CONTENT

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: CJP/ PFAJAKA/07	**Course name:** Academic English

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

Number of ECTS credits: 2

Recommended semester/trimester of the course:

Course level: I., II., N

Prerequisities:

Conditions for course completion:
Active classroom participation, 2 absences tolerated (4x45 min.) tolerated. 2 tests (5th/6th week and 12th/13th week), no retake. Minipresentation on chosen topic. Final evaluation- average assessment of tests and presentation. Grading scale: A 93-100%, B 86-92%, C 79-85%, D 72-78%, E 65-71%, FX 64% and less

Learning outcomes:

Brief outline of the course:

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

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

Notes:

Course assessment
Total number of assessed students: 355

A	B	C	D	E	FX
31.55	23.1	15.77	10.7	7.04	11.83

Provides: PaedDr. Gabriela Bednáriková

Date of last modification: 04.10.2019

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/ALGa/10	**Course name:** Algebra I

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: 1.

Course level: I.

Prerequisities:

Conditions for course completion:
According to the results from the semester and in view of the results of the written and oral final exam..

Learning outcomes:
To obtain basic knowledge from number theory concerning divisibility and from linear algebra concerning systems of linear equations. To be able to apply it in concrete excercises.

Brief outline of the course:
Divisibility in Z. Fields. Systems of linear equations, Gauss elimination. Maps, permutations. Computing with matrices. Determinants, Cramer rule.

Recommended literature:
T.S Blyth, E.F. Robertson: Basic linear algebra, Springer Verlag, 2001.
K. Jänich: Linear algebra, Springer Verlag, 1991.

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 1434

A	B	C	D	E	FX
11.09	11.99	17.99	17.71	28.87	12.34

Provides: prof. RNDr. Danica Studenovská, CSc., RNDr. Igor Fabrici, Dr. rer. nat., RNDr. Mária Maceková, PhD., RNDr. Mária Šurimová

Date of last modification: 31.01.2019

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/ ALG1b/10	**Course name:** Algebra II

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

Number of ECTS credits: 7

Recommended semester/trimester of the course: 2.

Course level: I.

Prerequisities: ÚMV/ALGa/10

Conditions for course completion:
Test
Exam

Learning outcomes:
To obtain a deeper knowledge on vector spaces, systems of linear equations and affine spaces.

Brief outline of the course:
Vector spaces, subspaces. A basis, a dimension and a characterization of n-dimensional vector spaces. The rank of a matrix, the Frobenius theorem. Homogeneous systems of linear equations, a fundamental solution set. Affine spaces, subspaces and their positions. Convex sets, convex polyhedrons.

Recommended literature:
A. F. Beardon: Algebra and Geometry, Cambridge University Press, 2005
G. Birkhoff, S. Mac Lane: A Survey of Modern Algebra, New York 1965

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 266

A	B	C	D	E	FX
12.78	12.03	17.67	12.03	43.61	1.88

Provides: doc. RNDr. Jaroslav Ivančo, CSc., RNDr. Mária Maceková, PhD.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/ ALG1c/10	**Course name:** Algebra III

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

Number of ECTS credits: 7

Recommended semester/trimester of the course: 3.

Course level: I.

Prerequisities: ÚMV/ALG1b/10

Conditions for course completion:
Awarded according to continual evaluation, written and oral examination.

Learning outcomes:
The students learn basic concepts, theorems and methods of linear algebra, at the level necessary for applications in geometry and other parts of mathematics. They obtain knowledge about the fundamentals of group theory and ring theory, and about properties of the polynomial integral domains.

Brief outline of the course:
- Ring, integral domain. Integral domain of polynomials over a field. Decomposition into irreducible factors. Roots of polynomials.
- Linear mappings and their matrices. Operations with linear mappings, matrices of sums and compositions of linear mappings. Regular linear transformations, regular matrices.
- Eigenvalues ans eigenvectors, similar matrices. Bilinear and quadratic forms.
- Groups, subgroups, cyclic groups, normal subgroups, factorization.

Recommended literature:
S.Mac Lane, G.Birkhoff: Algebra, The Macmillan Company, New York, 1964
D.A.R. Wallace: Groups,rings and fields, Springer, 1998
G. Birkhoff, S. MacLane: Prehľad modernej algebry, Alfa Bratislava, 1979 (in Slovak)
T. Katriňák a kol.: Algebra a teoretická aritmetika 1, Alfa Bratislava, 1985 (in Slovak)

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 112

A	B	C	D	E	FX
8.93	15.18	19.64	26.79	29.46	0.0

Provides: doc. RNDr. Miroslav Ploščica, CSc.

Date of last modification: 03.05.2015
Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚINF/ AFJ1a/15	**Course name:** Automata and formal languages

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: 4.

Course level: I.

Prerequisities:

Conditions for course completion:
Oral examination.

Learning outcomes:
To provide theoretical background for studying computer science in general, by giving the necessary knowledge in theory of automata.

Brief outline of the course:
Chomsky hierarchy of grammars and languages. Finite-state transducers and mapping, construction of a reduced automaton. Finite-state acceptors, nondeterministic acceptors, regular expressions. Closure properties of regular languages. Context-free grammars, Chomsky and Greibach normal forms. Pushdown automata, Pumping lemma. Closure properties of context-free languages.

Recommended literature:
J.E. Hopcroft, R.Motwani, J.D. Ullman: Introduction to automata theory, languages, and computation, Addison-Wesley, 2001.
J. Shallit: A second course in formal languages and automata theory, Cambridge University press, 2009.
M. Sipser: Introduction to the theory of computation, Thomson Course Technology, 2006.

Course language:

Notes:

Course assessment
Total number of assessed students: 821

A	B	C	D	E	FX
25.33	17.9	23.87	18.03	9.74	5.12

Provides: Mgr. Alexander Szabari, PhD., prof. RNDr. Viliam Geffert, DrSc.

