4. Thermoregulation.
- 5. Physiology of cardio-vascular system.
- 6. Physiology of the gastro-intestinal system.
- 7. The functions of the liver.
- 8. Physiology of nutrition and the energetic metabolism. The water and mineral household.
- 9. General neurophysiology.
- 10. Sensory and motoric functions of the nervous system. Associative functions of the brain.
- 11. Physiology of excretion. The work of the muscles.
- 12. Sensory physiology.
- 13. Hormonal regulation. Physiology of reproduction.
- 12. Sensory physiology.

Recommended literature:

Varder, A. J., Sherman, J. H., Luciano, D. S.: The mechanisms of body functions, McGraw-Hill, 1990

Schmidt, R. F., Thews, G.: Human Physiology, Springer-Verlag, 1989

R.W.Hill, R.Wyse, M.Anderson : Animal Physiology, Sinauer Assoc., 2008

R.W.Hill, R.Wyse, M.Anderson : Animal Physiology, Sinauer Assoc., 2008					
Course languag	ge:				
Notes:					
Course assessm Total number o	ent f assessed studen	ts: 1583			
А	В	С	D	Е	FX
8.91	16.49	21.92	23.75	23.06	5.87
Provides: doc. J Bianka Bojková Kisková, PhD.,	RNDr. Monika K , PhD., RNDr. V RNDr. Natália Pi	assayová, CSc., j lasta Demečková pová, PhD.	prof. RNDr. Beňa , PhD., univerzit	adik Šmajda, CS ná docentka, RN	c., doc. RNDr. Dr. Terézia
Date of last mo	dification: 21.10	0.2021			
Approved: doc.	RNDr. Zuzana J	ešková, PhD., do	oc. RNDr. Peter F	Pristaš, CSc.	

University: P. J. Šafa	arik University in Košice		
Faculty: Faculty of S	Science		
Course ID: ÚFV/ EP/22	Course ID: ÚFV/ Course name: Applied Electronics		
Course type, scope a Course type: Practi Recommended cou Per week: 2 Per stu Course method: pr	and the method: ice irse-load (hours): idy period: 28 resent		
Number of ECTS ci	redits: 2		
Recommended seme	ester/trimester of the course: 5.		
Course level: I.			
Prerequisities:			
Conditions for cour	se 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., doc. RNDr. Peter Pristaš, CSc.

University: P. J. Šafá	rik University in Košice	
Faculty: Faculty of S	cience	
Course ID: ÚBEV/ BKP/14	Course name: Bachelor Pr	roject
Course type, scope a Course type: Recommended cour Per week: Per stud Course method: pre	nd the method: rse-load (hours): y period: esent	
Number of ECTS cr	edits: 2	
Recommended seme	ster/trimester of the cours	e: 5.
Course level: I.		
Prerequisities:		
Conditions for cours Submission of the ba supervisor.	e completion: chelor project, the defense of	of the project and acceptance of its content by the
Learning outcomes:		
Brief outline of the c	ourse:	
Recommended litera 1. Scientific papers re rector UPJS in Košic	iture: elated to the topic of the bac e.	helor project. 2. Directive No. 1/2011 of the
Course language:		
Notes:		
Course assessment Total number of asses	ssed students: 193	
	abs	n
	100.0	0.0
Provides:		
Date of last modifica	tion: 02.03.2022	
Approved: doc. RND	Dr. Zuzana Ješková, PhD., do	oc. RNDr. Peter Pristaš, CSc.

University: P. J. Šafá	rik University in Košice	
Faculty: Faculty of S	science	
Course ID: ÚFV/ BKP1/22	Course name: Bachelor Pr	oject
Course type, scope a Course type: Recommended cou Per week: Per stuc Course method: pro	and the method: rse-load (hours): ly period: esent	
Number of ECTS cr	redits: 2	
Recommended seme	ester/trimester of the course	e: 5
Course level: I.		
Prerequisities:		
Conditions for cours Submission of the b acceptance of its con	se completion: bachelor project structure ba tent by the supervisor.	ased on the assignments of the supervisor and
Learning outcomes: The design of the ba the student demonstr project, can study, pr and graphic aspects of	chelor's project structure for rates that he is able to define ocess and correctly cite selec of the thesis.	the elaboration of a bachelor's thesis, in which , update the topic and structure of the bachelor's ted bibiographic resources, has an idea of formal
Brief outline of the of The bachelor project project, the student i following activities: project structure in w the specified problem	course: is focused on a selected area mplements the first (prepara clearly defines the topic, stud which formulates the working n, prepares citations of biblio	a of physics. Based on the goals of the bachelor's tory phase) of the bachelor's thesis based on the lies and updates bibiographic resources, creates a hypothesis, problem solving methods, works on graphic resources
Recommended litera 1. Resources (literatu 2. Regulations No. 1	ature: are, papers) based on the proj /2011 about final works (thes	ect assignments. sis for University of P.J. Safarik.
Course language: Slovak, English		
Notes:		
Course assessment Total number of asse	ssed students: 4	
	abs	n
	100.0	0.0
Provides:		
Date of last modifica	ation: 31.01.2022	

Approved: doc. RNDr. Zuzana Ješková, PhD., doc. RNDr. Peter Pristaš, CSc.

University: P. J. Šafá	rik University in Košice	
Faculty: Faculty of S	cience	
Course ID: ÚFV/ BKP2/14	Course name: Bachelor Pr	oject
Course type, scope a Course type: Recommended cour Per week: Per stud Course method: pre	nd the method: rse-load (hours): ly period: esent	
Number of ECTS cr	edits: 4	
Recommended seme	ster/trimester of the cours	e: 6.
Course level: I.		
Prerequisities:		
Conditions for cours Finalization and subr acceptance of its con	e completion: nission of the bachelor proje tent by the supervisor.	ct based on the assignments of the supervisor and
Learning outcomes: Finished bachelor pr is able to process kon correctly, prepare a p	oject prepared as a design on nwledge available in different resentation and share the res	of a bachelor thesis, as an evidence that student nt resources, citate correctly and keep the layout sults in front of experts.
Brief outline of the c Using the created str second (finalization) finalizes the project bibliographic referen results.	ourse: ucture and partial work on phase of elaboration of the into a thesis in required forr ces, implements the principl	the bachelor project, the student implements the bachelor thesis based on the following activities: nal and technical forms with correct citations of es of presentation and reporting the work and its
Recommended litera 1. Resources (literatu 2. Regulations No. 1/	nture: are, papers) based on the pro 2011 about final works (the	ject assignments. sis for University of P.J. Safarik.
Course language: Slovak, English		
Notes:		
Course assessment Total number of asse	ssed students: 15	
	abs	n
	100.0	0.0
Provides:		
Date of last modifica	ition: 31.01.2022	
Approved: doc. RNE	Dr. Zuzana Ješková, PhD., do	oc. RNDr. Peter Pristaš, CSc.

University P I Šafá	rik University in Košice				
Faculty: Faculty of S	cience				
Course ID: ÚBEV/ BKP2/22	Course ID: ÚBEV/Course name: Bachelor Project 23KP2/22				
Course type, scope a Course type: Recommended cour Per week: Per stud Course method: pre	nd the method: rse-load (hours): y period: esent				
Number of ECTS cr	edits: 4				
Recommended seme	ster/trimester of the cours	e: 6.			
Course level: I.					
Prerequisities:					
Conditions for cours Submission of the ba supervisor.	e completion: chelor project, the defense of	of the project and acceptance of its content by the			
Learning outcomes:					
Brief outline of the c	ourse:				
Recommended litera 1. Scientific papers re rector UPJS in Košic	iture: elated to the topic of the bac e.	helor project. 2. Directive No. 1/2011 of the			
Course language:					
Notes:					
Course assessment Total number of asses	ssed students: 25				
	abs	n			
	100.0 0.0				
Provides:					
Date of last modifica	tion: 02.03.2022				
Approved: doc. RND	Pr. Zuzana Ješková, PhD., do	oc. RNDr. Peter Pristaš, CSc.			

University: P. J	. Šafárik Univers	ity in Košice			
Faculty: Facult	y of Science				
Course ID: ÚF BSSM/22	V/ Course na	ame: Bachelor S	tate Exam Physic	CS	
Course type, sc Course type: Recommended Per week: Per Course metho	cope and the met d course-load (h r study period: d: present	thod: ours):			
Number of EC	TS credits: 2				
Recommended	semester/trimes	ster of the cours	se:		
Course level: I.					
Prerequisities:					
Conditions for Answering que	course completi stions concerning	on: g selected fields	of the subjects of	Bachelor state e	exam.
Learning outco Student has bas exam in line wi	mes: ic knowledge and th the graduate p	d overview of kr rofile.	nowledge in the f	ields stated by th	e Bachelor state
Brief outline of Exam in the fie - Mechanics an - Electricity and - Oscillations an - Nuclear physi - General bioph - Theoretical m - Theory of elec - Statistical phy	the course: ld of knowledge d molecular phys l magnetism nd waves, optics cs hysics echanics ctromagnetic field	in physics consis sics d	sting of an overv	iew of the follow	ring fields:
Recommended	literature:				
Course languag Slovak	ge:				
Notes:					
Course assessm Total number of	1ent f assessed studen	its: 6			
А	В	С	D	Е	FX
16.67	50.0	0.0	16.67	0.0	16.67
Provides:					
Date of last mo	dification: 18.02	2.2022			
Approved: doc.	. RNDr. Zuzana J	Ješková, PhD., d	oc. RNDr. Peter	Pristaš, CSc.	

University: P. J	. Šafárik Univers	sity in Košice			
Faculty: Facult	y of Science				
Course ID: ÚF BSSM/15	V/ Course na	ame: Bachelor St	ate Exam Physi	cs	
Course type, sc Course type: Recommended Per week: Per Course metho	ope and the me d course-load (h r study period: d: present	thod: ours):			
Number of EC	FS credits: 1				
Recommended	semester/trime	ster of the cours	e:		
Course level: I.					
Prerequisities:					
Conditions for Answering que	course completi stions concerning	i on: g selected fields c	of the subjects o	f Bachelor state ex	am.
Learning outco Basic knowledg	mes: ge and overview	of konowledge in	the fields state	d by the Bachelro	state exam.
Brief outline of Exam in the fie - Mechanics an - Electricity and - Oscillations at - Nuclear physi - General bioph - Theoretical m - Theory of elec - Statistical phy	the course: Id of knowledge d molecular phys magnetism nd waves, optics cs ysics echanics ctromagnetic fiel	in physics consis sics d	ting of an overv	view of the followi	ng fields:
Recommended	literature:				
Course languaş Slovak	ge:				
Notes:					
Course assessm Total number o	lent f assessed studen	nts: 29			
А	В	С	D	E	FX
41.38	31.03	17.24	0.0	10.34	0.0
Provides:					
Date of last mo	dification: 16.02	2.2016			
Approved: doc.	RNDr. Zuzana	Ješková, PhD., do	oc. RNDr. Peter	Pristaš, CSc.	

University: P. J	. Šafárik Univers	sity in Košice			
Faculty: Facult	y of Science				
Course ID: ÚF BPO/14	V/ Course n	ame: Bachelor T	hesis and its De	fence	
Course type, so Course type: Recommende Per week: Pe Course metho	cope and the me d course-load (h r study period: bd: present	thod: nours):			
Number of EC	TS credits: 4				
Recommended	semester/trime	ster of the cours	e:		
Course level: I.					
Prerequisities:					
Conditions for Required numb	course complet er of credits gain	ion: ned basedon subn	nitting the bache	elor thesis.	
Learning outco	omes:				
Brief outline of Presentation of professional co	the course: the bachelor the mmission.	esis results, answ	ering questions	of the reviewer	and members of
Recommended	literature:				
Course langua Slovak or Engl	ge: ish				
Notes:					
Course assessn Total number o	nent f assessed studer	nts: 62			
А	В	C	D	E	FX
85.48	8.06	3.23	3.23	0.0	0.0
Provides:				•	
Date of last mo	dification: 07.12	2.2021			
Approved: doc	. RNDr. Zuzana	Ješková, PhD., do	oc. RNDr. Peter	Pristaš, CSc.	

University: P. J.	Šafárik Univers	ity in Košice			
Faculty: Faculty	y of Science				
Course ID: ÚB BPO/14	EV/ Course na	ame: Bachelor Tl	hesis and its Defe	ence	
Course type, sc Course type: Recommended Per week: Per Course method	ope and the met l course-load (h r study period: d: present	thod: ours):			
Number of EC	IS credits: 4				
Recommended	semester/trimes	ster of the cours	e:		
Course level: I.					
Prerequisities:					
Conditions for	course completi	on:			
Learning outco	mes:				
Brief outline of	the course:				
Recommended	literature:				
Course languag	ge:				
Notes:					
Course assessm Total number of	ent f assessed studen	ts: 350			
А	В	С	D	Е	FX
52.29	26.86	16.0	3.14	1.71	0.0
Provides:					
Date of last mo	dification: 07.12	2.2021			
Approved: doc.	RNDr. Zuzana J	lešková, PhD., do	oc. RNDr. Peter H	Pristaš, CSc.	

University, F. J. Salarik University in Rusice	University:	P. J.	Šafárik	University	v in Košice
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Faculty: Faculty of Science

Course ID: ÚCHV/	Course name: Basic Chemistry
ZAC2/10	

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:

1. Participation in lectures and seminars.

2. Activity at seminars. The student must have mastered the theory of the lecture that will be discussed at the seminar.

3. Exam: test in inorganic chemistry (max. 50 p, min. 26 p) and test in organic chemistry (max. 50 p, min. 26 p).

4. The rating scale is determined as follows: A (100-91%), B (90-81%), C (80-71%), D (70-61%), E (60-51%), Fx (50- 0%).

Learning outcomes:

The main goal of this subject is to provide a basic overview of general, inorganic and organic chemistry for biology students.

Brief outline of the course:

Introduction to general and inorganic chemistry. Periodic systems of elements and periodicity. Atomic structure. Electron configuration, Chemical bonds. Relationship between structure and properties of substances. Transition and non transition elements and their compounds. Coordination and biocoordination compounds. Basic chemical calculations and balancing of chemical equations. Elements essential for living organisms and their function. Biometals. Biominerals. Introduction to organic chemistry. Saturated and unsaturated hydrocarbons and their derivatives. Heterocyclic compounds. Carbohydrates. Lipids. Aminoacids and proteins. Enzyms and vitamins. Nucleic acids.

Recommended literature:

1. Mária Reháková, Základy chémie pre biológov, časť anorganická chémia. Interný učebný text. PF UPJŠ, Košice 2012.

2. P. Segl'a, I. Potočňák, V. Jorík, J. Švorc, M. Tatarko, Anorganická chémia: Základy anorganickej chémie, 2020.

3. J. Krätsmár-Šmogrovič kolektív, Všeobecná a anorganická chémia, Osveta, 2007.

4. Hrnčiar P.: Organická chémia, UK Bratislava 1997.

Course language:

SK - slovak

Notes:

The subject is carried out in person or, if necessary, remotely using the online platform Big Blue Button (BBB) or MS Teams. The form of teaching is specified by the teacher at the beginning of the semester and updated continuously.

	F	<u> </u>			
Course assessn	nent				
Total number o	f assessed studen	ts: 1218			
А	В	С	D	Е	FX
22.25	24.88	26.68	15.93	9.28	0.99
Provides: doc.	RNDr. Mária Vil	ková, PhD., doc.	RNDr. Miroslav	Almáši, PhD.	
Date of last mo	dification: 16.08	3.2022			
Approved: doc	. RNDr. Zuzana J	Ješková, PhD., de	oc. RNDr. Peter I	Pristaš, CSc.	

University: P. J.	Šafárik Univers	ity in Košice				
Faculty: Faculty	of Science					
Course ID: ÚB BDD/05	Course ID: ÚBEV/ BDD/05Course name: Biology of Children and Adolescents					
Course type, sc Course type: I Recommended Per week: 2 / 0 Course method	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 ECT	FS credits: 2					
Recommended	semester/trimes	ster of the cours	e: 4., 6.			
Course level: I.						
Prerequisities:						
Conditions for of Written test	course completi	on:				
Learning outco Acquisition of systems of the h with developme of ontogenesis.	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 Human ontogen circulatory, resp system. Nervou population and o	the course: nesis. Postnatal piratory, gastroin s system. Age s environment.	development. A ntestinal and uri pecifics of select	ge specific fea nary systems. F red diseases and	tures of skeletal Reproductive sys drug dependenc	and muscalar, tem. Endocrine e arise. Human	
Recommended Drobný I., Drob 2000 Lipková V.: Sor Malá H., Kleme	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 I.: Biológia detí a dorastu. Bratislava, SPN, 1989					
Course languag	ge:					
Notes:						
Course assessm Total number of	Course assessment Total number of assessed students: 1757					
А	B C D E FX					
31.59 24.08 18.16 16.62 9.05 0.51						
Provides: doc. F	Provides: doc. RNDr. Monika Kassayová, CSc.					
Date of last modification: 20.04.2022						
Approved: doc.	Approved: doc. RNDr. Zuzana Ješková, PhD., doc. RNDr. Peter Pristaš, CSc.					