Date of last modification: 24.08.2018

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/ BKP1/14	**Course name:** Bachelor Project

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

Number of ECTS credits: 1

Recommended semester/trimester of the course: 5.

Course level: I.

Prerequisities:

Conditions for course completion:
To prepare and present a contribution related to thesis and its topic.

Learning outcomes:
To get students familiar with basic knowledge on the form and content of thesis and thesis presentation as well as with the support for its realisation.

Brief outline of the course:
Necessary elements and formal aspects of a thesis. WYSIWYG editors, LaTeX, drawing programs. Presentation software, Microsoft PowerPoint and its clones, Beamer. Suggestions for presentation and contribution making.

Recommended literature:
electronic information sources

Course language:
Slovak or English

Notes:

Course assessment
Total number of assessed students: 113

abs	n
100.0	0.0

Provides: doc. RNDr. Dušan Šveda, CSc.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/ BPO/14	**Course name:** Bachelor thesis and its defence

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

Number of ECTS credits: 4

Recommended semester/trimester of the course:

Course level: I.

Prerequisities:

Conditions for course completion:
Acquiring the required number of credits in the structure defined by the study plan.

Learning outcomes:
Evaluation of student‘s competences with respect to the profile of the graduate.

Brief outline of the course:
Presentation of results of the bachelor thesis, answering the questions of the thesis supervisor and answering the questions of members of evaluation commitee.

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 48

A	B	C	D	E	FX
56.25	27.08	8.33	6.25	2.08	0.0

Provides:

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/ ZBR/14	**Course name:** Bridge Fundamentals

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 3.

Course level: I.

Prerequisities:

Conditions for course completion:
Active participation on exercises.

Learning outcomes:
A student gets acquainted with fundamentals of the contract bridge, develops his/her logical thinking and consolidates his/her habits of positive social behaviour.

Brief outline of the course:
Bridge rules.
Principles of the bidding system Standard American.
Basic techniques of declarer's play.
Basic techniques of the defence.
Lead conventions, signals.
Common bidding conventions.
Selected advanced techniques of the card play.
Partnership cooperation in the contract bridge.
Bridge ethics.

Recommended literature:
T. Menyhért: Kurz bridžu 2013, http://new.bridgekosice.sk/kurz-bridzu-2013/
R. Pavlicek: Learn To Play Bridge!, http://www.rpbridge.net/1a00.htm
ACBL SAYC System Booklet, http://ebookbrowsee.net/acbl-sayc-pdf-d201415187

Course language:
Slovak or English

Notes:
Minimum number of participants is 4.

Course assessment
Total number of assessed students: 25

abs	n
96.0	4.0

Provides: doc. RNDr. Miroslav Ploščica, CSc., prof. RNDr. Mirko Horňák, CSc.
Date of last modification: 03.05.2015
Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: CJP/ PFAJKKA/07	**Course name:** Communicative Competence in English

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

Number of ECTS credits: 2

Recommended semester/trimester of the course:

Course level: I., II., N

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 short academic presentations in English on selected topics.
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:
Uplatnenie a aktívne používanie svojich teoretických vedomostí v praktických komunikačných situáciách. Zdokonalenie jazykových vedomostí a zručností študenta, rečovej, pragmatickej a vecnej kompetencie, predovšetkým zlepšujú komunikáciu, schopnosťprijímať a formulovať výpovede, efektívne vyjadrovať svoje myšlienky ako aj orientovať sa v obsahovom pláne výpovede. Precvičovanie rečových intencií kontaktných (napr. pozdravy, oslovenia, pozvanie, oslovenie), informatívnych (napr. získavanie a podávanie informácií, vyjadrenie priestorových a časových vzťahov), regulačných (napr. prosba, poďakovanie, zákaz, pochvala, súhlas, nesúhlas) a hodnotiacich (napr. vyjadrenie vlastného názoru, stanoviska, želania, emócií). Výsledkom budovania praktickej jazykovej kompetencie majú byť vedomosti a zručnosti zodpovedajúce požiadavkám a kritériám dokumentu Spoločný európsky referenčný rámec pre vyučovanie jazykov.

Brief outline of the course:
Rodina, jej formy a problémy
Vyjadrovanie pocitov a dojmov
Dom, bývanie a budúcnosť
Formy a dialekty v anglickom jazyku
Život v meste a na vidieku
Kolokácie a idiomy, zaužívané slovné spojenia
Prázdniny a sviatky vo svete
Životné prostredie a ekológia
Výnimky zo slovosledu
Frázové slovesá a ich použitie
Charakteristiky neformálneho diškurzu

Recommended literature:

www.bbclearningenglish.com
McCarthy M., O'Dell F.: English Vocabulary in Use, Upper-Intermediate. CUP, 1994.
Misztal M.: Thematic Vocabulary. SPN, 1998.
Fictumova J., Ceccarelli J., Long T.: Angličtina, konverzace pro pokročilé. Barrister and Principal, 2008.
Peters S., Gráf T.: Time to practise. Polyglot, 2007.
Jones L.: Communicative Grammar Practice. CUP, 1985.
Alexander L.G.: Longman English Grammar. Longman, 1988.

Course language:

English language, B2 level according to CEFR

Notes:

Course assessment

Total number of assessed students: 237

A	B	C	D	E	FX
38.4	22.36	19.41	9.7	6.75	3.38

Provides: Mgr. Barbara Mitríková

Date of last modification: 11.02.2020

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: KGER/ NJKK/07	**Course name:** Communicative Competence 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., II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 44

A	B	C	D	E	FX
59.09	13.64	6.82	4.55	13.64	2.27

Provides: Mgr. Eva Černáková, PhD.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of ECTS credits: 2

Recommended semester/trimester of the course:

Course level: I., II., N

Prerequisities:

Conditions for course completion:
Active classroom participation (max. 2x90 min. absences tolerated). 2 test (5th/6th and 12/13th week), no retake. Final evaluation- average assessment of tests. Grading scale: 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:
Vince M.: Macmillan Grammar in Context, Macmillan, 2008
McCarthy, O'Dell: English Vocabulary in Use, CUP, 1994
C. Oxengen, C. Latham-Koenig: New English File Advanced, Oxford 2010
Misztal M.: Thematic Vocabulary, Fragment, 1998
www.bbclearningenglish.com
ted.com/talks

Course language:

Notes:

Course assessment
Total number of assessed students: 406

A	B	C	D	E	FX
39.66	18.97	16.75	8.62	5.91	10.1

Provides: PaedDr. Gabriela Bednáriková

Date of last modification: 14.09.2019

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of ECTS credits: 2

Recommended semester/trimester of the course:

Course level: I., II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 50

A	B	C	D	E	FX
56.0	12.0	10.0	4.0	10.0	8.0

Provides: PaedDr. Ingrid Puchalová, PhD.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/FKP/10	**Course name:** Complex analysis

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

Number of ECTS credits: 5

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities: ÚMV/MAN1c/10 or ÚMV/MAN2d/10 or ÚMV/FRPb/19

Conditions for course completion:
Two written test during semeter and activity student to practice. Final evaluation is given by continuous assessment, written and oral part of the exam.

Learning outcomes:
The purpose of the course is to provide introductory knowledge in differential and integral calculus of complex functions and develop the ability to use this theory.

Brief outline of the course:
Complex numbers, complex sequences and series. Function of a complex variable - limits, continuity, differetiability, Cauchy-Riemann equations. Integration in the complex plane - Cauchy's theorems and its consequences. Laurent's series, residues and Cauchy's residue theorem. Laplace and Fourier transform and their applications.

Recommended literature:
1. Priestley, H.A.: Introduction to Complex Analysis. Oxford University Press, Oxford, 2004.
2. Sveshnikov, A. - Tikhonov, A.: The Theory of Functions of a Complex Variable. Mir Publishers, Moscow, 1973.

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 97

A	B	C	D	E	FX
12.37	5.15	25.77	19.59	25.77	11.34

Provides: doc. RNDr. Ondrej Hutník, PhD.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚINF/TVY/15	**Course name:** Computability theory

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

Number of ECTS credits: 4

Recommended semester/trimester of the course: 5.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:
To provide theoretical background for studying computer science in general, by familiarising students with basic knowledge of the theory of computability.

Brief outline of the course:
Turing machine as a formalisation of the notion of an algorithm. Partial recursive functions. Kleene's normal form theorem. The equivalences of the notion of a function calculable by a Turing machine, partial recursive and calculable by a computer program. Algorithmical undecidability of the halting problem of a Turing machine and a computer program.

Recommended literature:
MACHTEY, M. and YOUNG, P.: An Introduction to the General Theory of Algorithms, North--Holland, Amsterdam 1978.
BRIDGES, D. S.: Computability, A Mathematical Sketch book, Springer--Verlag 1994

Course language:

Notes:

Course assessment
Total number of assessed students: 262

A	B	C	D	E	FX
44.27	12.21	13.74	6.11	6.49	17.18

Provides: doc. RNDr. Stanislav Krajči, PhD.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/KOP/10	**Course name:** Convex programming

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

Number of ECTS credits: 5

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities: ÚMV/LCO/10 and (ÚMV/MAN1c/10 or ÚMV/MAN2d/10 or ÚMV/FRPb/19)

Conditions for course completion:
Based on the results of written tests (two per term, with emphasis on problem solving) and on the oral examination.

Learning outcomes:
To learn the theoretical basis and the most important methods of nonlinear programming

Brief outline of the course:
Practical problems leading to a nonlinear program. Convex sets and their properties. Convex functions – properties and criteria of convexity. Necessary and sufficient conditions of optimality. Karush-Kuhn-Tucker conditions. Quadratic programming.

Recommended literature:
Bazaraa, Sherali, Shetty: Nonlinear programming, Wiley, New York 1993

Course language:
Slovak or English

Notes:

Course assessment
Total number of assessed students: 152

A	B	C	D	E	FX
13.16	15.79	15.13	13.82	35.53	6.58

Provides: prof. RNDr. Tomáš Madaras, PhD.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚINF/ KRP1/15	**Course name:** Cryptographic protocols

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: 4

Recommended semester/trimester of the course: 5.

Course level: I., II.

Prerequisities:

Conditions for course completion:
written test

Learning outcomes:
to acquire knowledge on design and verifying of cryptographic protocols

Brief outline of the course:
Authentication and key establishment using shared and public key cryptography, key agreement protocols, conference key agreement, zero-knowledge protocols.

Recommended literature:
1. Colin Boyd, Anish Mathuria: Protocols for Authentication and Key Establishment, Springer, 2003
2. Douglas R. Stinson: Cryptography: Theory and Practice, Third Edition, Chapman & Hall/CRC, 2006
3. Bruce Schneier: Applied Cryptography, Second Edition, John Wiley & Sons Inc., 1996
4. Peter Ryan, Steve Schneider: Modeling and Analysis of Security Protocols, Addison-Wesley, 2001

Course language:

Notes:

Course assessment
Total number of assessed students: 14

A	B	C	D	E	FX
35.71	0.0	14.29	21.43	21.43	7.14

Provides: doc. RNDr. Stanislav Krajči, PhD., RNDr. Rastislav Krivoš-Belluš, PhD., doc. RNDr. Jozef Jirásek, PhD.

Date of last modification: 20.07.2016

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚINF/ KRS/15	**Course name:** Cryptographic systems and their applications

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: 5.

Course level: I., II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 106

A	B	C	D	E	FX
13.21	9.43	12.26	12.26	33.96	18.87

Provides: doc. RNDr. Stanislav Krajči, PhD., RNDr. Rastislav Krivoš-Belluš, PhD.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/ DFR/10	**Course name:** Differential equations

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: 5.

Course level: I., II.

Prerequisities:

Conditions for course completion:
Continuous assessment is taken the form of two tests during the semester. Final evaluation is given by continuous assessment (40%), written and oral part of the exam (30% and 30%).