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚBEV/ BS1/03	Course name: Biostatistics
Course type, scope a Course type: Lectu Recommended cou Per week: 2 / 2 Per Course method: pro	ind the method: re / Practice rse-load (hours): study period: 28 / 28 esent
Number of ECTS cr	redits: 6
Recommended seme	ester/trimester of the course: 3., 5.
Course level: I.	
Prerequisities:	
Conditions for cours Active participation of Passing the continua To absolve the final	se completion: on practicals, including successful solving of the assigned numerical examples. I testing. written test with at least 50% of the maximal score.
Learning outcomes: To provide the studer their scope of applic of the design of expe	nts with knowledge on basic principles of statistic methods used in biology and ation in statistical evaluation of experimental results, and with the principles priments, as well.
 Brief outline of the of 1. Sources and theored 2.Basic principles of and variability of dat 3. Theoretical and en 4. Reliability of estimute 5. Statistical sampline 6. One-way and multi 7. Regression analys 8. Correlations. 9. Non-parametrical 10. Design and planmetrical 11. Aanalysis of time 12. Analysis of quali 13. One- and multidi 	 course: etical background of biostatistics. the probability theory. Descriptive statistics: variables, measures of mean value a. npirical distributions. Experimental sampling from the normal distribution. nations. Testing of hypotheses. I and IItype errors. g. Comparison of two groups. tiple analysis of variance. Tests for multiple comparisons. is. methods. ning of biological experiments. e series. tative data. mensional methods, use of computer software.
Recommended litera Hassard, T. H.: Unde Snedecor,G.W., Cocl R.Forthofer, E.S.Lee Elsevier, Amsterdam	ature: rstanding biostatistics. Mosby Year Book, 1991 nran,W.G.: Statistical methods. The Iowa state university, Ames, 1972. , M.Hernandez: Biostatistics. A guide to design, analysis and dicovery. , 2007
Course language:	

Notes:							
Course assessment Total number of assessed students: 279							
А	A B C D E FX						
4.66	9.68	20.79	24.37	31.18	9.32		
Provides: prof. RNDr. Beňadik Šmajda, CSc.							
Date of last modification: 21.10.2021							
Approved: doc	Approved: doc. RNDr. Zuzana Ješková, PhD., doc. RNDr. Peter Pristaš, CSc.						

University: P. J.	Šafárik Univers	sity in Košice				
Faculty: Faculty	v of Science					
Course ID: ÚB BO1/03	Course ID: ÚBEV/ Course name: Botany I BO1/03					
Course type, sc Course type: I Recommended Per week: 2 / 2 Course method	ope and the me Lecture / Practice I course-load (h 2 Per study peri d: present	thod: c ours): od: 28 / 28				
Number of ECT	FS credits: 5					
Recommended	semester/trimes	ster of the cours	e: 3.			
Course level: I.						
Prerequisities:						
Conditions for	course completi	on:				
Learning outco	mes:					
Brief outline of	the course:					
Recommended	literature:					
Course languag	ge:					
Notes:						
Course assessm Total number of	ent f assessed studen	ıts: 1899				
А	В	С	D	Е	FX	
14.01	14.01 19.64 25.59 20.12 18.22 2.42					
Provides: prof. Sabovljević, Dr.	RNDr. Martin B rer. nat., RNDr.	ačkor, DrSc., doc Dajana Ručová,	. RNDr. Michal (PhD.	Goga, PhD., prof.	. Marko	
Date of last mo	dification: 05.11	.2021				
Approved: doc.	RNDr. Zuzana .	Ješková, PhD., do	oc. RNDr. Peter H	Pristaš, CSc.		

University: P. J.	. Šafárik Univers	ity in Košice				
Faculty: Faculty	y of Science					
Course ID: ÚBEV/ Course name: Botany I BO1/15						
Course type, sc Course type: I Recommended Per week: 2 / 2 Course method	ope and the met Lecture / Practice l course-load (h 2 Per study peri d: present	thod: e ours): od: 28 / 28				
Number of EC'	I'S credits: 4					
Recommended	semester/trimes	ster of the cours	e: 3.			
Course level: I.						
Prerequisities:						
Conditions for	course completi	on:				
Learning outco	mes:					
Brief outline of	the course:					
Recommended	literature:					
Course languag	ge:					
Notes:						
Course assessm Total number of	ent f assessed studen	its: 348				
А	В	С	D	E	FX	
22.41	22.41 19.83 23.85 19.83 12.36 1.72					
Provides: prof. Sabovljević, Dr.	RNDr. Martin B rer. nat., RNDr.	ačkor, DrSc., doc Dajana Ručová,	. RNDr. Michal (PhD.	Goga, PhD., prof	Marko	
Date of last mo	Date of last modification: 04.11.2021					
Approved: doc.	RNDr. Zuzana .	Ješková, PhD., do	oc. RNDr. Peter P	Pristaš, CSc.		

University: P. J.	Šafárik Univers	ity in Košice					
Faculty: Faculty	Faculty: Faculty of Science						
Course ID: ÚBE BOT1/15	EV/ Course na	ame: Botany II					
Course type, sco Course type: L Recommended Per week: 2 / 2 Course method	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 ECT	S credits: 4						
Recommended s	semester/trimes	ster of the cours	e: 2.				
Course level: I.							
Prerequisities: (JBEV/TCB1/03						
Conditions for c	ourse completi	on:					
Learning outcor	nes:						
Brief outline of a	the course:						
Recommended I Mártonfi P.: Syst Judd W. S., Cam A phylogenetic A Simpson M. G.: Dostál J., Červer	Recommended literature: Mártonfi P.: Systematika cievnatých rastlín, 4. vydanie Vydavateľstvo UPJŠ, Košice, 2013. Judd W. S., Campbell Ch. S., Kellogg E. A. & Stevens P. F., Donoghue M. J.: Plant Systematics. A phylogenetic Approach, 4th ed Sinauer Associates, Sunderland, 2016. Simpson M. G.: Plant Systematics Elsevier - Academic Press, 2019.						
Course language	e:						
Notes:							
Course assessme Total number of	Course assessment Total number of assessed students: 383						
A	В	С	D	Е	FX		
14.88	14.88 18.28 28.98 20.63 11.23 6.01						
Provides: prof. RNDr. Pavol Mártonfi, PhD., Mgr. Vladislav Kolarčik, PhD., univerzitný docent							
Date of last modification: 29.10.2021							
Approved: doc.	RNDr. Zuzana J	lešková, PhD., do	oc. RNDr. Peter	Pristaš, CSc.			

University: P. J.	Šafárik Univers	ity in Košice			
Faculty: Faculty	of Science				
Course ID: ÚBE BOT1/03	EV/ Course na	ame: Botany II			
Course type, sco Course type: L Recommended Per week: 2 / 2 Course method	ope and the met ecture / Practice course-load (h Per study perio l: present	thod: ours): od: 28 / 28			
Number of ECT	S credits: 5				
Recommended s	semester/trimes	ster of the cours	e: 2.		
Course level: I.					
Prerequisities:					
Conditions for c	course completi	on:			
-					
Learning outcom	mes:				
D:6 41 6					
Brief outline of	the course:				
Recommended I Mártonfi P.: Sys Judd W. S., Cam A phylogenetic J Simpson M. G.: Dostál J., Červer	literature: tematika cievnat pbell Ch. S., Ke Approach, 4th eo Plant Systemati nka M.: Veľký k	tých rastlín, 4. vy ellogg E. A. & St d Sinauer Asso cs Elsevier - A ľúč na určovanie	vdanie Vydavat evens P. F., Dono ociates, Sunderlar cademic Press, 2 e rastlín I. a II S	el'stvo UPJŠ, Ko oghue M. J.: Plar nd, 2016. 2019. SPN, Bratislava,	ošice, 2013. nt Systematics. 1991 a 1992
Course languag	e:				
Notes:					
Course assessme Total number of	ent assessed studen	ts: 1522			
A	В	С	D	Е	FX
10.91	12.55	16.95	20.04	24.9	14.65
Provides: prof. F Mgr. Zuzana Chl	RNDr. Pavol Má ipalová Košturia	rtonfi, PhD., Mg aková	r. Vladislav Kola	arčik, PhD., univ	erzitný docent,
Date of last mod	lification: 29.10	0.2021			
Approved: doc.	RNDr. Zuzana J	ešková, PhD., do	oc. RNDr. Peter I	Pristaš, CSc.	

Faculty: Faculty of S Course ID:	cience
Course ID:	
NI F AF Z/ ECU-C4/14	Course name: Communication ECo-C4
Course type, scope a Course type: Practic Recommended cou Per week: 2 Per stu Course method: co	ind the method: ce rse-load (hours): idy period: 28 mbined, present
Number of ECTS cr	edits: 4
Recommended seme	ester/trimester of the course: 4., 6.
Course level: I., N	
Prerequisities:	
Conditions for cours 1. Active participatio according to the teac Detailed information be realized by a com	Se completion: In in lessons (absence is allowed max. 90 min.), 2. Realization of assignments her's instructions. In the electronic board of the course in AIS2. The teaching of the subject will bined method.
The student underst communication, rhet is able to use the ac communication with which will contribute	tands theoretical information about the basics of verbal and nonverbal coric and methods of visualization and interprets them adequately. Student equired communication skills in practice, can apply effective principles of others, is able to anticipate and thus prevent possible misunderstandings, e to the development of his social and professional skills.
Brief outline of the c Basics of communic heard", "Internal dial Active listening (The Misunderstandings (I Body language (Wha Signs of Physical Ex Active and Passive B Personality developn Rhetoric (History of reactions) Visualization - optica flipchart, Based on co	ation (Transmitter-receiver principle, "What is said is not equal to what is ogue", The concept of communication) e most important criteria for active listening) How Misunderstandings Arise, How to Avoid Misunderstandings) at is body language, Active / passive body language, Dress psychology) cpression, Disadvantages of Fake Physical Expression, Difference Between Body Expression nent (Voices in us, "child in me" - identification of one's own personality) rhetoric, What is rhetoric, Vigor, alertness - assumptions, techniques, prompt al display (Classic media - whiteboard, magnetic whiteboard, bulletin board, omputer technology - PC + Beamer)
Recommended litera VÝROST, Jozef - SL GRADA, 2008. 408 VÝROST, Jozef - SL instituce. 1. vyd. Pral	ature: AMĚNÍK, Ivan. Sociální psychologie. 2., přepr. a rozš. vyd. Praha : s. AMĚNÍK, Ivan. Aplikovaná sociální psychologie I : Člověk a sociální ha : 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., doc. RNDr. Peter Pristaš, CSc.

University: P. J.	. Šafárik Univers	sity in Košice			
Faculty: Faculty	y of Science				
Course ID: CJF PFAJKKA/07	Course na	ame: Communica	ative Competenc	e 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 EC	FS credits: 2				
Recommended	semester/trimes	ster of the cours	e:		
Course level: I.					
Prerequisities:					
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					
Additional stud	y materials.	illai Flactice. CO	r, 1965.		
Course language: English language, B2-C1 level according to CEFR					
Notes:					
Course assessm Total number of	nent f assessed studen	its: 299			
А	В	С	D	E	FX
45.48	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., doc. RNDr. Peter Pristaš, CSc.

University: P. J. Šafár	rik University in Košice						
Faculty: Faculty of So	cience						
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 cre	edits: 2						
Recommended semes	ster/trimester of the course:						
Course level: I.							
Prerequisities:							
Conditions for cours Active classroom part by given deadlines. Powerpoint presentati Final Test - end of ser Final assessment = av Grading scale: A 93-1	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.						
Learning outcomes: The development of s of their communica phonological, lexical efectively use the lan level B2.	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 effectively 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 litera Vince M.: Macmillan McCarthy, O'Dell: En www.linguahouse.cor esllibrary.com bbclearningenglish.co ted.com/talks Course language:	ture: Grammar in Context, Macmillan, 2008 Iglish Vocabulary in Use, CUP, 1994 n						

English language, level B2 according to CEFR.								
Notes:	Notes:							
Course assessment Total number of assessed students: 446								
А	В	B C D E FX						
41.48	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., doc. RNDr. Peter Pristaš, CSc.								

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 langua German, Slova	ge: Ik language							
Notes:								
Course assess Total number of	nent of assessed studen	ts: 57						
А	В	B C D E FX						
61.4	10.53	8.77	3.51	8.77	7.02			
Provides: Mgr.	Ulrika Strömplov	/á, PhD.	·	·				
Date of last me	odification: 12.07	.2022						
Approved: doc	e. RNDr. Zuzana J	ešková, PhD., d	oc. RNDr. Peter	Pristaš, CSc.				

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚBEV/ Course name: Comparative Animal Morphology PMZ/10					
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: 1.					
Course level: I.					
Prerequisities					

Conditions for course completion:

Lectures and practical exercises, original drawing of some parts of animal body or it derivates, examination.

Learning outcomes:

The student will acquire basic knowledge about the principles of building the animal body from the simplest protostomian invertebrates to vertebrates. Despite the huge taxonomic diversity of animals, their bodies can be interpreted by a relatively limited number of building principles that correspond to the systematic position of the examined animal and functional adaptations to the environment and way of life. The subject examines the structure of the body at the level of organs and organ systems, by applying the method of comparison it seeks general principles and also peculiarities. It is also important to get acquainted with the principal terms, which the student will use in the spectrum of other study subjects.

Brief outline of the course:

Recommended literature:

Fretter, V., Graham, A., 1976: A Functional Anatomy of Invertebrates. Academic Press, London, New York, San Francisco, 589 pp.

Kardong, K. V., 2002: Vertebrates. Comparative anatomy, function, evolution. 3rd ed., Mc-Graw-Hill, New York.

Pough, F. H., Janis, Ch. M., Heiser, J. B., 2008: Vertebrate Life. Prentice Hall, Inc., 752 pp. 8th edition.

Ruppert, E. E., Fox, R. S., & Barnes, R. D., 2004: Invertebrate zoology: a functional evolutionary approach. Belmont, CA: Thomas-Brooks/Cole.

Course language:

Notes:

The study of the animal body structure of animals is a very old scientific discipline that has accumulated a vast amount of detailed knowledge. Comparing them is not only a way to put the knowledge into a comprehensive system, but mainly a way to find general anatomical rules that are tied to one of the animal's phylogenetic linneage or have general validity and reveal the degree of phylogenetic relationship of animals or the degree of adaptation to the environment

and a way of life. A brief summary of the phylogeny of the animal body building plan and organ systems using the knowledge of classical and modern comparative morphological approach, supported by knowledge of embryology and molecular data for interpretation of the phenotype are the content of this course.

Course assessment Total number of assessed students: 2244 А В С D Е FX 19.39 19.61 24.33 20.72 11.5 4.46 Provides: doc. RNDr. Andrej Mock, PhD., RNDr. Andrea Parimuchová, PhD. Date of last modification: 19.10.2021 Approved: doc. RNDr. Zuzana Ješková, PhD., doc. RNDr. Peter Pristaš, CSc.

University: P. J. Šafári	k University in Košice					
Faculty: Faculty of Science						
Course ID: ÚFV/ PPFM/15	Course name: Computer-Based Physical Measurement					
Course type, scope an Course type: Practice Recommended course Per week: 2 Per stud Course method: pres	ad the method: e se-load (hours): ly period: 28 eent					
Number of ECTS cree	dits: 2					
Recommended semes	ter/trimester of the course: 4.					
Course level: I.						
Prerequisities:						
Conditions for course Terms and conditions of -participation in labora -active participation at -submitting all the labo Final assessment: -based on assessment of Conditions for success -participation in lessor -achieving the level high	e completion: of assessment during the semester tory exercises in accordance with study regulations and teacher's instructions alaboratory exercises oratory reports in accordance with teacher's instruction during the semester aful completion of the course: as in accordance with the study regulations and teacher's instructions gher than 50 % in assessment during the semester and in final assessment					
Learning outcomes: By the end of the cours with the help of comp report about the gained exercises to demostrate	rse student is able to measure physical quantities, process and analyze data outer. He is able to interpret results, draw conclusions and elaborate formal d resuls. He is able to explain the physical principles of conducted laboratory e his conceptual understanding.					
Brief outline of the co The content of the co Physics I,II,III. 1. Motion in the Earth 2. Bungee jumper 3. Ideal gas behaviour 4.Molar mass of gas 5.Thermal expansion of 6.Electrical resistance 7.Ohm's law for closed 8.Bulbs' behaviour in 9.Planck constant 10. Transient phenome 11.Alternating current 12. Forced oscillations	urse: urse involves labworks in physics aimed at selected problems of General 's homogenous gravitational field of water and temperature d electric circuit dc electric circuit ena in RC ana RL circuit electric circuit 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

А	В	С	D	Е	FX	
72.73	9.09	18.18	0.0	0.0	0.0	
Duranidary day DNDr Zurang Lakkawá DKD						

Provides: doc. RNDr. Zuzana Ješková, PhD.

Date of last modification: 15.09.2021

University: P. J. Šafárik University in Košice
Faculty: Faculty of Science
Course ID: KPPaPZ/ECo-C3/14Course 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., doc. RNDr. Peter Pristaš, CSc.					

Learning outcomes:

To provide the students with knowledge of basic principles of cell microscopic and submicroscopic structure and function.

Brief outline of the course:

Lectures:

1.) Cell theory. Cell. 2.) Organization of living systems. 3.) Biological membranes. 4.) Transfer of substances across membranes. 5.) Cell wall of plant cells. 6.) Surface structures of cells. Extracellular matrix. Cell movement. 7.) Intercellular connections. 8.) Cytoskeleton. 9.) Cell nucleus. 10.) Mitochondria and cellular metabolism. 11.) Plastids and vacuoles. 12.) Ribosomes. Endoplasmic reticulum. Golgi apparatus. Lysosomes. 13.) Differentiation, aging and cell death, pathological changes in cells.

Exercises:

1.) Safety at work in a cytomorphological laboratory. Conditions for successful completion of exercises. 2.) Basics of optics. Origin and construction of the image with a magnifying glass and a microscope. 3.) Microscopic technique. 4.) Shape and size of cells. 5.) Principle of fluorescence and confocal microscopy. 6.) Control test. Vacuole. 7.) Cytoplasm movement. 8.) Nucleus and nucleolus. 9.) Cytoplasmic membrane. 10.) Osmotic processes. 11.) Cell inclusions. 12.) Cell walls of plant cells. 13.) Cell counting. Control test.

Recommended literature:

K.Kapeller, H.Strakele: Cytomorfológia. Osveta Martin, 1999

M.Babák, J.Šamaj: Cytológia. Univerzita Komenského Bratislava, 2002

Alberts B., Bray D., Johnson A., Lewis J.: Základy buněčné biologie. Espero Publishing, 2003 Campbell N. a Reece J.: Biologie. Computer Press, 2006

Kleban J., Mikeš J., Jendželovská Z., Jendželovský R., Fedoročko P.: Cytológia pracovný zošit na praktické cvičenia, 2018

Course language:

Notes:

Course assessment							
Total number o	Total number of assessed students: 1048						
A B C D E FX							
12.98 19.75 28.82 20.8 16.6 1.05							
Provides: doc. RNDr. Rastislav Jendželovský, PhD., RNDr. Zuzana Jendželovská, PhD., RNDr. Jana Vargová, PhD.							
Date of last modification: 19.02.2024							
Approved: doc. RNDr. Zuzana Ješková, PhD., doc. RNDr. Peter Pristaš, CSc.							