Learning outcomes:
Theory of differential equations is one of the fundamental areas of mathematical analysis. It has numerous applications in various fields of science and technology. The main objective of this course is to familiarize students with the basics of the theory of ordinary differential equations and their systems, and methods for solving certain types of differential equations and systems. We consider them as possible mathematical models of real situations.

Brief outline of the course:
Basic concepts. Elementary methods for solving and applications of the first order differential equations. The existence and uniqueness of solutions to Cauchy problem for differential equations of the first order, the n-th order and for differential systems. The relationship between differential equations of the n-th order and systems. Linear differential equations of the n-th order and linear differential systems - the local and global theorem on the existence and uniqueness
of solutions to Cauchy problem, basic properties of solutions, fundamental system of solutions, structure of general solution, Lagrange method of variation of constants, linear differential equations and systems with constant coefficients. Reduction of the order of differential equations. Euler differential equations. Elimination method for solving the systems of differential equations.

Recommended literature:
1. L. Kluvánek, I. Mišík, M. Švec: Matematika II, SVTL, Bratislava, 1961 (in Slovak).
2. J. Eliaš, J. Horváth, J. Kajan: Zbierka úloh z vyššej matematiky 3, Alfa, Bratislava, 1980 (in Slovak).
3. S. J. Farlow: An introduction to differential equations and their applications, Dover Publications, New York, 2006.
4. W. Kohler, L. Johnson: Elementary differential equations with boundary value problems, Pearson Education, Boston, 2006.
5. M. Tenenbaum: Ordinary differential equations, Dover Publications, New York, 1985.
6. J. C. Robinson: An introduction to ordinary differential equations, Cambridge University Press, Cambridge, 2004.

7. J. Polking, A. Boggess, D. Arnold: Differential equations, Prentice Hall (Pearson), Upper Saddle River, 2006.

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 447

A	B	C	D	E	FX
17.9	11.86	20.36	17.9	25.5	6.49

Provides: Mgr. Jozef Kiseľák, PhD.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/ DSMa/10	**Course name:** Discrete mathematics I

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: 3.

Course level: I.

Prerequisities:

Conditions for course completion:
Examination.

Learning outcomes:
To be familiar with some factual knowledge of combinatorics and graph theory. To understand an appreciate mathematical notions, definitions, and proofs, to solve problems requiring more than just standard recipes, and to express mathematical thoughts precisely and more rigorously.

Brief outline of the course:
Basic principles.
Counting and binomial coefficients, Binomial theorem, polynomial theorem.
Recurrence: Some miscellaneous problems, Fibonacci-type relations, Using generating functions, miscellaneous methods.
The inclusion-exclusion principle. Rook polynomials.
Introduction to graphs: The concept of graphs, paths in graphs. Connectivity. Trees, bipartite graphs. Planarity. Polyhedra.
Traveling round a graph: Eulerian graphs, Hamiltonian graphs.
Partitions and colourings: Vertex colourings of graphs. Edge colourings of graphs

Recommended literature:
1. I. Anderson, A first course in discrete mathematics, Springer-Verlag London, 2001.
2. J. Matoušek and J. Nešetřil, Invitation to discrete mathematics, Oxford University Press Inc. , New York 1999.

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 589

A	B	C	D	E	FX
13.24	13.07	17.32	22.75	25.47	8.15

Provides: Dr.h.c. prof. RNDr. Stanislav Jendroľ, DrSc., RNDr. Mária Maceková, PhD., RNDr. Juraj Valiska, PhD.
Date of last modification: 24.08.2018
Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/ DSMb/10	**Course name:** Discrete mathematics 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 ECTS credits: 5

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities: ÚMV/DSMa/10 or ÚMV/DSM3a/10

Conditions for course completion:
Two tests during the semester
It is made on the base of results of two tests during the semester (50%)and a final written exam and an oral exam (50%)

Learning outcomes:
Mastered funamental methods of graph theory. To be familiar with some possibilities of applications of graph theory

Brief outline of the course:
Introduction to graphs.
Connectivity and distance in graphs.
Trees, spanning subgraphs
Independence and coverings.
Introduction to the Ramsey theory.
Introduction to the extremal graph theory.
Matchings: Theorem of Hall, theorem of Berge, optimal assignment problems.
Vertex colorings: Theorem of Brooks, Theorem of Erdos and Szekeres.
Chromatic polynomials.
Edge colourings, Theorem of Koenig.
Introduction to directed graphs: Basic notions, connectivities, tounaments, acyclic graphs, base and kernel of a graph.
Introduction to applications of graphs.

Recommended literature:
1. A. Bondy and U.S.R. Murty: Graph theory, Springer-Verlag 2008
2. G. Chartrand, L. Lesniak, and P. Zhang, Graphs and digraphs, CRC Press, Boca Raton 2011
3. R. Diestel: Graph Theory, Springer-Verlag, New York, Inc. 1997
4.M.N.S. Swamy and K. Thulasiraman: Graphs, Networks and Algorithms.
Willey Interscience Publ., New York 1981

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 386

A	B	C	D	E	FX
11.92	9.59	17.36	19.17	28.24	13.73

Provides: Dr.h.c. prof. RNDr. Stanislav Jendroľ, DrSc., RNDr. Mária Maceková, PhD.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/ DSMc/10	**Course name:** Discrete mathematics III

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: 5.

Course level: I.

Prerequisities: ÚMV/DSMb/10

Conditions for course completion:
Two tests during the semester
It is made on the base of results of two tests during the semester (50%)and a final written exam and an oral exam (50%)

Learning outcomes:
Mastered fundamental methods of graph theory. Abilities of applications of graph theory.

Brief outline of the course:
Eulerian and Hamiltonian graphs.
Connectivity: Theorem of Menger.
Matching: Theorem of Tutte.
Planar graphs: Theorem of Kuratowski.
Plane graphs: Euler polyhedral formula and its consequences,
Introduction to the theory of light graphs in plane graphs.
Colourings of plane graphs.
Crossing numbers of graphs.
Introduction to the topological graph theory.
Edge colourings: Theorem of Vizing.
Application of Graph theory: The shortest path problem, the critical path method.

Recommended literature:
1. A. Bondy and U.S.R. Murty: Graph theory, Springer-Verlag 2008
2. G. Chartrand, L. Lesniak, and P. Zhang, Graphs and digraphs, CRC Press, Boca Raton 2011
3. R. Diestel: Graph Theory, Springer-Verlag, New York, Inc. 1997
4.M.N.S. Swamy and K. Thulasiraman: Graphs, Networks and Algorithms.
Willey Interscience Publ., New York 1981

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 68

A	B	C	D	E	FX
14.71	32.35	13.24	27.94	11.76	0.0

Provides: Dr.h.c. prof. RNDr. Stanislav Jendroľ, DrSc., doc. RNDr. Roman Soták, PhD.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/ BSE/14	**Course name:** Economic and financial mathematics

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

Number of ECTS credits: 4

Recommended semester/trimester of the course:

Course level: I.

Prerequisities: ÚMV/MAN1d/10 and ÚMV/TPP/19 and ÚMV/MST/19

Conditions for course completion:
Acquiring the required number of credits in the structure defined by the study plan.

Learning outcomes:
Evaluation of student‘s competences with respect to the profile of the graduate.

Brief outline of the course:
The state examination is performed in a form of a debate with the emphasis on one topic of the following courses: ÚMV/MANd/10, ÚMV/TPP/19, ÚMV/MST/19, ÚMV/FIM/10, ÚMV/ZIP/10, ÚMV/LCO/10
1. Differential and integral calculus of several variables.
2. Measure theory and Lebesgue integral.
3. Random variables, their distributions and characteristics.
4. Estimation theory and testing statistical hypotheses.
5. Cash flows, their present and future value.
6. Analysis of securities and portfolio immunisation.
7. Mortality modelling and basic types of life insurance.
8. Methods of computing insurance premiums and insurance reserves.
9. Linear programming problems and solution methods.
10. Duality in linear programming and its economic interpretation.

Recommended literature:

Course language:
slovak

Notes:

Course assessment
Total number of assessed students: 12

A	B	C	D	E	FX
41.67	8.33	33.33	16.67	0.0	0.0

Provides:

Date of last modification: 07.04.2020
Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: CJP/ PFAJ4/07	**Course name:** English Language of Natural Science

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 2.

Course level: I.

Prerequisities:

Conditions for course completion:
Active participation in class and completed homework assignments. Students are allowed to miss 2 classes at the most.
Continuous assessment: 2 credit tests (presumably in weeks 6 and 13) and academic presentation in English.
In order to be admitted to the final exam, a student has to score at least 65 % as a sum of both credit tests.
The exam test results represent 50% of the final grade for the course, continuous assessment results represent the other 50% of the final grade.
The final grade for the course will be calculated as follows:
A 93-100, B 86-92, C 79-85, D 72-78, E 65-71, FX 64 and less.

Learning outcomes:
Enhancement of students' language skills (speaking, writing, reading and listening comprehension) in English for specific purposes and development of students' language competence (familiarization with selected phonological, lexical and syntactic phenomena), improvement of students' pragmatic competence (familiarization with selected language functions) and improvement of presentation skills at B2 level (CEFR) with focus on terminology of English for natural science.

Brief outline of the course:
ANGLICKÝ JAZYK PRE GEOGRAFOV:
Veda a výskum. Odbor geografia.
Planéta Zem. Naša slnečná sústava.
Zemetrasenia, Sopečná činnosť.
Svetové oceány a ľadovce.
Životné prostredie a geografia.
Počasie a klíma.
ANGLICKÝ JAZYK PRE EKOLÓGOV:
Veda a výskum. Odbor ekológia.
Životné prostredie. Znečistenie a dôsledky.
Sopečná činnosť, zemetrasenia.
Great Pacific Garbage Patch.

Globálne otepľovanie a dôsledky. Ľadovce.
Počasie a klíma. Búrky, hurikány, tsunami.
Život na Zemi. Ohrozené rastlinné a živočíšne druhy.
ANGLICKÝ JAZYK PRE BIOLÓGOV:
veda a výskum, odbor biológia.
morfológia rastlín, koreň.
stonka, list.
rozmnožovanie rastlín, kvet.
biológia človeka - telesné sústavy.
slovná zásoba z oblasti botanickej a zoologickej nomenklatúry.
ANGLICKÝ JAZYK PRE MATEMATIKOV:
Veda a výskum, odbor matematika.
čísla a tvary v matematike.
Elementárna algebra.
Elementárna geometria.
Výpočty v matematike.
Pytagoras, Pytagorova veta.
Grafy a diagramy.
Štatistika.
ANGLICKÝ JAZYK PRE FYZIKOV
Veda a výskum, odbor fyzika.
Atómy a molekuly.
Hmota a jej premeny.
Elektrina, jej využitie.
Zvuka, jeho prenos.
Svetlo.
Solárny systém.
Matematické operácie.
ANGLICKÝ JAZYK PRE CHEMIKOV:
Veda a výskum, odbor chémia.
História, Každodenná chémia.
Laboratórium a jeho vybavenie.
Periodická tabuľka.
Hmota a jej premeny.
Životné prostredie a chémia.
ANGLICKÝ JAZYK PRE INFORMATIKOV:
Veda a výskum, informatika.
Život s počítačom.
Typický PC.
Zdravie a bezpečnosť, ergonomika.
Programovanie.
Emailovanie.
Cybercrime.
Trendy budúcnosti.