Page: 45

University: P. J. Šafári	k University in Košice
Faculty: Faculty of Sc	ience
Course ID: KPPaPZ/PUDB/15	Course name: Drug Addiction Prevention in University Students
Course type, scope an Course type: Practice Recommended course Per week: 2 Per stud Course method: pres	ad the method: e se-load (hours): ly period: 28 sent
Number of ECTS cree	dits: 2
Recommended semest	ter/trimester of the course: 3., 5.
Course level: I.	
Prerequisities:	
Conditions for course 1st of the evaluation: ac participation in worksh 50 - 45: A; 44 - 40: B the electronic bulletin a combined method.	completion: ctive participation in the training part (30p). 2nd part of the evaluation: active nops (20p). In total, students can get 50p and the final evaluation is as follows: 3; 39-35: C; 34-30: D; 29 - 25: E 24 and less: FX. Detailed information in board of the course in AIS2. The teaching of the subject will be realized by
Learning outcomes: The student understand describe and explain the substance use. Student of substance and non-se The student is also also approaches in prevention The student is able to and assume their position	nds the principals of research data based prevention of risk behavior, can the determinants of risk behavior as well as protective and risk factors for understands and adequately interprets the theory explaining the background substance addictions. The to state and classify the types and forms of prevention, strategies and ion, can distinguish effective strategies from ineffective ones. adequately interpret their experience with preventive activities in the group ive effect as well as limitations and threats.
Brief outline of the co	urse:
Recommended literat Orosová, O. a kol. (20 internetu v školskej pr Sloboda, Z., & Bukosk and Practice. New Yor National and internatio	ure: 12). Základy prevencie užívania drog a problematického používania axi. Košice: UPJŠ. ki, J. (Eds.). (2006). Handbook of Drug Abuse Prevention: Theory, Science, k: Springer. onal scientific journals.
Course language: slovak	
Notes:	

Course assessment Total number of assessed students: 616									
А	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., doc. RNDr. Peter Pristaš, CSc.									

University: P. J. Šafa	arik University in Košice
Faculty: Faculty of S	Science
Course ID: ÚINF/ EDS/15	Course name: Educational software
Course type, scope a Course type: Practi Recommended cou Per week: 2 Per stu Course method: pr	and the method: ce irse-load (hours): idy period: 28 esent
Number of ECTS ci	redits: 2
Recommended seme	ester/trimester of the course: 5.
Course level: I.	
Prerequisities:	
Conditions for cour Conditions for cour Conditions for ongo 1. Creation of a worl 2. Creation of a mult 3. Creation of an inter 4. Creation of an ins Conditions for the fi Creation and present Conditions for succe Obtaining at least 50 Learning outcomests Students will received	se completion: ing evaluation: ksheet for student. timedia educational game. eractive educational quiz. tructional educational video. nal evaluation: ation of final project on the use of educational software in education. essful completion of the course: % of points for ongoing and final assignments.
 a) presentation software conceptual maps, b) programs for the order of the order o	are, programs for creating and editing images, animations, diagrams, sounds, creation of didactic tests, questionnaires, surveys, odeling software, riented educational programs, discuss their idea of the use of educational software and educational Internet n the selected school subject.
 Brief outline of the of the	course: ational software and educational web resources and tools. essing of materials for teaching aid . of electronic and interactive educational documents (worksheets, presentations, pooks). etional educational video. and questionnaire creation. to tests and educational games. Gamification elements, tools and environments. o applications. ation tools. earning 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

А	В	С	D	Е	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

University: P. J. Šafárik University in Košice					
Faculty: Faculty of	Science				
Course ID: ÚFV/ ELP1/01Course name: Electonics Practical					
Course type, scope Course type: Pract Recommended cou Per week: 3 Per st Course method: pr	and the method: ice irse-load (hours): udy period: 42 resent				
Number of ECTS c	redits: 3				
Recommended sem	ester/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

Α	В	С	D	Е	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							
Annual de DND Zenne Liter (DD de DND Deter Distat CC							

University: P. J. Šafárik University in Košice						
Faculty: Faculty of Science						
Course ID: ÚFV/ ELEM1/15Course 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 assessn Total number o	nent f assessed studen	ts: 169					
А	В	С	D	Е	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 J	ešková, PhD., d	oc. RNDr. Peter I	Pristaš, CSc.			

University: P. J. Šafá	rik University in Košice						
Faculty: Faculty of S	Faculty: Faculty of Science						
Course ID: CJP/ PFAJ4/07	Course name: English Language of Natural Science						
Course type, scope a Course type: Practic Recommended cour Per week: 2 Per stu Course method: pre	nd the method: ce rse-load (hours): dy period: 28 esent						
Number of ECTS cr	edits: 2						
Recommended seme	ster/trimester of the course: 4.						
Course level: I.							
Prerequisities:							
Conditions for cours Active participation i 2 classes at the most Continuous assessme 1 credit test taken pre 1 project (quiz on the 5 LMS quizzes (25% In order to be admitte assessment The exam test results represent the other 50 The final grade for th A 93-100, B 86-92, C Learning outcomes: Enhancement of stude in English for specifie Students obtain know English, improve thei	e completion: n class and completed homework assignments. Students are allowed to miss nt: sumably in weeks 6/7 topic of the student's field of study) 25% of the continuous assessment of the continuous assessment) ed to the final exam, a student has to score at least 65 % from the continuous represent 50% of the final grade for the course, continuous assessment results 0% of the final grade. le course will be calculated as follows: 2 79-85, D 72-78, E 65-71, FX 64 and less. ents' language skills (speaking, writing, reading and listening comprehension) c and academic purposes and development of students' linguistic competence. wedge of selected phonological, lexical and syntactic aspects of professional ir pragmatic competence - students can effectively use the language for a given are course of the provide of selectively use the language for a given transported on the provide of selectively use the language for a given transported on the provide of selectively use the language for a given transported on the provide of selectively use the language for a given transported on the provide of selectively use the language for a given transported on the provide of selectively use the language for a given transported on the provide of selectively use the language for a given transported on the provide of selectively use the language for a given transported on the provide of selectively use the language for a given transported on the provide of selectively use the language for a given transported on the provide of selectively use the language for a given transported on the provide of selectively use the language for a given transported on the provide of selectively use the language for a given transported on the provide of selectively use the language for a given transported on the provide of selectively use the language for a given transported on the provide of selectively use the language for a given transported on the provide of selectively use the language for a given transported on t						
sciences.							
Brief outline of the c 1. Introduction to stud 2. Selected aspects of 3. Talking about acad 4. Discussing science 5. Defining scientific 6. Expressing cause a 7. Describing structur 8. Explaining process 9. Comparing objects	ourse: dying language f scientific language lemic study terminology and concepts and effect res ses s, 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

А	В	С	D	Е	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							

University: P. J. Šafárik University in Košice				
Faculty: Faculty of Science				
Course ID: ÚBEV/ TCZ/03Course name: Fieldwork from zoology				
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: Per study period: 5d Course method: present				
Number of ECTS credits: 2				
Recommended semester/trimester of the course: 4.				
Course level: I.				
Prerequisities:				
Conditions for course completion: The condition for successful completion of the field exercises in zoology is active participation in the specified field trips, submission of a collection of 10 correctly identified species of animals or their resident characters, processing of the assigned task and presentation of the results of the task at the final student conference.				
Learning outcomes: Students will see and practically try different methods of collecting, capturing and observing different groups of animals in nature. They will try identifying animals using identification keys. Students will try processing a small scientific project and presenting the obtained results in front of other course participants.				
Brief outline of the course: Study of fauna directly in the field in different habitats of Slovakia; observation, collection, recording, conservation and determination. Getting to know the representatives of fauna connected with the principles of nature conservation.				
Recommended literature: Any literature (identification keys, animal atlases) for identifying different groups of invertebrates and vertebrates. Electronic applications for identifying animals from photographs and voice recordings.				
Course language:				
Notes:				
Course assessment Total number of assessed students: 1088				
abs n				
99.45 0.55				
Provides: RNDr. Peter Ľuptáčik, PhD., doc. RNDr. Andrej Mock, PhD., doc. RNDr. Marcel Uhrin, PhD., univerzitný profesor				
Date of last modification: 21.02.2024				

University: P. J. Šafá	rik University in Košice	
Faculty: Faculty of S	cience	
Course ID: ÚBEV/ TCB1/03	Course name: Fieldworks	from Botany
Course type, scope a Course type: Practic Recommended cour Per week: Per stud Course method: pre	nd the method: ce rse-load (hours): ly period: 5d esent	
Number of ECTS cr	edits: 2	
Recommended seme	ster/trimester of the course	e: 2.
Course level: I.		
Prerequisities:		
Conditions for cours	e completion:	
Learning outcomes:		
Brief outline of the c	ourse:	
Recommended liters	iture:	
Course language:		
Notes:		
Course assessment Total number of asse	ssed students: 1412	
	abs	n
	99.93	0.07
Provides: prof. RND:	r. Pavol Mártonfi, PhD., Mg	r. Vladislav Kolarčik, PhD., univerzitný docent
Date of last modifica	tion: 15.12.2021	
Approved: doc. RNE	Dr. Zuzana Ješková, PhD., do	c. RNDr. Peter Pristaš, CSc.

University: P. J. Šafá	rik University in Košice				
Faculty: Faculty of S	Science				
Course ID: ÚFV/ ZMF2/22	Course name: Fundamentals of Mathematics for Physicists 2				
Course type, scope a Course type: Practi Recommended cou Per week: 2 Per stu Course method: pro	and the method: ce rse-load (hours): ady period: 28 esent				
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

А	В	С	D	Е	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

University: P. J. Šafárik University in Košice						
Faculty: Faculty of Science						
Course ID: ÚFV/ ZMF/22Course 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: 0102. Introduction to the subject, the concept of a function of single variable and several variables, elementary functions, modeling real processes using functions 0304. Concept of ordinary and partial derivative, properties, rules and formulas, interpretation (geometric and physical) and applications of derivatives 0506. 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 0708. Test of knowledge and skills 1 Concept of integral, properties, rules, interpretation (geometric and physical) and applications of order), DE solution procedures (separation of variables, variation of constants), application of DEs 1112. Test of knowledge and skills 2 Concept 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 						

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, 20186. 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

А	В	С	D	Е	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

University: P. J. Šafárik	k University in Košice
Faculty: Faculty of Scie	ence
Course ID: ÚFV/ C VBFM1/15	Course name: General Biophysics I
Course type, scope and Course type: Lecture Recommended course Per week: 3 Per study Course method: prese	d the method: e-load (hours): y period: 42 ent
Number of ECTS cred	lits: 3
Recommended semeste	cer/trimester of the course: 3.
Course level: I.	
Prerequisities:	
Conditions for course Exam. During an exam, a stud Biophysics which are d	completion: lent should be able to demonstrate his/her knowledge from the parts of described in the brief outline of the course.
Learning outcomes: To provide information emphasis will be given of of the most important be the thermodynamics an	n about the object, significance and role of biophysics in science. The main on the understanding of the principles determining the structure and function biological structures (nucleis acids, proteins, biomembranes) as well as on nd kinetics of selected chemical and biophysical processes.
Week 1 Areas of interest of bio Characterization of mol disciplines related to bi Week 2 Intra-molecular and intervander Waals forces. I in biological macromol form for the potential e in biopolymers (protein Week 3 Thermodynamics in bio 1st law of thermodynamic capacity. Examples of t thermodynamics (law o Dependence of Gibbs e energy on pressure. Che chemical reaction. Influ Calorimetric and van't Week 4	 physics and its importance and position in science. Structure of biophysics. lecular, cellular, medical, environmental and radiation biophysics. Scientific iophysics. The future of biophysics. cermolecular interactions. Covalent bonds. Coulomb (ionic) interactions. Lennard - Jones potential. Hydrogen bonds. The role of hydrogen bonds lecules. Hydrophobic interactions. Hydrating forces. Empirical analytical energy of intramolecular interactions. Stabilizing non-covalent interactions as, nucleic acids, biological membranes). ological systems. Definition of thermodynamics. Thermodynamic system. mics (law of conservation of energy). Internal energy and enthalpy. Heat the use of the study of enthalpy change in biological processes. 2nd law of of process spontaneity). Entropy. 3rd law of thermodynamics. Gibbs energy. energy on temperature - Gibbs - Helmoltz equation. Dependence of Gibbs memical potential. Chemical potential in liquids. Equilibrium constant of uence of temperature on the equilibrium constant - van't Hoff's equation. Hoff enthalpy of protein and nucleic acid denaturation.

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 o	of assessed studen	its: 12			
А	В	С	D	Е	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					

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚFV/ VF1a/12	Course name: General Physics I
Course type, scope a Course type: Lectur Recommended cour Per week: 4 / 2 Per Course method: pre	nd the method: re / Practice rse-load (hours): study period: 56 / 28 esent
Number of ECTS cr	edits: 7
Recommended seme	ster/trimester of the course: 1.
Course level: I.	
Prerequisities:	
Conditions for course Terms and conditions -participation in class -active participation a -submitting all the as -tests during the sema -project group work a Final assessment: -final oral examination Conditions for succes -participation in lesso -achieving the level h	e completion: of assessment during the semester ses in accordance with study regulations and teacher's instructions at seminars and exercises signments in accordance with teacher's instruction ester and its successful presentation and defence on ssful completion of the course: ons in accordance with the study regulations and teacher's instructions higher than 50 % in assessment during the semester and in final assessment
Learning outcomes: By the end of the co physics and thermod course content and ap	urse student masters basic knowledge connected with mechanics, molecular ynamics. Student will be able to solve various problems connected with the oply gained knowledge in different situations.
Brief outline of the c 1. Basic knowledge of 2. Mechanics of parti 3. Gravitational field 4. Work, power and e 5. Mechanics of syste 6. Mechanics of rigid 7. Mechanics of fluid 9. Basics of molecula 10. Basics of thermood 11. Heat transfer. The 12. Structure and pro 13. Changes of state.	ourse: If the calculus, vector algebra. Standards and units. cle. mergy. m of particles. body. ic body. s. ur physics. Structure and properties of gases. dynamics. ermal expansion. perties of liquids

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

А	В	С	D	Е	FX
23.71	15.14	21.14	14.86	16.29	8.86
D • • • • • •					

Provides: doc. RNDr. Zuzana Ješková, PhD.

Date of last modification: 15.09.2021

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚFV/ VF1b/03	Course name: General Physics II
Course type, scope a Course type: Lectur Recommended cour Per week: 4 / 2 Per Course method: pre	nd the method: re / Practice rse-load (hours): study period: 56 / 28 esent
Number of ECTS cr	edits: 7
Recommended seme	ster/trimester of the course: 2.
Course level: I.	
Prerequisities: ÚFV/	VF1a/12
Conditions for cours To successfully comp sufficient understand to continue the study Knowledge of individ Maxwell's equations if Another requirement Credit evaluation take exercises, 4 credits), s that is part of the back is to obtain 50 points 50% of points from e Numerical exercises i student must obtain a Oral exam with a ma 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	e completion: lete the course (presence, if necessary distance), the student must demonstrate ing of the basic concepts and laws of electromagnetism, so that it is possible of general physics III, IV and the discipline of electromagnetic field theory. Jual laws of electricity and magnetism and their generalization in the form of is required. Knowledge of these laws in nature and in practical use is required. is adequate skills in solving the problems of electricity and magnetism. es into account the scope of teaching (4 hours of lectures, 2 hours of numerical self-study (1 credit), evaluation (2 credits) and the fact that it is a basic subject nelor's state exam. The minimum limit for successful completion of the course from the subsequent point evaluation, while it is necessary to obtain at least ach part: maximum number of 20 points (usually 2 written tests of 10 points each, the t least 5 points from each test) uximum of 80 points (answer to three questions, each of which must reach a t.
Learning outcomes: After completing lect of electricity and ma He will also gain ade	tures and exercises, the student will have sufficient knowledge of the basics gnetism and will be able to solve numerical problems of electromagnetism. equate 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 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

А	В	С	D	Е	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

University: P. J.	Šafárik Univers	ity 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 ECT	S credits: 7					
Recommended	semester/trimes	ster of the course	e: 3.			
Course level: I.						
Prerequisities:	ÚFV/VF1b/03 oi	tÚFV/VFM1b/1	5			
Conditions for o Written test (2x) Oral examinatio	course completi) from seminars on.	on: during the semest	ter.			
Learning outco The objective is	mes: to acquaint the s	students with the	basis of oscilat	ions, waves and op	ptics.	
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, diffraction. Doppler effect. Waves speed in materials. Acoustics. Geometrical optics. Mirrors, lens. Fotometry. Light as electromagnetic wave. Dispersion, absorption, interference, diffraction, polarization. Photon's theory of light. Law of emission 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 assessm Total number of	ent `assessed studen	ts: 70				
А	В	С	D	Е	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 mod	dification: 17.09	0.2021				

University:	P.J.	Šafárik	University	in	Košice
e mit er stegt	1.0.	Saraim	omierony		1100100

Faculty: Faculty of Science

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

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

А	В	С	D	Е	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., doc. RNDr. Peter Pristaš, CSc.