Recommended literature:

study materials provided by the course instructor
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.
Murphy, R.: English Grammar in Use. Cambridge University Press, 1994.
P. Fitzgerald : English for ICT studies. Garnet Publishing, 2011.
https://worldservice/learningenglish, https://spectator.sme.sk
www.isllibrary.com

Course language:

Notes:

Course assessment
Total number of assessed students: 2582

A	B	C	D	E	FX
36.91	25.17	17.04	10.3	8.37	2.21

Provides: PaedDr. Gabriela Bednáriková, Mgr. Zuzana Naďová, Mgr. Oľga Lešková, PhDr. Marianna Škultétyová

Date of last modification: 08.02.2020

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/ FMT/10	**Course name:** Financial mathematics

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

Number of ECTS credits: 4

Recommended semester/trimester of the course: 3.

Course level: I.

Prerequisities:

Conditions for course completion:
Two tests during the semester
Based on written tests and oral exam.

Learning outcomes:
Knowledge of the basics of financial mathematics.

Brief outline of the course:
Financial systems and their structure. Simple, compound and continuous interesting and discounting. The time value of money, inflation and taxes. Cash flows, their present and future value. Annuities, savings and loan amortizations. The time structure of interest rates, yield curves. Analysis of investments, decisional criteria and techniques of valuation and comparison of financial projects. Stocks and bonds, their valuation, duration and konvexity. Immunization of portfolio. Financial derivatives, business stretegies.

Recommended literature:
1. Skřivánková V.-Skřivánek J.: Kvantitatívne metódy finančných operácií, IURA Edition, Bratislava, 2006.
2. Capiński M., Zastawniak T.: Mathematics for Finance, Springer, London, 2011.
3. Lovelock at al.: An Introduction to the Mathematics of Money, Springer, London, 2007.
4. Janssen at al.: Mathematical Finance, ISTE / Wiley, 2009

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 50

A	B	C	D	E	FX
8.0	14.0	24.0	18.0	26.0	10.0

Provides: doc. RNDr. Valéria Skřivánková, CSc., Mgr. Katarína Lučivjanská, PhD.

Date of last modification: 22.09.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/ GEO1a/10	**Course name:** Geometry I

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

Number of ECTS credits: 7

Recommended semester/trimester of the course: 5.

Course level: I.

Prerequisities: ÚMV/ALG1b/10

Conditions for course completion:
Test
Exam

Learning outcomes:
To obtain a deeper knowledge on Euclidean spaces and basic geometric transformations.

Brief outline of the course:
Euclidean spaces, the distance and angle of subspaces. The measure of angle and the volume of convex polyhedron. Geometry of the triangle. Curves and surfaces of second order. Affine transformations. Isometric transformations and similitudes.

Recommended literature:
A. F. Beardon: Algebra and geometry, Cambridge University Press, 2005

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 200

A	B	C	D	E	FX
9.5	12.0	12.5	18.5	43.5	4.0

Provides: doc. RNDr. Jaroslav Ivančo, CSc., RNDr. Andrej Gajdoš, PhD.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

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

Course assessment
Total number of assessed students: 1554

abs	n
88.61	11.39

Provides: prof. RNDr. Viliam Geffert, DrSc.	
Date of last modification: 25.09.2019	
Approved: prof. RNDr. Katarína Cechlárová, DrSc.	

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚMV/ UAD/10	**Course name:** Introduction to data analysis

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 3.

Course level: I.

Prerequisities:

Conditions for course completion:
Test and individual project work.
Oral presentation of the individual project work.

Learning outcomes:
To know the basic purpose of statistical data analysis, its methods and statistical thinking and understand its importance for science and practical life.
To understand elementary statistical concepts.
To gain experience in handling real data using spreadsheet Excel and statistical software R.

Brief outline of the course:
1. Introduction (the basic philosophy and aim of statistical data analysis, descriptive and inductive statistics)
2. Collecting Data (types of data, random sample, randomized experiment)
3. Handling Data (visualization, summarizing – measures of center, measures of variability, skewness and kurtosis, relationships in data – introduction to regression and correlation)
4. Statistical inference (elementary view into estimation and testing hypothesis)

Recommended literature:
1. Anděl, J.: Statistické metody, Matfyzpress, Praha, 1998 (in Czech)
2. Rossman, A.J. et al.: Workshop Statistics: Discovery with Data and Fathom, 3rd ed. Wiley, 2009
3. Utts, J.M.: Seeing Through Statistics, 4th ed., Thomson Brooks/Cole, Belmont, 2014
4. Utts, J.M., Heckard R.F.: Mind on Statistics, 5th ed. Thomson Brooks/Cole, Belmont, 2014
5. Zvára, K., Štěpán, J.: Pravděpodobnost a matematická statistika, Matfyzpress, Praha, 2001 (in Czech)

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 296

A	B	C	D	E	FX
31.76	26.01	29.39	11.82	0.68	0.34

Provides: doc. RNDr. Ivan Žežula, CSc., RNDr. Martina Hančová, PhD.

Date of last modification: 18.03.2019

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚMV/ UDM/10	**Course name:** Introduction to mathematics
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: Two tests during the semester.	
Learning outcomes: Repetition of problematic sections of the secondary mathematics by interesting tasks.	
Brief outline of the course: Simplification of algebraic expressions. Real number, absolute value of real numbers; equations and inequalities. Irrational equations and inequalities. Concept of function. Linear and quadratic function; equations and inequalities. Exponencial and logarithmic function; equations and inequalities. Goniometric functions; equations and inequalities. Complex numbers.	
Recommended literature: 1. V. Medek - L. Mišík - T. Šalát: REPETITÓRIUM STREDOŠKOLSKEJ MATEMATIKY, Alfa Bratislava, 1976 2. S. Richtárová - D. Kyselová: MATEMATIKA (pomôcka pre maturantov a uchádzačov o štúdium na vysokých školách), Enigma Nitra, 1998 3. O. Hudec – Z. Kimáková – E. Švidroňová: PRÍKLADY Z MATEMATIKY (pre uchádzačov o štúdium na TU v Košiciach), EF TU Košice, 1999 4. F. Peller – V. Šáner – J. Eliáš – Ľ. Pinda: MATEMATIKA – Podklady na prijímacie testy pre uchádzačov o štúdium, Ekonóm Bratislava, 2000/2001 5. F. Vesajda – F. Talafous: ZBIERKA ÚLOH Z MATEMATIKY pre stredné všeobecnovzdelávacie školy a gymnáziá, SPN Bratislava, 1973 6. J. Lukášová – O. Odvárko – B. Riečan – J. Šedivý – J. Vyšín: ÚLOHY Z MATEMATIKY pre 4. ročník gymnázia, SPN Bratislava, 1976	
Course language: Slovak	
Notes:	

Course assessment
Total number of assessed students: 496

A	B	C	D	E	FX
22.78	16.73	16.73	16.13	16.13	11.49

Provides: doc. RNDr. Matúš Harminc, CSc., RNDr. Tadeáš Gavala, PhD., RNDr. Timea Gábová

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚMV/ ZIP/10	**Course name:** Life insurance

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

Number of ECTS credits: 4

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities: ÚMV/MANb/19 and ÚMV/TPP/19

Conditions for course completion:
Given at the basis of partial examination, written part, and oral part of the exam.

Learning outcomes:
Mastering basics of insurance mathematics for life insurance.

Brief outline of the course:
• Interest calculus in insurance (compound and continuous interests, annuities and perpetuities)
• Mortality modeling
o Lifetime, force of mortality, distribution of future lifetime
o Curtate and fractional future lifetime
o Multiple decrement model
o Life tables
o Estimation of probabilities of death
• Elementary types of life insurance
o Equivalence principle
o Life insurance with fixed and varying benefits
o Elementary types of life annuities, variable life annuities
• Calculation of premiums
o Net premiums
o Expense-loaded premiums
o Health risks in insurance
o Multiple lifes insurance
• Premium reserves
o Net premium reserves
o Expense-loaded premium reserves
• Reinsurance in life insurance

Recommended literature:
• Gerber: Life insurance mathematics, Springer, 1997
• Bowers et al.: Actuarial mathematics, The Society of Actuaries, 1986

Course language:

Slovak

Notes:

Course assessment
Total number of assessed students: 140

A	B	C	D	E	FX
16.43	19.29	25.0	12.86	16.43	10.0

Provides: doc. RNDr. Ivan Žežula, CSc., RNDr. Daniel Klein, PhD.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/ LCO/10	**Course name:** Linear and integer programming

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: 5.

Course level: I.

Prerequisities: ÚMV/ALGa/10

Conditions for course completion:
Two tests, using software CASSIM, oral exam

Learning outcomes:
To learn the solving methods of linear programming

Brief outline of the course:
Formulation of linear and integer programs. Graphic solution. Simplex method, its variants and finiteness. Duality and its economic interpretation. Sensitivity analysis and parametric programming. Algorithms for integer programming.

Recommended literature:
Ch. Papadimitriou – K. Steiglitz: Combinatorial Optimization: Algorithms and Complexity, 1984
R.J. Vanderbei, Linear Programming:Foundations and Extentions (Kluwer 2001), electronic version: http://www.princeton.edu/~rvdb/LPbook/

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 152

A	B	C	D	E	FX
22.37	13.82	21.05	21.05	21.05	0.66

Provides: doc. RNDr. Roman Soták, PhD., RNDr. Andrej Gajdoš, PhD.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/ LTM/10	**Course name:** Logic and set theory

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: 5.

Course level: I.

Prerequisities: ÚMV/MANb/19 or ÚMV/FRPb/19

Conditions for course completion:
Exam

Learning outcomes:
To obtain a basic knowledge on the mathematical notion of an infinity. Analysis of the notion of a proof.

Brief outline of the course:
Set as a mathematical formularization of an infinity. Properties of the set of reals. Mathematical induction. Relations and mappings.
Finite and countable sets. Cardinality of continuum. Elementary cardinal arithmetics.
Sentential calculus, an axiomatization. Completness Theorem. Methods of proofs. Language of predicate calculus, examples. Axiomatizations of predicate calculus and the notion of a proof. Methods of proofs in predicate calculus.

Recommended literature:
E. Mendelson, Introduction to Mathematical Logic, van Nostrand 1964.

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 559

A	B	C	D	E	FX
12.7	16.28	19.86	24.15	17.17	9.84

Provides: RNDr. Jaroslav Šupina, PhD.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/ MAE/10	**Course name:** Macroeconomics

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., 3.

Course level: I.

Prerequisities:

Conditions for course completion:
Final mark is given based on the results of the tests written during the semester and oral exam, that evaluates the verbal argument about the studied models.

Learning outcomes:

Brief outline of the course:
Basic macroekonomic notions: Gross domestic product, inflation, unemployment.. Analysis of godds markets. Financial markets. IS-LM model in closed economy. Open economy. IS-LM model in open economy. Models of labour market. Inflation and economic growth. High depth.

Recommended literature:
1. Olivier Blanchard, Alessia Amighini, Francesco Giavazzi:MACROECONOMICS, A EUROPEAN PERSPECTIVE, Pearson Education, 2010
2. N.GREGORY MANKIW, MACROECONOMICS, 7th Edition, Harvard University,Worth Publishers 2009

Course language:
Slovak and English

Notes:

Course assessment
Total number of assessed students: 75

A	B	C	D	E	FX
21.33	14.67	21.33	22.67	13.33	6.67

Provides: prof. RNDr. Katarína Cechlárová, DrSc.

Date of last modification: 31.01.2019

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/ MANa/10	**Course name:** Mathematical analysis I

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: 1.

Course level: I.

Prerequisities:

Conditions for course completion:
Two written test during semeter and activity student to practice. Final evaluation is given by continuous assessment, written and oral part of the exam.

Learning outcomes:
The aim of the course is to give introductory knowledge about real numbers, sequences and series of real numbers, and to develop certain calculation skills in the field.