University: P. J. Šafán	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚBEV/ VB1/01	Course name: General botany
Course type, scope a Course type: Lectur Recommended cour Per week: 3 / 2 Per Course method: pre	nd the method: e / Practice crse-load (hours): study period: 42 / 28 esent
Number of ECTS cro	edits: 6
Recommended seme	ster/trimester of the course: 2.
Course level: I.	
Prerequisities: ÚBEV	V/CYT1/15
Conditions for cours Two tests during the s	e completion: semester, oral examination
Learning outcomes: The subject enables to to enhance student's will acquire skills for microscope and demo topics.	o understand the structure and function of plant cells, tissues and organs and ability to describe the biological role of plants for life on earth. Students r simple preparation of native microscopic slides, for working with a light onstration of observed plant structures in relation to the lectured theoretical
Brief outline of the control organization. Plant read and functions of plant adaptations of plants; plant tissue systems, reorgans, root; 8. Stem; 12. Sexual and apom and life cycles of brye	ourse: ction of plant cells and tissues. Plant organs, their structure, function, shape and production and grounding in embryology. Basic information and terms that erstanding of relationship between internal structure and functions of organs at organism en bloc. 1. Contents of General botany, significant evolutionary 2. Plant cell cytology. Basic cell organelles; 3. Plastids, cell wall; 4. Histology, neristematic tissues; 5. Dermal and ground tissues; 6. Vascular tissues; 7. Plant 9. Leaf; 10. Flower, Inflorescence; 11. Pollination and fertilisation in plants; ictic reproduction of plants. Seeds and fruits; 13. Alternation of generations ophytes and vascular plants.
Recommended litera Bobák, M. a kol.: Bot Vinter V.: Rostliny po v Olomouci, Olomou Lux, A. (ed.) Obrazov	ture: tanika. Anatómia a morfológia rastlín. SPN, Bratislava, 1992; od mikroskopem. Základy anatómie cévnatých rostlin. Univerzita Palackého c, 2009; vý průvodce anatomíí rostlin, Academia, Praha, 2017.
Course language: Slovak	
Notes:	

Course assessm Total number o	nent f assessed studen	ts: 1199			
А	В	С	D	Е	FX
16.6	27.11	28.86	16.1	8.34	3.0
Provides: prof. RNDr. Pavol Mártonfi, PhD., Mgr. Vladislav Kolarčik, PhD., univerzitný docent, PaedDr. Andrea Lešková, PhD.					
Date of last modification: 29.10.2021					
Approved: doc. RNDr. Zuzana Ješková, PhD., doc. RNDr. Peter Pristaš, CSc.					

University: P. J	. Šafárik Univers	sity in Košice				
Faculty: Facult	y of Science					
Course ID: ÚB GE1/10	EV/ Course na	V/ Course name: Genetics				
Course type, so Course type: 1 Recommende Per week: 3 / Course metho	cope and the me Lecture / Practice d course-load (h 3 Per study peri d: present	thod: e ours): od: 42 / 42				
Number of EC	TS credits: 7					
Recommended	semester/trimes	ster of the cours	e: 5.	=		
Course level: I.						
Prerequisities:	ÚBEV/MOB1/1	5 or ÚBEV/MB1	/01			
Conditions for	course completi	ion:				
Learning outco	omes:					
Brief outline of	f the course:					
Recommended	literature:					
Course langua	ge:					
Notes:						
Course assessn Total number o	nent f assessed studen	nts: 1645				
А	В	С	D	E	FX	
19.39	15.5	15.62	14.29	20.43	14.77	
Provides: prof. Miroslava Bálir	RNDr. Eva Čellá tová, PhD., RNE	árová, DrSc., doc Dr. Linda Petijová	. RNDr. Katarín , PhD.	a Bruňáková, PhI	D., RNDr.	
Date of last mo	dification: 15.12	2.2021				
Approved: doc	. RNDr. Zuzana .	Ješková, PhD., do	oc. RNDr. Peter	Pristaš, CSc.		

University: P. J	. Šafárik Univers	ity in Košice			
Faculty: Facult	y of Science				
Course ID: KP POŽ/21	E/ Course na	Course name: Getting to know the Student in Education			
Course type, sc Course type: I Recommended Per week: 2 Pe Course metho	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 EC	TS credits: 2				
Recommended	semester/trimes	ster of the cours	e: 4.		
Course level: I.					
Prerequisities:					
Conditions for	course completi	on:			
Learning outco	omes:				
Brief outline of	the course:				
Recommended	literature:				
Course languag	ge:				
Notes:				=	
Course assessment Total number of assessed students: 53					
А	В	С	D	Е	FX
75.47	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., doc. RNDr. Peter Pristaš, CSc.					

University: P. J. Šafárik University in Košice
Faculty: Faculty of Science
Course ID: ÚBEV/ HISE1/15Course name: Histology
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: 6
Recommended semester/trimester of the course: 2.
Course level: I.
Prerequisities: ÚBEV/CYT1/15
Conditions for course completion: Oral examination
Learning outcomes: To provide the students with knowledge of basic morphology of tissues of animals.
Brief outline of the course:1. Epithelium and glands.2. Connective tissue.3. Cartilage. Bone.4. Muscle.5. Nervous Tissue.6. Blood and hemopoiesis.7. Circulatory system. Lymphoid system.8. Endocrine system.8. Respiratory system. Integument.9. Digestive system.10. Urinary system.11. Female reproductive system.12. Male reproductive system.13. Nervous system. Special senses.
Recommended literature: Gartner, L.P., Hiatt, J.L.: Color Texbook of Histology. W.B. Saunders Company, Philadelphia, 1997 Juanqueira, L.C., Carneiro, J., Kelley, R.O.: Basic Histology. Prentice Hall International Inc., Apleton & Lange, 1992 Michel H. Ross, Wojciech Pawlina: Histology, Lippincott Wiliams & Wilkins, 2011
Course language:

Notes:

Course assessment Total number of assessed students: 577					
А	В	С	D	Е	FX
16.81	14.21	14.38	19.06	23.92	11.61
Provides: doc. RNDr. Zuzana Daxnerová, CSc., RNDr. Anna Alexovič Matiašová, PhD., doc. RNDr. Juraj Ševc, PhD.					
Date of last modification: 11.01.2022					
Approved: doc.	Approved: doc. RNDr. Zuzana Ješková, PhD., doc. RNDr. Peter Pristaš, CSc.				

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚBEV/ ACL/03	Course name: Human Anatomy
Course type, scope a Course type: Lectur Recommended cour Per week: 2 / 2 Per Course method: pre	nd the method: re / Practice rse-load (hours): study period: 28 / 28 esent
Number of ECTS cr	edits: 5
Recommended seme	ster/trimester of the course: 3.
Course level: I.	
Prerequisities:	
Conditions for cours 1. active participation 2. two written exams overall ranking 3. elaboration and pro- 4. written exam (test, number of students) Final grade will be ca seminar paper (5) an (70.5-61), E (60.5-51)	 a completion: a on Anatomy lectures, max. 3 absences per semester a (20 points each) during semester, results of written exams contribute to the esentation of the seminar paper (max. 5 points to overall ranking) a 55 points max.) during winter exam period; 3 regular exam dates (unlimited + 1 date for correction (for students, which failed in regular exam dates). alculated based on the total sum of earned points from written exams (20+20), b test (55). Grading scale: A (100-91 points), B (90.5-81), C (80.5-71), D b), FX (50.5 and less)
Learning outcomes: After successful com an accurate idea abou various systems. Stu human body in conte completion of the le comparative morphol	pletion of the lectures, student masters the systemic human anatomy and has t the arrangement of the individual organs in particular organ system, or across dent understands the function and basic physiology of particular organs in xt of both; evolution and processes occurring in cells and tissues. Successful ectures prepare students for further study of histology, animal physiology, logy, immunology, etc.
 Brief outline of the c 1. Anatomical termin 2. The skeletal system 3. The muscular system 4. The respiratory system 5. The gastrointestina 6. The urinary system 7. The male reproduct 8. The female reproduct 9. The circulatory system 10. The lymphatic system 11. The immune system 12. The nervous system 	ourse: ology n em stem al system n trive system uctive system stem stem em em

13. The sensory organs

Recommended literature:

Miklošová M.: Anatómia, vysokoškolská učebnica, UPJŠ, Equilibria, Košice, 2011 Ševc, J., Mochnacký, F.: Anatomické termíny pre jednoodborové a medziodborové štúdium biológie, UPJŠ, e-book (https://unibook.upjs.sk/sk), 2020

Kluchová, D. a kol.: Anatómia trupu a končatín, UPJŠ, Equilibria, Košice, 2015 K. S. Saladin: Anatomy and Physiology: The Unity of Form and Function, Mc Graw-Hill; 3rd edition, 2004

Mráz, P. a kol.: Anatómia ľudského tela 1-3, Slovak Academic Press, 2015-2021

Course language:

Notes:

Course assessment

Total number of assessed students: 2014

А	В	С	D	Е	FX
6.11	16.93	26.66	24.98	22.05	3.28

Provides: doc. RNDr. Juraj Ševc, PhD., RNDr. Anna Alexovič Matiašová, PhD.

Date of last modification: 07.09.2021

Approved: doc. RNDr. Zuzana Ješková, PhD., doc. RNDr. Peter Pristaš, CSc.

University: P. J.	. Šafárik Univers	ity in Košice				
Faculty: Faculty	Faculty: Faculty of Science					
Course ID: KP INP/17	E/ Course n a	Course name: Inclusive Pedagogy				
Course type, sc Course type: I Recommended Per week: 2 Pe Course metho	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 EC	IS credits: 2					
Recommended	semester/trimes	ster of the cours	e: 5.			
Course level: I.						
Prerequisities:						
Conditions for	course completi	on:				
Learning outco	mes:					
Brief outline of	the course:					
Recommended	literature:					
Course languag	ge:					
Notes:						
Course assessm Total number of	Course assessment Total number of assessed students: 107					
А	В	С	D	Е	FX	
69.16	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.	Approved: doc. RNDr. Zuzana Ješková, PhD., doc. RNDr. Peter Pristaš, CSc.					

University: P. J	. Šafárik Univers	ity in Košice			
Faculty: Facult	y of Science				
Course ID: KP IIŠP/21	E/ Course na	Course name: Integration and Inclusion in School Practice			
Course type, so Course type: 1 Recommended Per week: 2 P Course metho	cope and the met Practice d course-load (h er study period: d: present	thod: ours): 28			
Number of EC	TS credits: 2				
Recommended	semester/trimes	ster of the cours	e: 3.	=	
Course level: I.					
Prerequisities:					
Conditions for	course completi	on:			
Learning outco	omes:				
Brief outline of	the course:				
Recommended	literature:				
Course languag	ge:				
Notes:					
Course assessm Total number of	nent f assessed studen	ts: 52			
А	В	С	D	Е	FX
36.54	36.54 38.46 15.38 7.69 1.92 0.0				
Provides: PaedDr. Michal Novocký, PhD.					
Date of last mo	dification: 12.03	3.2024			
Approved: doc.	. RNDr. Zuzana J	lešková, PhD., do	oc. RNDr. Peter I	Pristaš, CSc.	

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚBEV/ VEK1/03	Course name: Introduction to Ecology
Course type, scope a Course type: Lectur Recommended cou Per week: 3 Per stu Course method: pre	and the method: re rse-load (hours): ady period: 42 esent
Number of ECTS cr	edits: 3
Recommended seme	ster/trimester of the course:
Course level: I., II.	
Prerequisities:	
Conditions for cours oral examination	se completion:
Learning outcomes: Fundamental parame factors in air, aquation Ecosystem and Natur	eters and relations in ecological science. Abiotic, biotic and anthropogenic e and terrestrial/soil environment. Autecology, Demecology and Synecology. re Protection.
Brief outline of the c	course:

Ecological factors and relations in environment (air, water, soil); influence of ecological factors on individuals (morphological adaptations, behavioral reactions); populations and communities; ecosystems (impact assessment); conservation and biodiversity.

1. Basic ecological terms. 2. Characterisation of the basic ecological factors (light, temperature, water). 3. Air environment (composition of atmosphere, physical and chemical factors, air pollutants, organisms and their adaptations in air environment). 4. Aquatic environment (water properties physical and chemical factors, gases in water, water pollutants, eutrophication and saprobity, aquatic organisms). 5. Soil environment (physical and chemical properties, soil profile, humus layer, soil pollutants, soil organisms and their adaptations). 6. Characterization of Populations, structure and ppuatin dynamics. 7.Biocenoses and biotops. 8. Qualitative and quantitative community characteristics. 9. Ecosystems. 10. Biomes and their characteristics, 11. Bidiversity-factors affecting biodiversity, Species-Area relationships. 12. Biodiversity protection.13. Biospheric cycles.

Recommended literature:

Begon, M., Harper, J. L., Townsend, C. L.: Ecology: individuals, populations, and communities. Blackwell Sci. Publ., 1990

Course language:

Notes:

Course assessment Total number of assessed students: 1825					
А	В	С	D	Е	FX
20.99	17.64	24.93	17.21	11.73	7.51
Provides: RNDr. Natália Raschmanová, PhD., doc. RNDr. Marcel Uhrin, PhD., univerzitný profesor					
Date of last modification: 16.03.2023					
Approved: doc. RNDr. Zuzana Ješková, PhD., doc. RNDr. Peter Pristaš, CSc.					

University: P. J. Šafá	irik University in Košice			
Faculty: Faculty of S	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 cr	redits: 2			
Recommended seme	ester/trimester of the course: 1.			
Course level: I.				
Prerequisities:				
Conditions for cours Terms and condition -participation in clas -active participation -submitting all the as -tests during the sem Final assessment: -based on assessmen Conditions for succe -participation in less -achieving the level 1	se completion: s of assessment during the semester ses in accordance with study regulations and teacher's instructions at seminars and exercises ssignments in accordance with teacher's instruction ester t during the semester ssful completion of the course: ons in accordance with the study regulations and teacher's instructions higher than 50 % in assessment during the semester and in final assessment			
Learning outcomes: By the end of the co physics and thermod collection, videomea	burse student is able to solve problems connected with mechanics, molecular lynamics. In solving problems student is able to apply digital tools for data surement and computer modelling and data processing and their analysis.			
Brief outline of the o The course is an aux and Thermodynamic connected with the for 1. Kinematics and o Equation of motion. 2. Gravitational field 3. Work, power and o 4. Rotational motion 5. Law of momentum 6. Deformation. Hoo 7. Fluid mechanics. 8. Gases. Ideal gas la 9.Basics of thermody 10.Heat and heat exce	course: iliary subject to the course General physics 1 - Mechanics, Molecular Physics as aimed to development of conceptual understanding and problem solving ollowing areas: dynamics of motion along a line and two-dimensional motion of particle. I. Projectile motion. energy. Law of energy conservation. . Equation of rotational motion. n conservation and angular momentum conservation. k's law. ws. ynamics. First law of thermodynamics. change.			

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

А	В	С	D	Е	FX
36.96	20.34	24.64	13.18	4.58	0.29
Provides des DNDr Zuzens lečková DhD					

Provides: doc. RNDr. Zuzana Ješková, PhD.

Date of last modification: 15.09.2021

Approved: doc. RNDr. Zuzana Ješková, PhD., doc. RNDr. Peter Pristaš, CSc.

University: P. J. Šafá	rik University in Košice					
Faculty: Faculty of S	Faculty: Faculty of Science					
Course ID: ÚFV/ UVF2/07	Course name: Introduction to General Physics II					
Course type, scope a Course type: Practi Recommended cou Per week: 2 Per stu Course method: pro	and the method: ce rse-load (hours): ady period: 28 esent					
Number of ECTS cr	redits: 2					
Recommended seme	ester/trimester of the course: 2.					
Course level: I.						
Prerequisities:						
Conditions for course Terms and conditions -participation in class -active participation -submitting all the as -tests during the sem -based on assessmen Conditions for succe -participation in less -achieving the level I	se completion: s of assessment during the semester ses in accordance with study regulations and teacher's instructions at seminars and exercises signments in accordance with teacher's instruction ester Final assessment: t during the semester ssful completion of the course: ons in accordance with the study regulations and teacher's instructions higher than 50 % in assessment during the semester and in final assessment					
Learning outcomes: By the end of the cou connected with selec	rse student is able to solve problems and explain phemomena and experiments ted areas of Electricity and Magnetism.					
 Brief outline of the of The course is an auxility to development of courses: 1. Electric field. Courses: 2. Work, electric poteds 3. Electric capacitantes 4. Electric current. O 5. Work and power. If 6. Magnetic field. 7. Interaction betwees 8. Transient phenomes 9. Electromagnetic in 10. Transient phenomes 11. Alternating curres 12. Resonance in serting the serting curres 	course: liary subject to the course General physics 2 - Electricity and Magnetism aimed onceptual understanding and problem solving connected with the following lomb's law. ential energy, electric potential. ce and capacitors. bhm's law, Kirchhoff's laws. Energy and efficiency of sources of electromotive force en magnetic field and electric charge. ena in RC circuit. nduction. nena in RL circuit. nt circuits. ies and paralel circuits.					
Recommended liter	ature:					

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

А	В	С	D	Е	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., doc. RNDr. Peter Pristaš, CSc.					

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

Α	В	С	D	Е	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., doc. RNDr. Peter Pristaš, CSc.

University: P. J. Šafá	University: P. J. Šafárik University in Košice				
Faculty: Faculty of S	Faculty: Faculty of Science				
Course ID: Dek. PF UPJŠ/USPV/13	ourse ID: Dek. PF Course name: Introduction to Study of Sciences PJŠ/USPV/13				
Course type, scope a Course type: Lectur Recommended cour Per week: Per stud Course method: pre	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 cr	edits: 2				
Recommended seme	ster/trimester of the cou	se: 1			
Course level: I.					
Prerequisities:					
Conditions for cours	e completion:				
Learning outcomes:					
Brief outline of the c	ourse:				
Recommended litera	iture:				
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. RND	Approved: doc. RNDr. Zuzana Ješková, PhD., doc. RNDr. Peter Pristaš, CSc.				

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚMV/ MTFa/15	Course name: Mathematics I for physicists
Course type, scope a Course type: Lectur Recommended cour Per week: 2 / 2 Per Course method: pre	nd the method: re / Practice rse-load (hours): study period: 28 / 28 esent
Number of ECTS cr	edits: 5
Recommended seme	ster/trimester of the course: 1.
Course level: I.	
Prerequisities:	
Conditions for cours To complete the courterms and the ability is according to the red During the semester, (together 50 points). may write the exam. The number of 30 points. 59-50-D, 49-40-E. If exam test (12 points)	Se completion: It is necessary to demonstrate the acquirement of basic mathematical to solve problems from selected thematic units. The evaluation of the subject esults from the semester and in view of the results of the written final test. students write tests at all seminars (together 20 points) and two extensive tests It is necessary to obtain at least 28 points during the semester. Then students To pass the exam, it is necessary to obtain at least 12 points from the maximum The scale for student evaluation is as follows: 100-80-A, 79-70-B, 69-60-C, a student does not achieve the required minimal number of points from the and during the semester (together 28 points), he/she is evaluated by FX.
Learning outcomes: After completing the equations and inequ differential and integ	e course, the student can use basic mathematical terms, can solve various nations, and is acquainted with basic mathematical knowledge from the ral calculus, and is able to apply the theory in concrete excercises.
Brief outline of the c Week 1-6: Definition functions. Compositi Week 7-14: Limit of Indefinite integrals, b	ourse: a of function. Domain and range of functions. Elementary functions. Inverse ons of functions. functions. Continuity of functions. Derivation and its geometric aplications. pasic methods of integration. Definite integral and its applications.
Recommended litera Huťka, Benko, Ďurik D. Studenovská, T. M odbory, UPJŠ 2006 D. Studenovská, T. M S. Lang: A First Cour	nture: covič: Matematika, Alfa, Bratislava 1991 Iadaras, S. Mockovčiak: Zbierka úloh z matematiky pre nematematické Iadaras: Matematika pre nematematické odbory, UPJŠ 2006 rse in Calculus, Springer Verlag, 1998
Course language:	
Slovak	
Notes:	

Course assessment Total number of assessed students: 101						
А	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., doc. RNDr. Peter Pristaš, CSc.						

University: P. J. Šafárik University in Košice					
Faculty: Faculty of S	Faculty: Faculty of Science				
Course ID: ÚMV/ MTFb/22Course 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

А	В	С	D	Е	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., doc. RNDr. Peter Pristaš, CSc.

University: P. J	. Šafárik Univers	ity in Košice					
Faculty: Facult	Faculty: Faculty of Science						
Course ID: KP MKŠP/21	e ID: KPE/ Course name: Mentoring and Coaching in School Practice						
Course type, sc Course type: I Recommended Per week: 2 Pe Course metho	ope and the met Practice d course-load (h er study period: d: present	thod: ours): 28					
Number of EC	TS credits: 2						
Recommended	semester/trimes	ster of the cours	e: 5.				
Course level: I.							
Prerequisities:							
Conditions for	course completi	ion:					
Learning outco	omes:						
Brief outline of	the course:						
Recommended	literature:						
Course languag	ge:						
Notes:							
Course assessm Total number of	Course assessment Total number of assessed students: 62						
А	В	С	D	Е	FX		
83.87	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 J	Ješková, PhD., do	oc. RNDr. Peter I	Pristaš, CSc.			

University: P. J. Šafárik University in Košice						
Faculty: Faculty of Science						
Course ID: ÚFV/ SDFM1/15Course 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.

4. Siegel A. F.:	Statistics and Da	ta Analysis. An I	Introduction. J. V	Viley&Sons, NY,	1988.		
Course langua slovak, basics o	ge: of english						
Notes:	Notes:						
Course assessm Total number o	nent of assessed studen	ts: 4					
А	В	С	D	E	FX		
50.0	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 J	ešková, PhD., do	oc. RNDr. Peter l	Pristaš, CSc.			

University: P. J. Šafár	ik University in Košice
Faculty: Faculty of Sc	ience
Course ID: ÚFV/ MFYU/15	Course name: Methods of Physical Problems Solving
Course type, scope an Course type: Practic Recommended cour Per week: 2 Per stuc Course method: pres	nd the method: e se-load (hours): Hy period: 28 sent
Number of ECTS cre	dits: 2
Recommended semes	ter/trimester of the course: 5.
Course level: I.	
Prerequisities:	
Conditions for course Summary evaluation b 1. Practical ongoing at 2. Active participatio absences allowed) and	e completion: based on ongoing assessment: ssignments for given topics and their defense (at least 50% needed) n during face-to-face contact learning in classical or virtual classroom (3 d during online learning (no absence, uploading all ongoing assignments)
Learning outcomes: The student will gain 1. overview of qualita 2. can model a given p nature of the physical 3. can effectively use	the following knowledge and skills tive, quantitative and experimental methods of solving physical problems obysical problem and apply appropriate methods of solution according to the problem digital technologies on PC, mobile and tablet in solving physical problems.
Brief outline of the co Introduction to the sult 1. Overview of approa Qualitative approache 2. Simple thought mod 3. Dimensional analys 4. Application of sym 5. Graphic methods Experiment and digita 6. Animations and sim (Geogebra, Phet, Worl 7. Video analysis (Tra 8. Computer-aided, re Quantitative approach 9. Models in the form 10. Symbolic and nun More advanced approa 11. Qualitative approach 12. Variational approa	purse: bject iches, methods and means, sources of physical problems, competitions s in solving deling and Fermi estimates, is, scaling metry and conservation laws I technologies in solving nple simulations kbench, Physlets) cker), iconographic modeling (VnR, Coach) mote and virtual experiments (PC, tablet, mobile) es in solving of differential equations - computer modeling (Sage, Jupyter) nerical solutions (Sage, Jupyter), aches to solutions ich through the theory of dynamical systems iches (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

А	В	С	D	Е	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., doc. RNDr. Peter Pristaš, CSc.

University: P. J. Š	Šafárik Univers	ity in Košice					
Faculty: Faculty	of Science						
Course ID: ÚBEV/ Course name: Microbiology and basics of virology MKV/15 MKV/15							
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	S credits: 5						
Recommended se	emester/trimes	ter of the course	e: 3., 5.				
Course level: I.							
Prerequisities: Ú	BEV/CYT1/15						
Conditions for co Attendance of p examination	ourse completion racticals (at le	on: east 90%), 2 wr	itten examinatic	ons during seme	ster, final oral		
Learning outcom Students will obta their cytology, ph methods for study	nes: ain a basic info sysiology, genet ying microorgan	rmations on viru ics, ecology, clas nisms will be pro	ses, prokaryotic sification, and in vided.	and eukaryotic m nportance . Infori	nicroorganisms, mation on basic		
Brief outline of t Viruses, prokaryc classification. Th	he course: otic and eukaryc e importance of	otic microorganis f microorganisms	ms, their cytolog for humans and	y, physiology, ge environment.	netics, ecology,		
Recommended li	terature:						
Course language	:						
Notes:							
Course assessment Total number of assessed students: 1500							
A	В	С	D	Е	FX		
24.07	13.47	18.33	18.93	20.93	4.27		
Provides: doc. RNDr. Peter Pristaš, CSc., RNDr. Mária Piknová, PhD., RNDr. Mariana Kolesárová, PhD., RNDr. Lenka Maliničová, PhD.							
Date of last modi	ification: 10.12	.2021					
Approved: doc. F	RNDr. Zuzana J	ešková, PhD., do	oc. RNDr. Peter P	Pristaš, CSc.			

University: P. J. Šafá	rik University in Košice						
Faculty: Faculty of S	Faculty: Faculty of Science						
Course ID: ÚFV/ MTFM/20	Course name: Modern Trends in Physics						
Course type, scope a Course type: Lectur Recommended cour Per week: 2 Per stu Course method: pre	nd the method: re rse-load (hours): dy period: 28 esent						
Number of ECTS cr	edits: 2						
Recommended seme	ster/trimester of the course: 4.						
Course level: I.							
Prerequisities:							
Conditions for cours To successfully comp a sufficient understan elaboration of semes processing and presen Credit assessment tal credits). Rating scale complied with 100-50 failed 49-0	be completion: lete the course (full-time, if necessary distance), the student must demonstrate ding of the basic concepts and laws of physics, which were focused on lectures, ster work on specified topics and successful oral examination and written ntation of one topic, which is in the content of the subject. kes into account the scope of teaching (2 hours of lectures and self-study 2 0						
Learning outcomes: After completing the parts of physics that l	lectures and exercises, the student will have sufficient knowledge of those have been included in the content of lectures.						
Brief outline of the c Week 1-3: Selected la Week 4-6: Selected la Weeks 7-9: Selected Week 10-12: Selected Week 1314: Present	ourse: ectures in theoretical physics and astrophysics ectures in nuclear physics lectures in biophysics d lectures on condensed matter physics eation of students' work and discussion.						
Recommended litera The literature is speci	iture: ified at the beginning of the semester according to selected topics.						
Course language: english							
Notes: Presence form repres using MS Teams.	ents a standart form for the course, if a need arises, the course is performed						

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., d	oc. RNDr. Peter Pristaš, CSc.				

University: P. J.	. Šafárik Univer	sity in Košice					
Faculty: Faculty	y of Science						
Course ID: ÚB MB1/01	Course ID: ÚBEV/ Course name: Molecular Biology MB1/01						
Course type, sc Course type: I Recommended Per week: 3 Pe Course metho	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 EC	FS credits: 4						
Recommended	semester/trime	ster of the cours	e: 4.				
Course level: I.							
Prerequisities:							
Conditions for Oral examination	course complet on.	ion:					
Learning outco To provide the expression and	mes: students with k development.	mowledge of mo	lecular basis of	inheritance and	control of gene		
Brief outline of Structure and replication and gene expression	the course: properties of in repair, transcript in prokaryotes	information mac ion and translatio and eukaryotes. (romolecules. M n. Prokaryotic ar Control of cell cy	olecular mechan nd eukaryotic ger rcle.	nisms of DNA nome. Control of		
Recommended Lodish, H., Bal Freeman and Co Myers, R.A.: M	literature: timore, D., Berk ompany, New Yo lolecular Biolog	, A. et al.: Molect ork, 1995 y and Biotechnole	ular Cell Biology ogy. VCH Publis	y. Sci. Amer. Boo hers Inc., New Y	oks Inc., W.H. York, 1995		
Course languag	ge:						
Notes:							
Course assessment Total number of assessed students: 1127							
А	В	C	D	Е	FX		
7.99	12.16	18.72	19.34	30.17	11.62		
Provides: doc. RNDr. Peter Pristaš, CSc., RNDr. Mária Piknová, PhD., RNDr. Zuzana Jendželovská, PhD., RNDr. Ján Košuth, PhD., RNDr. Jana Vargová, PhD.							
Date of last mo	dification: 03.0	5.2015					
Approved: doc.	RNDr. Zuzana	Ješková, PhD., do	oc. RNDr. Peter	Pristaš, CSc.			

II · · · · DI	<u>й с ч тт</u>	· · · · ·					
University: P. J.	Safarik Universi	ity in Kosice					
Faculty: Faculty	Faculty: Faculty of Science						
Course ID: ÚBEV/Course name: Molecular Biology and GeneticsMBGNm/22							
Course type, sco Course type: Recommended Per week: Per Course methoo	ope and the met course-load (he study period: l: present	hod: ours):					
Number of ECT	S credits: 2						
Recommended	semester/trimes	ter of the cours	e:				
Course level: I.							
Prerequisities:	ÚBEV/CYT1/15	and ÚBEV/MB	1/01 and ÚBEV/	GE1/10			
Conditions for a	course completion	o n:					
Learning outco	mes:						
Brief outline of	the course:						
Recommended	literature:						
Course languag	e:						
Notes:							
Course assessm Total number of	ent assessed student	ts: 18					
A	В	С	D	E	FX		
33.33	33.33 22.22 27.78 5.56 5.56 5.56						
Provides:				· · · · · · · · · · · · · · · · · · ·			
Date of last mod	lification: 15.05	.2023					
Approved: doc.	RNDr. Zuzana J	ešková, PhD., do	oc. RNDr. Peter	Pristaš, CSc.			

University: P. J	. Šafárik Univers	ity in Košice					
Faculty: Facult	Faculty: Faculty of Science						
Course ID: KP MMKV/17	Course ID: KPE/ Course name: Multiculturalism and Multicultural Education MMKV/17						
Course type, sc Course type: 1 Recommended Per week: 2 P Course metho	cope and the met Practice d course-load (h er study period: d: present	thod: ours): 28					
Number of EC	TS credits: 2						
Recommended	semester/trimes	ster of the cours	e: 4.				
Course level: I.							
Prerequisities:							
Conditions for	course completi	on:					
Learning outco	omes:						
Brief outline of	the course:						
Recommended	literature:						
Course languag	ge:						
Notes:							
Course assessm Total number of	nent f assessed studen	ts: 202					
А	В	С	D	Е	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 J	Ješková, PhD., do	oc. RNDr. Peter I	Pristaš, CSc.			

University: P. J. Šafárik University in Košice							
Faculty: Faculty of Science							
Course ID: KPH Pg/15	E/ 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							
Kecommended semester/trimester of the course: 3.							
Course level: 1.							
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							
А	В	С	D	Е	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., doc. RNDr. Peter Pristaš, CSc.							
University: P. J. Šafán	rik University in Košice						
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Faculty: Faculty of S	Faculty: Faculty of Science						
Course ID: ÚFV/ ZFP1a/22	Course name: Physics Practical I						
Course type, scope a Course type: Practic Recommended cour Per week: 3 Per stu Course method: pre	nd the method: ce rse-load (hours): dy period: 42 esent						
Number of ECTS cro	edits: 3						
Recommended seme	ster/trimester of the course: 2.						
Course level: I.							
Prerequisities:							
Conditions for cours Summary evaluation 1. Theoretical prepara 2. Group realization o forms and their defen 3. Active participation and during online le protocols needed)	e completion: based on ongoing assessment: atory assignments (at least 50% of performance) f experimental laboratory measurements, reporting their results in the protocol se (at least 50% needed) n during group work in the classical or virtual laboratory (3 absences allowed) arning (no absence, all individual theoretical assignments and laboratory						
Learning outcomes: Student should obtain 1. Designing and realing theoretical knowledge Molecular Physics. 2. Processing, visual according to Guide to digital technology (co	a and know to apply basic concepts and skills in izing classical and virtual physical experiments to improve or supplement new e connected to introductory physics course: Mechanics & lizing, analyzing, evaluating and scientific presenting experimental data to the Expression of Uncertainty in Measurement (GUM) and using modern omputer probes and simulations, Jupyter notebooks, Google spreadsheets).						
Brief outline of the c 0102. Introduction, new SI units, the basi 0304. Processing d technologies 05 06. Processing experiment, data anal 0709. Laboratory ta A. Measuring density B. Measuring spheric C. Measuring moment 10. Defense of protoco 1113. Laboratory ta D. Measuring dynam	ourse: the concept of measurement error and uncertainty, c task of the experimenter irect measurements, type A uncertainties, data visualization using digital indirect measurements, type B uncertainties, uncertainty budget for the ysis using digital technologies, temple and contents of laboratory protocols sks: of liquids and solids al radius and area at of inertia cols sks: ic 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

А	В	С	D	Е	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

Faculty: Faculty of Science

Course ID: ÚFV/	Course name: Physics Practical II
ZFP1b/03	

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

А	В	С	D	Е	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

University: P. J. Šafárik University in Košice							
Faculty: Faculty of Science							
Course ID: ÚFV/ ZFP1c/14Course name: Physics Practica	V/ 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 defended. As a part of evaluation there is is also a good of the task.	in the form l theoretica	of a written report, l preparation for th	, which must be he measurement				
Learning outcomes: To gain some physical inside into some of the conception practice in data collection, analysis and interpretation report writing presentation and results.	ots presente on of resun	d in the lectures. b nance. c. To gain	b. To gain some experience and				
Brief outline of the course: Oscilations. Pendulum. Composition and decomposition sound. Refractive index. Lense's focal length. Interfe of waves. Polarization. The speed of light. Quantum of the speed of light.	ion of osci rence. Diff optics.	llations. Resonance raction. Diffractior	e. The speed of and reflection				
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							

University: P. J. Šafá	rik University in Košice						
Faculty: Faculty of S	Faculty: Faculty of Science						
Course ID: ÚFV/ ZFP1d/14	Course name: Physics Practical IV						
Course type, scope a Course type: Practic Recommended cou Per week: 3 Per stu Course method: pre	nd the method: ce rse-load (hours): dy period: 42 esent						
Number of ECTS cr	edits: 3						
Recommended seme	ster/trimester of the course: 5.						
Course level: I.							
Prerequisities:							
Conditions for course - a check of the theore - tests for tasks no. 2 and detectors, each te - measurement of task - the overall evaluation	e completion: etical preparation for measuring the given task (2x), 4,5,6,8, tests from the theoretical part - basic characteristics of radiation est with a minimum success rate of 51%, ks, elaboration and submission of protocols of measured tasks on is the sum of the evaluations of the individual tasks						
Learning outcomes: The student will acquionizing radiation an and Nuclear Physics.	uire knowledge and practical skills about the registration of various types of d verify the knowledge acquired in the subject General Physics IV - Atomic						
Brief outline of the c 1. Introduction to me 2. Dosimetry measur 3. Statistic distribution 4. Measurement time 5. Absorption of beta 6. Backward scatterin 7. Scintillation gamm 8. Emulsion detector 9. Franck Hertz expe 10. Beta - spectrosco 11. Energy dependen 12. MEDIPIX. 13. Interaction of pho	ourse: asurements. ements. on of measured quantities. scale selection. . rays. ng of beta rays. na spectrometer. riment. py. ce of the gamma-absorption coefficient.						
Recommended litera 1. J.Vrláková, S.Voka dostupné na http://www.upjs.sk/p	i ture: il: Základné fyzikálne praktikum III, skriptá PF UPJŠ, Košice, 2012, ublic/media/5596/Zakladne-fyzikalne-praktikum-III.pdf						

Course languages slovak	ge:				
Notes:					
Course assessm Total number o	nent f assessed studen	ts: 111			
А	В	С	D	Е	FX
82.88	8.11	5.41	2.7	0.0	0.9
Provides: doc. Dominika Šveco	RNDr. Janka Vrla ová	iková, PhD., doc	. RNDr. Adela K	ravčáková, PhD.,	, RNDr.
Date of last mo	dification: 23.08	3.2022			
Approved: doc	. RNDr. Zuzana J	ešková, PhD., do	oc. RNDr. Peter H	Pristaš, CSc.	

University: P. J	University: P. J. Šafárik University in Košice						
Faculty: Facult	Faculty: Faculty of Science						
Course ID: ÚF FDE/15): ÚFV/ 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 EC	TS credits: 2						
Recommended	semester/trime	ster of the cours	e: 3.				
Course level: I.							
Prerequisities:							
Conditions for Seminar work -	course complet - a project dealin	i on: g with hands-on o	experiments and	their role in Phy	vsics teachig.		
Learning outco The goal of the through demons	mes: course is to get b strational physic	better the understa al experiments.	unding of basic p	hysical concepts	and phenomena		
Brief outline of The course is a with the help of subject Introduc	the course: imed at the cond selected demons ctory physics and	ceptual understan strational experin l their realization	ding of basic ph nents. The experi is based on stud	nysical concepts ments concern the ents' active parti	and phenomena he content of the icipation.		
Recommended 1. D.Halliday, F 2.K.Cummings, John Wiley & S 3.P.G.Hewitt: C 4.Ľ.Onderová, I	literature: R.Resnick, J.Wal , P.W.Law, E.F.R Sons, Inc., 2004 Conceptual Physic M.Kireš, Z.Ješko	ker: Fyzika, VUT edish, P.J.Coone cs, tenth edition, ová, J.Degro: Pral	TUM, Brno, 200 y: Understanding Pearson, Addiso ttikum školskýcl	0 g Physics, n Wesley, 2006 n pokusov II, PF	UPJŠ, 2004		
Course languag Slovak	ge:						
Notes:	Notes:						
Course assessment Total number of assessed students: 51							
А	В	С	D	Е	FX		
82.35	11.76	3.92	1.96	0.0	0.0		
Provides: doc. 1	RNDr. Marián K	ireš, PhD.		·			
Date of last modification: 15.04.2022							
Approved: doc.	RNDr. Zuzana	Ješková, PhD., do	oc. RNDr. Peter	Pristaš, CSc.			
time and the second							

University: P. J. Šafárik University in Košice					
Faculty: Faculty of S	cience				
Course ID: ÚBEV/ FG1/03	Course name: Phytogeography				
Course type, scope a Course type: Lectur Recommended cou Per week: 2 / 1 Per Course method: pre	and the method: re / Practice rse-load (hours): study period: 28 / 14 esent				
Number of ECTS cr	edits: 5				
Recommended seme	ster/trimester of the course:				

Course level: I., II.

Prerequisities:

Conditions for course completion:

1. Lectures are optional, but highly recommended due to the presentation of otherwise difficult-toaccess information and its synthesis.

2. In addition to the exam, the student must complete a mandatory 5-hour field trip focusing on the aspects that determine the spread of plants on Earth, solve practical tasks from the topic of the subject and prepare a semester presentation on the given topic, the presentation is defended at a scientific mini-conference.

Learning outcomes:

After completing the subject, the student is oriented in various aspects of phytogeographic issues and can apply the acquired knowledge both in basic research within chorology, historical and regional phytogeography, as well as in the evaluation of world biomes. The practical application of the subject is within the study of geographically and climatically conditioned changes in vegetation, in the assessment of the reduction of biodiversity and the extinction of the natural plant communities of the Earth, and the acquired knowledge can be used in work in environmental protection.

Brief outline of the course:

- 1. History of the subject. Plants and environment. Dynamics of the earth's surface.
- 2. Abiotic and biotic factors of the plant environment.
- 3. Chorology, range, areal disjunctions, relics, endemism, vicarism.
- 4. Elements of flora older and newer approaches.
- 5. Main features of florogenesis. Paleozoic, Mesozoic, Cenozoic.
- 6. Main features of florogenesis. Cenozoic Pleistocene, Holocene.
- 7. Basics of GIS (geographic information systems) and their use in botanical research.
- 8. Postglacial development of vegetation in Slovakia.
- 9. Current changes in terrestrial vegetation and their study, plant invasions.
- 10. Geography of vegetation: from tropical rainforests to tundra I.
- 11. Geography of vegetation: from tropical rainforests to tundra II.
- 12. Geographical origin of cultivated plants.

Seminars and exercises consist of a 5-hour excursion focusing on the connections and conditionality of plant distribution and indoor exercises focusing on an overview of phytogeographical literature, atlases of plant distribution and their importance, types of mapping, types of areas, practical

assessment of floristic elements and types of disjunctions, work with maps of specific taxa throughout Europe. Further: regional phytogeography of the Earth, historical overview of opinions on the phytogeographical (floristic) division of Slovakia. Plant phylogeography. Student presentations of final semester theses (phytogeographical mini-conference).

Recommended literature:

Hendrych R.: Fytogeografie. - SPN, Praha 1984.

Prach K., Štech M., Říha P.: Ekologie a rozšíření biomů na Zemi. - Scientia, Praha 2009. Krippel E.: Postglaciálny vývoj vegetácie Slovenska. – Veda, vyd. SAV, Bratislava, 1986. Dahl, E.: The Phytogeography of Northern Europe, - Cambridge University Press, 2007.

Brown J. H., Lomolino M. V.: Biogeography. - Sinauer Associates, Sunderland, 1998.

Myers A. A., Giller P. S.: Analytical Biogeography. - Chapman & Hall, 1990.

Various literature devoted to the geography of vegetation (mainly nature and travel), articles in National Geographic, Živa, Vesmír and other magazines.

Course language:

Notes:

Course assessment

Total number of assessed students: 400

А	В	С	D	Е	FX
38.5	22.25	21.25	8.75	8.5	0.75

Provides: prof. RNDr. Pavol Mártonfi, PhD., Mgr. Vladislav Kolarčik, PhD., univerzitný docent

Date of last modification: 24.07.2022

University: P. J.	Šafárik Univers	sity in Košice			
Faculty: Faculty	of Science				
Course ID: ÚBI BRNm/22	EV/ Course na	ame: Plant Biolog	gy		
Course type, sco Course type: Recommended Per week: Per Course methoo	ope and the me course-load (h study period: l: present	thod: ours):			
Number of ECT	S credits: 2				
Recommended	semester/trime	ster of the course	2.		
Course level: I.					
Prerequisities: UÚBEV/BO1/15)	ÚBEV/CYT1/15 and (ÚBEV/BC	5 and ÚBEV/VB1 0T1/03 or ÚBEV/	/01 and ÚBEV/ BOT1/15)	FR1/10 and (ÚBI	EV/BO1/03 or
Conditions for a	course complet	ion:			
Learning outco	mes:				
Brief outline of	the course:				
Recommended	literature:				
Course languag	e:				
Notes:					
Course assessm Total number of	ent assessed studer	nts: 12			
A	В	C	D	E	FX
25.0	16.67	33.33	0.0	16.67	8.33
Provides:		·			
Date of last mod	lification: 29.0	5.2023			
Approved: doc.	RNDr. Zuzana .	Ješková, PhD., do	c. RNDr. Peter	Pristaš, CSc.	

University: P. J. Šafárik University in Košice Faculty: Faculty of Science Course ID: ÚBEV/ FR1/10 Course type, scope and the method: Course type: Lecture / Practice
Faculty: Faculty of Science Course ID: ÚBEV/ FR1/10 Course name: Plant Physiology Course type, scope and the method: Course type: Lecture / Practice
Course ID: ÚBEV/ FR1/10 Course name: Plant Physiology Course type, scope and the method: Course type: Lecture / Practice
FR1/10 Course type, scope and the method: Course type: Lecture / Practice
Course type, scope and the method: Course type: Lecture / Practice
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 3 Per study period: 28 / 42
Course method: present
Number of ECTS credits: 6
Recommended semester/trimester of the course: 4.
Course level: I.
Prerequisities: ÚBEV/VB1/01
 will determine an alternative form of lessons. 2. Before the practicals, the students will study the main oints of the task that will be can Students will receive an exact list of tasks according to individual lessons at the beginnin semester. 3. Students make a written report of the practicals. The students will evaluate the result tasksand form a conclusion. The protocols are handed over to the teacher before the next list be latest. The teacher checks the protocols and, in case of errors, returns the protocols for If the submitted protocol is correct, the task is considered validly completed. 4. Practicals are considered to have been completed when at least 10 practical tasks are completed. Completion of practicals by the end of the semester at the latest (the date specified by the teacher) is obligatory for participation in the exam. 5. The activity in the practicals is evaluated by means of an ongoing point evaluation. A can get 1-3 points. Obtaining 2 points is considered a standard completion of practicals. students can get 3 points for high-quality performance in the laboratory or excelent protoc the other hand, 1 point will be awarded to students who completed the practicals despite the minor reservations. 6. The examination of the subject takes place orally. Students need to answer to three questions.

Any changes or modifications to the conditions for completing the subject due to the COVID19 pandemic or other serious reasons are continuously posted on the subject's electronic board.

Learning outcomes:

Getting a basic overview of life processes in plants. Acquisition of basic laboratory practice in biochemical methods and work with plant material. Ability to evaluate results and form the conclusions.

Brief outline of the course:

Water in plant life, properties of water, water regime; uptake and transport of water, transpiration.
 Mineral substances in plants, transport mechanisms of mineral substances, Essential elements and their main functions, useful substances and toxic substances.

3. Photosynthesis: Meaning of photosynthesis, photosynthetic pigments, electron and proton transport, ATP production.

4. Metabolic phase of photosynthesis, CO2 fixation, Calvin cycle, Photorespiration, C4 and CAM plants, ecophysiology of photosynthesis.

5. Mobilization of storage substances, Glycolysis, Pentose cycle, Citrate (Krebs) cycle, Mitochondrial respiration, Biosynthesis and mobilization of lipids

6. Nitrogen and sulfur metabolism: Nitrogen uptake and reduction, assimilation of nitrogen, nitrogenase, assimilation of sulfur

7. Secondary plant metabolism: Isoprenoids, phenolic substances, substances derived from amino acids, stress metabolites

8. Plant growth, cell division, cellulose formation, embryogenesis, meristems, regeneration

9. Photoreceptors: Phytochromes, physiological effects of phytochromes, blue light receptors

10. Plant hormones: Characteristics and method of signaling, auxins, gibberellins, cytokinins, abscisic acid, ethylene, brassinosteroids and other hormones

11. Plant movements, tropisms, circadian rhythms

12. Flowering control: Internal and external regulation of flowering, floral meristem and control of flower development.

13. Physiology of stress: Abiotic stress, biotic stress, response of plants to stress.

Recommended literature:

Bhatla S.C., Lal M.A. Plant Physiology, development and metabolism. Springer Nature Singapore Pte Ltd. 2018

Course language:

Notes:

Course assessment

Total number of assessed students: 1939

А	В	С	D	Е	FX
16.19	13.46	16.92	14.44	22.18	16.81

Provides: doc. RNDr. Peter Pal'ove-Balang, PhD.

Date of last modification: 28.07.2022

University: P. J. Ša	afárik University in Košice
Faculty: Faculty o	f Science
Course ID: KPPaPZ/PP/15	Course name: Positive Psychology
Course type, scop Course type: Pra Recommended c Per week: 2 Per Course method:	e and the method: ctice ourse-load (hours): study period: 28 present
Number of ECTS	credits: 2
Recommended ser	mester/trimester of the course: 4., 6.
Course level: I.	
Prerequisities:	
Conditions for con Assessment is base format. Up-to-date on the electronic b	urse completion: ed on interim evaluation. The subject will be taught in both present and distance e information concerning the subject for the given academic year can be found board of the subject in the Academic information system of the UPJŠ.
Students will acqu its main theory, c rapidly developing thinking to the cha individual in conte topics of positive	tire basic knowledge concerning the reasons for founding Positive psychology, surrent research, as well as application of Positive psychology as a new and g field within psychology. Students will also gain experience in applying critical llenges and issues that Positive psychology brings and raises in the context of the emporary society. Emphasis is placed on the ability to critically evaluate current psychology.
Brief outline of th 1. Different perspect 2. Main theoretica 3. Positive emotion 4. Meaningfulness 5. Positive interpert 6. Post-traumatic g 7. Hope and optim 8. Gratitude 9. Spirituality as a 10. Wisdom 11. Positive institut 12. New themes an	e course: ectives on well-being nad happiness in psychology l approaches to positive psychology ns and positivity rsonal relations growth hism personality dimension tions nd topics in PP
Recommended lite Brewer, M. B, Hw Deci, E., Ryan R. Křivohlavý, J.: Po Křivohlavý, J.: Ps Křivohlavý, J.: Ps	erature: estone, M: Emotion and Motivation, Blackwell, 2004 M., Handbook of Self – Determination Reasearch, Rochester, 2002 zitivní psychologie. Praha, Portál, 2003 ychologie vděčnosti a nevděčnosti. Praha, Grada, 2007 ychologie 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

А	В	С	D	Е	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

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 EC	FS credits: 2				
Recommended	semester/trimes	ster of the cours	e: 3.		
Course level: I.					
Prerequisities:					
Conditions for	course completi	on:			
Learning outco	mes:				
Brief outline of	the course:				
Recommended	literature:				
Course languag	ge:				
Notes:	Notes:				
Course assessment Total number of assessed students: 858					
А	В	С	D	Е	FX
37.41	20.98	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., doc. RNDr. Peter Pristaš, CSc.					

Faculty: Faculty of S	Faculty: Faculty of Science					
Course ID: KPPaPZ/PKŽ/15	Course ID: Course name: Psychology of Everyday Life KPPaPZ/PKŽ/15					
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 seme	ster/trimester of the course: 3.					
Course level: I.						
Prerequisities:						
Conditions for cours The evaluation of the set requirements, whi ensure an objective a moral standards. The process or in the asse 1. Active participatio 2. Elaboration and pr points 20; minimum r 3. Elaboration of an e minimum number of The final evaluation (A 40b - 37b B 36b - 33b C 32b - 29b D 28b - 25b E 24b - 21b FX 20b - 0b Learning outcomes: The student is able	e completion: course and its subsequent completion will be based on clearly and objectively ch will be set in advance and will not change. The aim of the assessment is to nd fair mapping of the student's knowledge while adhering to all ethical and re is no tolerance for students' fraudulent behavior, whether in the teaching ssment process. n in seminars resentation of PPT presentation on the assigned topic. Maximum number of number of points 11. essay in the range of 4xA4 (standard pages). Maximum number of points 20; points 11. (grade) is the sum of points for the presentation and the essay.					
The student is able everyday situations st	to demonstrate an understanding of the individual's behavior in selected uch 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

А	В	С	D	Е	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

University: P. J. Šafá	rik University in Košice			
Faculty: Faculty of S	Science			
Course ID: ÚFV/ KVM/15	Course name: Quantum Mechanics I.			
Course type, scope a Course type: Lectu Recommended cou Per week: 3 / 2 Per Course method: pr	and the method: re / Practice rse-load (hours): study period: 42 / 28 esent			
Number of ECTS cr	edits: 5			
Recommended seme	ester/trimester of the course: 5.			
Course level: I.				
Prerequisities:				
Conditions for course To successfully com	se completion: uplete 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

А	В	С	D	Е	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

University: P. J. Šafá	rik University in Košice			
Faculty: Faculty of S	cience			
Course ID: KPPaPZ/RKS/14	Course name: Resolving	ourse name: Resolving Conflict Situations in Educational Practice		
Course type, scope a Course type: Lectur Recommended cour Per week: 1 / 2 Per Course method: pre	nd the method: re / Practice rse-load (hours): study period: 14 / 28 esent			
Number of ECTS cr	edits: 4			
Recommended seme	ster/trimester of the cours	e: 3., 5.		
Course level: I., N				
Prerequisities:				
Conditions for cours	e completion:			
Learning outcomes:				
Brief outline of the c	ourse:			
Recommended litera	iture:			
Course language:				
Notes:				
Course assessment Total number of asses	ssed students: 178			
	abs	n		
	94.38 5.62			
Provides: PhDr. Anna	a Janovská, PhD., Mgr. Luc	ia Barbierik, PhD.		
Date of last modifica	tion: 24.06.2022			
Approved: doc. RND	Dr. Zuzana Ješková, PhD., d	oc. RNDr. Peter Pristaš, CSc.		

University: P. J	University: P. J. Šafárik University in Košice				
Faculty: Facult	Faculty: Faculty of Science				
Course ID: KP OLŠ/15	E/ Course na	Course name: School Administration and Legislation			
Course type, sc Course type: I Recommended Per week: 2 Pe Course metho	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 EC	I'S credits: 2				
Recommended	semester/trimes	ster of the cours	e: 3., 5.		
Course level: I.					
Prerequisities:					
Conditions for	course completi	on:			
Learning outco	omes:				
Brief outline of	the course:				
Recommended	literature:				
Course languag	Course language:				
Notes:	Notes:				
Course assessment Total number of assessed students: 322					
А	В	С	D	Е	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., doc. RNDr. Peter Pristaš, CSc.					

University: P. J. Šafárik University in Košice
Faculty: Faculty of Science
Course ID: ÚTVŠ/ ÚTVŠ/CM/13Course 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: Basic aerobics – low impact aerobics, high impact aerobics, basic steps and cuing Basics of aqua fitness Basics of Pilates Health exercises Bodyweight exercises Swimming Relaxing yoga exercises Power yoga Yoga relaxation 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.

 ČECHOVSKÁ, I., MILEROVÁ, H., NOVOTNÁ, V. Aqua-fitness. Praha: Grada. 136 s. EVANS, M., HUDSON, J., TUCKER, P. 2001. Umění harmonie: meditace, jóga, tai-či, strečink. 192 s. JARKOVSKÁ, H., JARKOVSKÁ, M. 2005. Posilováni s vlastním tělem 417 krát jinak. Praha: Grada. 209 s. 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., do	oc. RNDr. Peter Pristaš, CSc.		

University: P. J	. Šafárik Univers	ity in Košice			
Faculty: Facult	y of Science				
Course ID: KF/ VKFV/07	Course ID: KF/ KFV/07Course name: Selected Topics in Philosophy of Education (General Introduction)				General
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 EC	TS credits: 2				
Recommended	semester/trimes	ster of the cours	e: 3., 5.	=	
Course level: I.					
Prerequisities:					
Conditions for	course completi	on:			
Learning outco	omes:				
Brief outline of	the course:				
Recommended literature:					
Course language:					
Notes:					
Course assessment Total number of assessed students: 32					
А	В	С	D	Е	FX
68.75	68.75 18.75 9.38 3.13 0.0 0.0				
Provides: PhDr. Dušan Hruška, PhD.					
Date of last mo	dification: 13.04	1.2022			
Approved: doc.	. RNDr. Zuzana J	Ješková, PhD., do	oc. RNDr. Peter I	Pristaš, CSc.	

University: P. J	. Šafárik Univers	ity in Košice			
Faculty: Facult	Faculty: Faculty of Science				
Course ID: KF/ VKFV/07	urse ID: KF/ FV/07Course name: Selected Topics in Philosophy of Education (General Introduction)				General
Course type, sc Course type: I Recommended Per week: 2 Pe Course metho	ope and the met Practice d course-load (h er study period: d: present	thod: ours): 28			
Number of EC	TS credits: 2				
Recommended	semester/trimes	ster of the cours	e: 6.		
Course level: I.					
Prerequisities:					
Conditions for	course completi	ion:			
Learning outco	omes:				
Brief outline of	the course:				
Recommended literature:					
Course language:					
Notes:	Notes:				
Course assessm Total number of	ent f assessed studen	ts: 32			
A	В	С	D	Е	FX
68.75	68.75 18.75 9.38 3.13 0.0 0.0				
Provides: PhDr. Dušan Hruška, PhD.					
Date of last mo	dification: 13.04	1.2022			
Approved: doc.	. RNDr. Zuzana J	Ješková, PhD., do	oc. RNDr. Peter I	Pristaš, CSc.	

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: KPPaPZ/ECo-C2/14	Course name: Self Marketing ECo-C2
Course type, scope a Course type: Practic Recommended cou Per week: 2 Per stu Course method: cou	and the method: ce rse-load (hours): ady period: 28 mbined, present
Number of ECTS cr	edits: 4
Recommended seme	ster/trimester of the course: 4., 6.
Course level: I., N	
Prerequisities:	
Conditions for course 1. Active participation according to the teach Detailed information subject will be realized	be completion: n in lessons (absence is allowed max. 90 min.), 2. Realization of assignments her's instructions. in the electronic bulletin board of the course in AIS2. The teaching of the ed by a combined method.
Learning outcomes: The student is able knows the possibiliti knowledge and princ competencies, his / h knowledge and socia life, which will also i	to understand and explain the basic assumptions of good self-marketing, es for the correct presentation of his own person and understands the related iples of personal and communication area. He / she can understand his / her her goals, how to make his / her strengths visible and he / she can apply this and professional skills in the personal and professional sphere of his / her mprove his / her employment opportunities.
Brief outline of the c What is marketing? (Basics of self-market Me and my influence me? Ability to defend options do I have?), Competence (Have y at work), Draw attention to y successfully).	Marketing - Mix) ting (Personal opinion is crucial, Goal setting, Proper use of opportunity) e (What can I offer? What does he / she have unlike me? How do others see d one's own opinion, Think positively!, I know how to explore myself - what rour own opinion, How to withstand criticism, Be a team player, Competence rourself (Voice and word selection, Active in meetings, Present yourself
Recommended litera VÝROST, Jozef - SL GRADA, 2008. 408 VÝROST, Jozef - SL instituce. 1. vyd. Pral KOMÁRKOVÁ, Růz psychologie III : Soc	AMĚNÍK, Ivan. Sociální psychologie. 2., přepr. a rozš. vyd. Praha : s. AMĚNÍK, Ivan. Aplikovaná sociální psychologie I : Člověk a sociální na : Portál, 1998. 384 s. ISBN 80-7178-269-6. žena - SLAMĚNÍK, Ivan - VÝROST, Jozef. Aplikovaná sociální iálněpsychologický 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 90.18 9.82 Provides: Mgr. Lucia Barbierik, PhD. Date of last modification: 24.06.2022

University: P. J. Šafa	árik University in Košice
Faculty: Faculty of S	Science
Course ID: KPO/ SPKVV/15	Course name: Social and Political Context of Education
Course type, scope a Course type: Lectu Recommended cou Per week: 2 Per stu Course method: pr	and the method: re irse-load (hours): ady period: 28 esent
Number of ECTS cr	redits: 2
Recommended sem	ester/trimester of the course: 4., 6.
Course level: I.	
Prerequisities:	
Conditions for cour Evaluation of the de A 100,00% - 91,0 B 90,99% - 81,00 C 80,99% - 71,00 D 70,99% - 61,00 E 60,99% - 51,00 FX 50,99% and le	se completion: veloped assignment. 0% % % % %
Learning outcomes:	
The aim and purpose	e of teaching the subject is to impart knowledge and promote reflection on the

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 assessn	nent	te: 161			
		us. 101	_		
A	В	С	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., doc. RNDr. Peter Pristaš, CSc.					

University: P. J.	. Šafárik Univers	ity in Košice			
Faculty: Faculty	Faculty: Faculty of Science				
Course ID: ÚF TRS/03	: ÚFV/ 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 EC	IS credits: 3				
Recommended	semester/trimes	ster of the cours	e: 5.		
Course level: 1.	, II.				
Prerequisities:	UFV/TEP1/03				
Conditions for	course completi	on:			
Learning outco	Learning outcomes:				
Brief outline of	Brief outline of the course:				
Recommended literature:					
Course language:					
Notes:	Notes:				
Course assessm Total number of	ent f assessed studen	ıts: 184			
А	В	С	D	Е	FX
50.54	21.2	15.22	8.15	4.89	0.0
Provides: RNDr. Tomáš Lučivjanský, PhD., univerzitný docent					
Date of last mo	dification: 16.11	.2021			
Approved: doc.	RNDr. Zuzana J	Ješková, PhD., do	oc. RNDr. Peter F	Pristaš, CSc.	

University: P. J. Safárik University in Košice	University:	P. J.	Šafárik	University in Košic	e
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Faculty: Faculty of Science

Course ID: KGER/	Course name: Specialised German Language - Natural Sciences 1
OJPV1/07	

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 effectively 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:
Germar	n

Notes:

Course assessn	nent f assessed studen	ts [.] 148			
A	B	C	D	Е	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., doc. RNDr. Peter Pristaš, CSc.					

University: P. J. Šafárik	University in Košice
Faculty: Faculty of Scien	nce
Course ID: ÚTVŠ/ Co TVa/11	ourse name: Sports Activities I.
Course type, scope and Course type: Practice Recommended course- Per week: 2 Per study Course method: preser	the method: -load (hours): period: 28 nt
Number of ECTS credi	ts: 2
Recommended semester	r/trimester of the course: 1.
Course level: I., II.	
Prerequisities:	
Conditions for course c Min. 80% of active parti	ompletion: cipation in classes.
Learning outcomes: Sports activities in all the They have a great impace enables students to stree improve.	Fir forms prepare university students for their professional and personal life. et on physical fitness and performance. Specialization in sports activities ngthen their relationship towards the selected sport in which they also
Brief outline of the cours Brief outline of the cours The Institute of physical activities aerobics; aikid yoga, power yoga, pilat tennis, chess, volleyball, Additionally, the Institu offers winter courses (sl the Tisza River) with an participation.	rse: se: education and sport at the Pavol Jozef Šafárik University offers 20 sports o, basketball, badminton, body-balance, body form, bouldering, floorball, es, swimming, fitness, indoor football, SM system, step aerobics, table tabata, cycling. te of physical education and sport at the Pavol Jozef Šafárik University ki course, survival) and summer courses (aerobics by the sea, rafting on attractive programme, sports competitions with national and international
Recommended literatur BENCE, M. et al. 2005. [online] Dostupné na: ht BUZKOVÁ, K. 2006. F 8024715252. JARKOVSKÁ, H, JARH Grada. ISBN 978802475 KAČÁNI, L. 2002. Futb 8089197027. KRESTA, J. 2009. Futsa LAWRENCE, G. 2019. SNER, Wolfgang. 2004.	 Plávanie. Banská Bystrica: FHV UMB. 198s. ISBN 80-8083-140-8. tps://www.ff.umb.sk/app/cmsFile.php?disposition=a&ID=571 itness jóga, harmonické cvičení těla I duše. Praha: Grada. ISBN KOVSKÁ, M. 2005. Posilování s vlastním tělem 417 krát jinak. Praha: 67308. al:Tréning hrou. Bratislava: Peter Mačura – PEEM. 278s. ISBN I.Praha: Grada Publishing, a.s. 112s. ISBN 9788024725345. Power jóga nejen pro sportovce. Brno: CPress. ISBN 9788026427902. 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
University: P. J. Šafár	rik University in Košice
Faculty: Faculty of Se	cience
Course ID: ÚTVŠ/ TVb/11	Course name: Sports Activities II.
Course type, scope an Course type: Practic Recommended cour Per week: 2 Per stud Course method: pre	nd the method: ee •se-load (hours): dy period: 28 sent
Number of ECTS cro	edits: 2
Recommended semes	ster/trimester of the course: 2.
Course level: I., II.	
Prerequisities:	
Conditions for cours active participation in	e completion: classes - min. 80%.
Learning outcomes: Sports activities in all They have a great im enables students to s improve.	their forms prepare university students for their professional and personal life. pact on physical fitness and performance. Specialization in sports activities trengthen their relationship towards the selected sport in which they also
Brief outline of the co Brief outline of the co The Institute of physi activities aerobics; ail yoga, power yoga, p tennis, chess, volleyb Additionally, the Inst offers winter courses the Tisza River) with participation.	Durse: Durse: cal education and sport at the Pavol Jozef Šafárik University offers 20 sports cido, basketball, badminton, body-balance, body form, bouldering, floorball, ilates, swimming, fitness, indoor football, SM system, step aerobics, table all, tabata, cycling. itute of physical education and sport at the Pavol Jozef Šafárik University (ski course, survival) and summer courses (aerobics by the sea, rafting on an attractive programme, sports competitions with national and international
Recommended litera BENCE, M. et al. 200 [online] Dostupné na: BUZKOVÁ, K. 2006 8024715252. JARKOVSKÁ, H, JA Grada. ISBN 9788024 KAČÁNI, L. 2002. F 8089197027. KRESTA, J. 2009. Fu LAWRENCE, G. 201 SNER, Wolfgang. 200	 ture:)5. Plávanie. Banská Bystrica: FHV UMB. 198s. ISBN 80-8083-140-8. https://www.ff.umb.sk/app/cmsFile.php?disposition=a&ID=571 . Fitness jóga, harmonické cvičení těla I duše. Praha: Grada. ISBN .RKOVSKÁ, M. 2005. Posilování s vlastním tělem 417 krát jinak. Praha: 4757308. utbal:Tréning hrou. Bratislava: Peter Mačura – PEEM. 278s. ISBN itsal.Praha: Grada Publishing, a.s. 112s. ISBN 9788024725345. 9. Power jóga nejen pro sportovce. Brno: CPress. ISBN 9788026427902. 04. 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

r	
University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚTVŠ/ TVc/11	Course name: Sports Activities III.
Course type, scope a Course type: Practic Recommended cour Per week: 2 Per stu Course method: pre	nd the method: ce rse-load (hours): dy period: 28 esent
Number of ECTS cr	edits: 2
Recommended seme	ster/trimester of the course: 3.
Course level: I., II.	
Prerequisities:	
Conditions for cours min. 80% of active pa	e completion: articipation in classes
Learning outcomes: Sports activities in all They have a great im enables students to s improve.	their forms prepare university students for their professional and personal life. spact on physical fitness and performance. Specialization in sports activities strengthen their relationship towards the selected sport in which they also
Brief outline of the c Brief outline of the co The Institute of physi activities aerobics; ai yoga, power yoga, p tennis, chess, volleyb Additionally, the Inst offers winter courses the Tisza River) with participation.	ourse: burse: cal education and sport at the Pavol Jozef Šafárik University offers 20 sports kido, basketball, badminton, body-balance, body form, bouldering, floorball, ilates, swimming, fitness, indoor football, SM system, step aerobics, table all, tabata, cycling. titute of physical education and sport at the Pavol Jozef Šafárik University (ski course, survival) and summer courses (aerobics by the sea, rafting on an attractive programme, sports competitions with national and international
Recommended litera BENCE, M. et al. 200 [online] Dostupné na BUZKOVÁ, K. 2006 8024715252. JARKOVSKÁ, H, JA Grada. ISBN 978802 KAČÁNI, L. 2002. F 8089197027. KRESTA, J. 2009. Fu LAWRENCE, G. 201 SNER, Wolfgang. 20	 ture: D5. Plávanie. Banská Bystrica: FHV UMB. 198s. ISBN 80-8083-140-8. thtps://www.ff.umb.sk/app/cmsFile.php?disposition=a&ID=571 Fitness jóga, harmonické cvičení těla I duše. Praha: Grada. ISBN ARKOVSKÁ, M. 2005. Posilování s vlastním tělem 417 krát jinak. Praha: 4757308. utbal:Tréning hrou. Bratislava: Peter Mačura – PEEM. 278s. ISBN utsal.Praha: Grada Publishing, a.s. 112s. ISBN 9788024725345. Power jóga nejen pro sportovce. Brno: CPress. ISBN 9788026427902. O4. 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

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚTVŠ/ TVd/11	Course name: Sports Activities IV.
Course type, scope a Course type: Practic Recommended cour Per week: 2 Per stu Course method: pre	nd the method: ce rse-load (hours): dy period: 28 esent
Number of ECTS cr	edits: 2
Recommended seme	ster/trimester of the course: 4.
Course level: I., II.	
Prerequisities:	
Conditions for cours min. 80% of active pa	e completion: articipation in classes
Learning outcomes: Sports activities in all They have a great im enables students to s improve.	their forms prepare university students for their professional and personal life. spact on physical fitness and performance. Specialization in sports activities strengthen their relationship towards the selected sport in which they also
Brief outline of the c Brief outline of the co The Institute of physi activities aerobics; ai yoga, power yoga, p tennis, chess, volleyb Additionally, the Inst offers winter courses the Tisza River) with participation.	ourse: ourse: cal education and sport at the Pavol Jozef Šafárik University offers 20 sports kido, basketball, badminton, body-balance, body form, bouldering, floorball, ilates, swimming, fitness, indoor football, SM system, step aerobics, table all, tabata, cycling. titute of physical education and sport at the Pavol Jozef Šafárik University (ski course, survival) and summer courses (aerobics by the sea, rafting on an attractive programme, sports competitions with national and international
Recommended litera BENCE, M. et al. 200 [online] Dostupné na BUZKOVÁ, K. 2006 8024715252. JARKOVSKÁ, H, JA Grada. ISBN 978802 KAČÁNI, L. 2002. F 8089197027. KRESTA, J. 2009. Fu LAWRENCE, G. 201 SNER, Wolfgang. 20	 ture: D5. Plávanie. Banská Bystrica: FHV UMB. 198s. ISBN 80-8083-140-8. https://www.ff.umb.sk/app/cmsFile.php?disposition=a&ID=571 Fitness jóga, harmonické cvičení těla I duše. Praha: Grada. ISBN ARKOVSKÁ, M. 2005. Posilování s vlastním tělem 417 krát jinak. Praha: 4757308. utbal:Tréning hrou. Bratislava: Peter Mačura – PEEM. 278s. ISBN ntsal.Praha: Grada Publishing, a.s. 112s. ISBN 9788024725345. Power jóga nejen pro sportovce. Brno: CPress. ISBN 9788026427902. 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

University: P. J. Šaf	University: P. J. Šafárik University in Košice						
Faculty: Faculty of	Science						
Course ID: ÚFV/ SVL1/03	rse ID: ÚFV/ Course name: Structure and Properties of Solids						
Course type, scope Course type: Lectu Recommended cou Per week: 3 Per st Course method: pr	and the method: ure urse-load (hours): udy period: 42 resent						
Number of ECTS c	redits: 5						
Recommended sem	ester/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

А	В	С	D	Е	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

University: P. J. Šafá	rik University in Ko	šice					
Faculty: Faculty of S	cience						
Course ID: ÚBEV/ SVK/01	Course ID: ÚBEV/ Course name: Student Scientific Conference SVK/01						
Course type, scope a Course type: Recommended cou Per week: Per stud Course method: pre	nd the method: rse-load (hours): ly period: esent						
Number of EC18 cr	ealts: 4						
Course level: I II	ster/trimester of the						
Course level: 1., 11.							
Conditions for a series	1.4						
Conditions for cours	e completion:						
Learning outcomes:							
Brief outline of the c	ourse:						
Recommended litera	iture:						
Course language:							
Notes:							
Course assessment Total number of asse	ssed students: 31						
	abs	n					
100.0 0.0							
Provides:							
Date of last modifica	tion: 30.11.2021						
Approved: doc. RNI	Dr. Zuzana Ješková, F	PhD., doc. RNDr. Peter Pristaš, CSc.					

University: P. J. Šafá	rik University in Košio	ce						
Faculty: Faculty of S	cience							
Course ID: ÚFV/ SVKD/04	Course name: Stude	Course name: Student Scientific Conference						
Course type, scope a Course type: Recommended cour Per week: Per stud Course method: pre	Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present							
Number of ECTS cr	edits: 4							
Recommended seme	ster/trimester of the	course:						
Course level: I., II.								
Prerequisities:								
Conditions for cours presentation of result	e completion: s of studnets' research	work at Students' scientific conference						
Learning outcomes: Student gains experie	ence and skills in proce	essing and presentation of results of his research work.						
Brief outline of the c Presentation of result	ourse: s of studnets' research	work at Students' scientific conference.						
Recommended litera Based on the recomm	nture: mendations of supervise	or						
Course language: Slovak								
Notes:								
Course assessment Total number of asse	ssed students: 9							
abs n								
100.0 0.0								
Provides:		·						
Date of last modifica	tion: 03.05.2015							
Approved: doc. RND	Dr. Zuzana Ješková, Ph	D., doc. RNDr. Peter Pristaš, CSc.						

University: P. J. Šafárik University in Košice									
Faculty: Faculty of S	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 cro	edits: 2								
Recommended seme	ster/trimester of the course: 1.								
Course level: I.									
Prerequisities:									
Conditions for cours Summary evaluation 1. Practical ongoing a 3. Active participatic absences allowed) and assignments)	e completion: based on ongoing assessment: assignments and their defense (at least 50% needed) on during face-to-face contact learning in classical or virtual classroom (3 nd during online learning (no absence, uploading all individual ongoing								
Learning outcomes: The student should of digital technologies (i 1. according to the cu 2. for better and mor learning and further c	btain and know to apply basic knowledge and skills in working with current mobile phone, tablet, laptop, web technologies): rrent European framework for the Digital competence DigComp and ECDL e effective learning, work and active life in higher education, later lifelong areer prospects.								
Brief outline of the c 0102. Basic digital s - modern web browse - security, privacy, res 0305. Search, collec - scanning, audio reco - digital notebooks (C - evaluation of digital 0608. Editing and cr - cloud and interactiv (text and spreadsheet - work with pdf docur (Kami, Google books 09 10. Organization - modern LMS and cl (Google Classroom, I - time management (C 1113. Digital comm	ourse: skills, DigComp framework, ECDL er and its personalization sponsible use of DT ttion and evaluation of digital content ording and speech resolution, optical resolution (OCR) Google keep, Evernote, Onenote) resources (Google forms and sections) reating digital content e documents editors - Google, Microsoft, Jupyter) ments, e-books and videos b, Screencasting) n, protection and sharing of digital content oud storage Microsoft team, Google Drive, Dropbox) Google Calendar) unication 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									
ABCDEFX									
69.38	69.38 4.38 4.38 0.0 21.88 0.0								
Provides: doc.]	Provides: doc. RNDr. Jozef Hanč, PhD.								
Date of last modification: 26.01.2022									
Approved: doc	. RNDr. Zuzana J	lešková, PhD., do	oc. RNDr. Peter I	Pristaš, CSc.					

University: P. J. Šafán	rik University in Košice					
Faculty: Faculty of Science						
Course ID: ÚTVŠ/ LKSp/13	Course name: Summer Course-Rafting of TISA River					
Course type, scope a Course type: Practic Recommended cour Per week: 2 Per stu Course method: pre	nd the method: ce cse-load (hours): dy period: 28 csent					
Number of ECTS cro	edits: 2					
Recommended seme	ster/trimester of the course:					
Course level: I., II.						
Prerequisities:						
Conditions for cours Completion: passed Condition for success - active participation - effective performance paddling	e completion: ful course completion: in line with the study rule of procedure and course guidelines ce of all tasks: carrying a canoe, entering and exiting a canoe, righting a canoe,					
Learning outcomes: Content standard: The student demonstr course syllabus and re Performance standard Upon completion of t - implement the acqu - implement basic ski - determine the right s - prepare a suitable m	ates relevant knowledge and skills in the field, which content is defined in the ecommended literature. I: he course students are able to meet the performance standard and: ired knowledge in different situations and practice, lls to manipulate a canoe on a waterway, spot for camping, aterial and equipment for camping.					
 Brief outline of the c Brief outline of the co 1. Assessment of diff 2. Safety rules for raff 3. Setting up a crew 4. Practical skills train 5. Canoe lifting and co 6. Putting the canoe in 7. Getting in the canoe 8. Exiting the canoe on 10. Steering a) The pry stroke (on b) The draw stroke 	burse: burse: iculty of waterways ting ning using an empty canoe arrying n the water without a shore contact e ut of the water fast waterways)					

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/UkyxQ2IYF8qh/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

University: P. J.	. Šafárik Univers	ity in Košice					
Faculty: Faculty	y of Science						
Course ID: KPE/ Course name: Teachers' Support Groups SSU/15 SSU/15							
Course type, sc Course type: I Recommended Per week: 2 Pe Course metho	ope and the met Practice I course-load (h er study period: d: present	thod: ours): 28					
Number of EC	IS credits: 2						
Recommended	semester/trimes	ster of the cours	e: 6.				
Course level: I.	, II.						
Prerequisities:							
Conditions for	course completi	on:					
Learning outco	mes:						
Brief outline of	the course:						
Recommended	literature:						
Course languag	ge:						
Notes:							
Course assessm Total number of	ent f assessed studen	ts: 44					
А	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 mo	dification: 12.03	3.2024					
Approved: doc.	RNDr. Zuzana J	lešková, PhD., do	oc. RNDr. Peter I	Pristaš, CSc.			

University: P. J. Šafá	University: P. J. Šafárik University in Košice				
Faculty: Faculty of S	Faculty: Faculty of Science				
Course ID: KPPaPZ/ECo-C1/14	ourse ID: Course name: Team Work ECo-C1 PPaPZ/ECo-C1/14 Course name: Team Work ECo-C1				
Course type, scope a Course type: Practic Recommended cour Per week: 2 Per stu Course method: con	nd the method: ce rse-load (hours): dy period: 28 mbined, present				
Number of ECTS cr	edits: 4				
Recommended seme	ster/trimester of the c	ourse: 3., 5.			
Course level: I., N					
Prerequisities:					
Conditions for cours	e completion:				
Learning outcomes:					
Brief outline of the c	ourse:				
Recommended litera	iture:				
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., doc. RNDr. Peter Pristaš, CSc.					

University: P. J. Šaf	árik University in Košice		
Faculty: Faculty of	Science		
Course ID: ÚFV/ TMEU/15	Course name: Theoretical Mechanics		
Course type, scope Course type: Lectu Recommended cou Per week: 2 / 1 Per Course method: pr	and the method: ure / Practice urse-load (hours): r study period: 28 / 14 resent		
Number of ECTS c	redits: 3		
Recommended sem	ester/trimester of the course: 3.		
Course level: I.			
Prerequisities: ÚFV	//VF1a/12		
Conditions for cour	rse 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

А	В	С	D	Е	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

University: P. J	. Šafárik Univers	ity in Košice					
Faculty: Facult	y of Science						
Course ID: KP TVE/08	Course ID: KPE/ Course name: Theory of Education 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 EC	I'S credits: 2						
Recommended	semester/trimes	ster of the cours	e: 4., 6.				
Course level: I.							
Prerequisities:							
Conditions for	course completi	on:					
Learning outco	omes:						
Brief outline of	the course:						
Recommended	literature:						
Course languag	ge:						
Notes:							
Course assessment Total number of assessed students: 645							
А	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.	Approved: doc. RNDr. Zuzana Ješková, PhD., doc. RNDr. Peter Pristaš, CSc.						

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚFV/ TEP1/03Course name: Theory of the Electromagnetic Field					
Course type, scope a Course type: Lectur Recommended cou Per week: 3 / 1 Per Course method: pre	and the method: re / Practice rse-load (hours): study period: 42 / 14 esent				
Number of ECTS cr	edits: 5				
Recommended semester/trimester of the course: 4.					
Course levels I					

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

А	В	С	D	Е	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

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 cro	edits: 5				
Recommended seme	ster/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

А	В	С	D	Е	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

University: P. J. Šafárik University in Košice					
Faculty: Faculty of S	cience				
Course ID: ÚBEV/ ZOG1/03Course name: Zoogeography					
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 seme	ster/trimester of the course:				
Course level: I., II.					
Prerequisities:					
Conditions for course completion: Active participation in seminars. Preparation of oral presentation to a selected topic. Completion of two semestral written examinations. Oral examination.					

Learning outcomes:

The main goal of the subject is to get knowledge on the basic reasons of recent distribution of the animals on the Earth, zoogeographic regionalization of the Earth's surface and human influence on the faunal distribution in the history.

Brief outline of the course:

This course will review our current understanding of the patterns of animal distribution and the processes that influence distributions of species and their attributes. Zoogeography will integrate information on the historical and current ecology, genetics, and physiology of animals and their interaction with environmental processes (continental drift, climate) in regulating geographic distributions. The course will emphasize descriptive and analytical approaches useful in hypothesis testing in zoogeography and will illustrate applied aspects of zoogeography (e.g. refuge design in conservation).

Recommended literature:

Buchar, J., 1983: Zoogeografie. SPN Praha

Darlington, P.J., 1998: Zoogeography: The geographical distribution of animals. Krieger, USA Lomolino M.V., Brown J.H., Riddle B. R., 2005: Biogeography. Sinauer Associates, 1-845 Plesník, P., Zatkalík, F., 1996: Biogeografia. Vysokoškolské skriptá, PríFUK Bratislava

Course language:

Notes:

Course assessment							
Total number o	f assessed studen	ts: 1017					
A B C D E FX							
24.98	23.5	23.4	18.68	7.67	1.77		
Provides: prof. RNDr. Ľubomír Kováč, CSc.							
Date of last modification: 10.12.2021							
Approved: doc. RNDr. Zuzana Ješková, PhD., doc. RNDr. Peter Pristaš, CSc.							

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚBEV/ ZO1/15	Course name: Zoology I
Course type, scope a Course type: Lectur Recommended cou Per week: 2 / 2 Per Course method: pro	nd the method: re / Practice rse-load (hours): study period: 28 / 28 esent
Number of ECTS cr	edits: 4
Recommended seme	ster/trimester of the course: 3.
Course level: I.	
Prerequisities: ÚBE	V/PMZ/10
Conditions for course The condition for para all interim assessment currently covered in Continuous evaluation animals according to least 28 out of a max Mid-term tests from correction dates for t The final grade for t points from the tests the points from the tests the points from the tests the points from the tests the points of the picture into a class or series is to find the correct picture). Students hav All interim assessme In addition to the po content of the teacher be announced at the tests, taxonomic class of orders. By adding up all the previous lectures, the Point limits for indiv A - 100.0-93.0 points D - 78.9-72.0 points	c completion: ising the course is active participation in mandatory exercises, completion of its during the exercises and successful completion of 3 interim tests on topics lectures. Ins during the exercises are: a test on zoological terms and determination of the picture. To successfully complete the exercises, students must obtain at imum of 40 points. the lectures will be written using the Moodle environment. There are no hese tests. Students earn points for each test. he subject is determined by adding up the points from the exercises and the within lecture topics, with the points from the exercises making up 40% and ists making up 60% of the final grade. Ins during the exercises are: a test on zoological terms (know how to define ist is published at the beginning of the semester), determnation of animals irre (assign the Slovak and scientific genus and species name and classify them the list of animals is published at the beginning semester, the students' task animal pictures for the names and learn to name the animal according to the ze one correction period for the test of terms and one of animal determination. Ints are scored. Ints from the exercises, the points obtained for the 3 mid-term tests from the d topics will also be reflected in the final grade for the subject. Test dates will first lecture and will also be listed in the Moodle course for the subject. For sification needs to be controlled to the level of classes, for insects to the level e points from the interim evaluation within the exercises and tests from the final grade for the subject is determined. idual grades:

E - 71.9-65.0 points FX - less than 65 points

Learning outcomes:

Students will gain knowledge of the systematic classification and phylogenetic relationships of the higher groups of non-chordates, knowledge of their morphology, anatomy, mode of reproduction, biology and geographic distribution.

Brief outline of the course:

1. Fundamentals of the history of zoology.

System, anatomy, morphology, development, phylogenetic relationships and exemplary species of selected groups of invertebrates:

- 2. Porifera, Cnidaria, Ctenophora
- 3. Platyhelminthes, Rotifera, Acantocephala
- 4. Entoprocta, Ectoprocta, Cycliophora
- 5. Mollusca, Annelida
- 6. Nematode, Onychophora, Tardigrad
- 7. Arthropoda Chelicerata
- 8. Arthropoda Myriapoda
- 9. Arthropoda Crustacea (Branchiata)
- 10. Arthropoda Hexapoda / Entogantha
- 11. Arthropoda Hexapoda / Insecta Heterometabola
- 12.Arthropoda Hexapoda / Insecta Holometabola
- 13. Deusterostomia Echinodermata

Recommended literature:

Course language:

Notes:

If necessary, students have the opportunity to consult with the lecturer. The exact date has not been set. Consultations must be arranged individually with the lecturer at the email address peter.luptacik@upjs.sk.

Course assessment

Total number of assessed students: 323

А	В	С	D	Е	FX
9.29	19.2	22.6	25.08	16.1	7.74

Provides: RNDr. Peter L'uptáčik, PhD., RNDr. Andrea Parimuchová, PhD.

Date of last modification: 21.02.2024

University: P. J. Šafár	ik University in Košice
Faculty: Faculty of Sc	ience
Course ID: ÚBEV/ ZO1/03	Course name: Zoology I
Course type, scope an Course type: Lecture Recommended cour Per week: 2 / 2 Per s Course method: pres	ad the method: e / Practice se-load (hours): tudy period: 28 / 28 sent
Number of ECTS cre	dits: 5
Recommended semes	ter/trimester of the course: 3.
Course level: I.	
Prerequisities: ÚBEV	/PMZ/10
Conditions for course The condition for pass all interim assessment After successfully com points from the exerci- grade from the final of Continuous evaluation selected terms; the list to the picture (assign to classify it into a class the students' task is to according to the pictur All interim assessmen the student must obtai If students get less the completed the exercise get at least 28 points, exam, bringing with th The exam is always of More detailed informat for the subject. Studer Point limits for individe A - 100.0-93.0 points B - 92.9-86.0 points C - 85.9-79.0 points E - 71.9-65.0 points FX - less than 65 point Learning outcomes:	e completion: sing the subject is active participation in mandatory exercises, completion of s during the exercises and successful completion of the final exam. upleting the exercises, students proceed to the final exam, bringing with them ises that make up 40% of the final grade. Students receive 60% of the final ral exam. as during the exercises are: a test on zoological terms (knowing how to define is published at the beginning of the semester), recognizing animals according the Slovak and scientific genus and species name to the depicted animal and or series; the list of animals is published at the beginning of the semester, find the correct animal pictures for the names and learn to name the animal re). Students have one correction period for the paper and animal knowledge. Is are scored. The maximum number of points from the exercises is 40, while n at least 28 points to pass the exercises. an 28 points from the interim evaluations in the exercises, they have not es and must enroll in the subject again in the next academic year. If the students they have successfully completed the exercises and can register for the final ment the points from the exercises, which make up 40% of the final grade. ral. Specific exam dates will be posted in AIS2 at the end of the semester. tion on the types of questions on the exam is published in the Moodle course tts get 60% of the final grade from the exam. thual grades:

Students will gain knowledge of the systematic classification and phylogenetic relationships of the higher groups of non-chordates, knowledge of their morphology, anatomy, mode of reproduction, biology and geographic distribution.

Brief outline of the course:

1. Fundamentals of the history of zoology.

System, anatomy, morphology, development, phylogenetic relationships and exemplary species of selected groups of invertebrates:

- 2. Porifera, Cnidaria, Ctenophora
- 3. Platyhelminthes, Rotifera, Acantocephala
- 4. Entoprocta, Ectoprocta, Cycliophora
- 5. Mollusca, Annelida
- 6. Nematode, Onychophora, Tardigrad
- 7. Arthropoda Chelicerata
- 8. Arthropoda Myriapoda
- 9. Arthropoda Crustacea (Branchiata)
- 10. Arthropoda Hexapoda / Entogantha
- 11. Arthropoda Hexapoda / Insecta Heterometabola
- 12.Arthropoda Hexapoda / Insecta Holometabola
- 13. Deusterostomia Echinodermata

Recommended literature:

Course language:

Notes:

If necessary, students have the opportunity to consult with the lecturer. Unless otherwise stated at the first lecture, consultations take place every Wednesday between 10:00 and 11:00. If the date is not convenient for someone, it is advisable to arrange a consultation date individually by contacting the lecturer by email (peter.luptacik@upjs.sk).

Course assessment

Total number of assessed students: 1306

А	В	С	D	Е	FX
8.5	16.46	22.13	21.75	23.05	8.12

Provides: RNDr. Peter L'uptáčik, PhD., RNDr. Andrea Parimuchová, PhD.

Date of last modification: 21.02.2024

University: P. J.	. Šafárik Univers	sity in Košice			
Faculty: Faculty of Science					
Course ID: ÚB ZOO1/03	EV/ Course n	ame: Zoology II			
Course type, sc Course type: I Recommended Per week: 2 / 2 Course metho	ope and the me Lecture / Practico d course-load (h 2 Per study peri d: present	thod: e ours): od: 28 / 28			
Number of EC	FS credits: 5				
Recommended	semester/trime	ster of the cours	e: 4.		
Course level: I.					
Prerequisities:	ÚBEV/PMZ/10				
Conditions for	course complet	ion:			
Learning outco Fundamental in	mes: formation on tax	conomy and morp	phology of verteb	orates	
Brief outline of Systematic and amphibians, rep 1. Introduction 2. Chordata, Pro 3. Verrtebrata in 4. Agnatha 5. Chondrichthy 6. Osteognathos 7. Actinopteryg 8. Sarcopterygii 9. Tetrapoda 10. Lissamphib 11. Reptilia 12. Aves 13. Mammalia	the course: phylogenetic reporties, bidrs and report of the course of th	elationships of ve nammals.	ertebrate. Review	v of important g	roups of fishes,
Recommended	literature:				
Course languag	ge:				
Notes:				-	
Course assessm Total number of	ient f assessed studer	nts: 1116			
A	В	C	D	Е	FX
22.49	28.58	18.82	15.32	9.5	5.29
Provides: doc. 1	RNDr. Marcel U	hrin, PhD., unive	rzitný profesor, I	RNDr. Monika B	alogová, PhD.

Date of last modification: 20.09.2021

University: P. J. S	University: P. J. Šafárik University in Košice				
Faculty: Faculty	of Science				
Course ID: ÚBE ZOO1/15	EV/ Course name: Zoology II				
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 ECT	S credits: 4				
Recommended se	emester/trimes	ter of the cours	e: 4.		
Course level: I.					
Prerequisities: Ú	BEV/PMZ/10				
Conditions for co	ourse completi	on:			
Learning outcon Fundamental info	nes: ormation on tax	onomy and morp	hology of verteb	rates	
Brief outline of the course: Systematic and phylogenetic relationships of vertebrate. Review of important groups of fishes, amphibians, reptiles, bidrs and mammals. 1. Introduction 2. Chordata, Protochordata 3. Verrtebrata introduction 4. Agnatha 5. Chondrichthyes 6. Osteognathostomata 7. Actinopterygii 8. Sarcopterygii 9. Tetrapoda 10. Lissamphibia 11. Reptilia 12. Aves 13. Mammalia					
Recommended li	Recommended literature:				
Course language					
Notes:	Notes:				
Course assessment Total number of assessed students: 264					
Α	В	С	D	E	FX
1.52	20.08	31.06	18.18	18.56	10.61
Provides: doc. RNDr. Marcel Uhrin, PhD., univerzitný profesor, RNDr. Monika Balogová, PhD.					
Date of last modification: 20.09.2021					
Approved: doc. RNDr. Zuzana Ješková, PhD., doc. RNDr. Peter Pristaš, CSc.					