Brief outline of the course:
Real numbers - axioms and properties. Real functions - basic properties (monotone, bounded, even/ odd, inverse), transformations of graphs of functions. Infinite sequences - operations, boundedness, monotonicity, convergence. Infinite series - operations, convergence, criteria of convergence.

Recommended literature:
1. Brannan, D.: A First Course in Mathematical Analysis, Cambridge University Press, Cambridge 2006.
2. Bruckner, A. M., Bruckner J. B., Thomson, B. S.: Real Analysis, Second Edition, ClassicalRealAnalysis.com, 2008.
3. Zorich, V. A.: Mathematical Analysis I, Springer-Verlag 2002.

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 1350

A	B	C	D	E	FX
6.3	7.7	12.3	13.56	35.26	24.89

Provides: doc. RNDr. Ondrej Hutník, PhD., RNDr. Lenka Halčinová, PhD., RNDr. Viera Šottová

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/MANb/10	**Course name:** Mathematical analysis II

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 4 / 3 **Per study period:** 56 / 42
Course method: present

Number of ECTS credits: 8

Recommended semester/trimester of the course: 2.

Course level: I.

Prerequisities: ÚMV/MANa/10

Conditions for course completion:
Two written test during semeter and activity student to practice. Final evaluation is given by continuous assessment, written and oral part of the exam.

Learning outcomes:
The purpose of the course is to provide introductory knowledge in differential and integral calculus of real functions of one real variable and to develop computational skills in the field.

Brief outline of the course:
Limit and continuity of real functions, elementary functions. Differential calculus - derivatives of the first and of higher orders, the basic theorems of differential calculus and their use to study properties and behavior of functions. Indefinite integral - basic methods for finding primitive functions. Newton integral and its basic properties.

Recommended literature:
1. Brannan, D.: A First Course in Mathematical Analysis, Cambridge University Press, Cambridge 2006.
2. Bruckner, A. M., Bruckner J. B., Thomson, B. S.: Real Analysis, Second Edition, ClassicalRealAnalysis.com, 2008.
3. Zorich, V. A.: Mathematical Analysis I, Springer-Verlag 2002.

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 868

A	B	C	D	E	FX
8.64	8.29	12.56	18.66	36.75	15.09

Provides: doc. RNDr. Ondrej Hutník, PhD.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/ MAN1c/10	**Course name:** Mathematical analysis III

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

Number of ECTS credits: 7

Recommended semester/trimester of the course: 3.

Course level: I.

Prerequisities: ÚMV/MANb/19

Conditions for course completion:
exam

Learning outcomes:
Understanding of the basic rigorous ideas of Mathematical Analysis.

Brief outline of the course:
Riemann integral. Functional series. Pointwise and uniform convergence. Power series. Fourier series. Euclidean spaces. Limits and continuity of real functions of several variables. Partial derivatives. Implicit function. Inverse mapping. Local, global and constrained extrema.

Recommended literature:
B. S. Thomson, J. B. Bruckner, A. M. Bruckner: Elementary Real Analysis, Prentice Hall, 2001.
J. Doboš, M. Záskalická: Zbierka úloh z matematiky III, Elfa, Košice, 2002.
Л. Д. Кудрявцев, А. Д. Кутасов, В. И. Чехлов, М. И. Шабунин: Сборник задач по математическому анализу, Наука, Москва, 1995.
Qian, Z., Analysis III: Integration, Mathematical Institute, Oxford, 2011.

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 273

A	B	C	D	E	FX
2.56	4.03	7.69	17.22	47.62	20.88

Provides: prof. RNDr. Jozef Doboš, CSc., RNDr. Lenka Halčinová, PhD.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/ MAN1d/10	**Course name:** Mathematical analysis IV

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

Number of ECTS credits: 7

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities: ÚMV/MAN1c/10 or ÚMV/MAN2c/10

Conditions for course completion:
exam

Learning outcomes:
Understanding of the basic rigorous ideas of Mathematical Analysis.

Brief outline of the course:
Metric spaces. Complete, compact and connected sets. Rings sigma-rings. Measure. Outer measure. Lebesgue measure. Measurable sets. Measurable functions. Legesgue integral. Lebesgue integral versus Riemann integral. Calculations of Lebesgue integrals. Applications.

Recommended literature:
B. S. Thomson, J. B. Bruckner, A. M. Bruckner: Elementary Real Analysis, Prentice Hall, 2001.
A. M. Bruckner, J. B. Bruckner, B. S. Thomson: Real Analysis, Prentice Hall, 1997.
T. Neubrunn, B. Riečan: Miera a integrál, Veda, Bratislava, 1981.
B. Riečan, T. Neubrunn: Teória miery, Veda, Bratislava, 1992.
G. S. Nelson, A User-Friendly Introduction to Lebesgue Measure and Integration, American Mathematical Society, 2015

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 222

A	B	C	D	E	FX
4.05	4.95	13.06	22.52	43.24	12.16

Provides: prof. RNDr. Jozef Doboš, CSc., RNDr. Jaroslav Šupina, PhD.

Date of last modification: 04.03.2019

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚMV/ MSW/10	**Course name:** Mathematical software
Course type, scope and the method: **Course type:** Lecture / Practice **Recommended course-load (hours):** **Per week:** 1 / 2 **Per study period:** 14 / 28 **Course method:** present	
Number of ECTS credits: 3	
Recommended semester/trimester of the course: 2.	
Course level: I.	
Prerequisities:	
Conditions for course completion: Tests from both Excel and Maple Given at the basis of partial tests.	
Learning outcomes: To develop student's knowledge and skills to use numerical and grafical representations of data and modelling by solving of various types of mathematical problems in different mathematical environments – environment of spreadsheet, R language or environment of system of symbolic calculations Maple.	
Brief outline of the course: The creation and use of formulas with mathematical functions, graphical and numerical solving of equations and systems of equations, utilize of arithmetical, graphical and stochastic models by solving of mathematical problems, linear optimalization. Basic description of Maple software and R language, manipulation with matrices and vectors, working with data and data files. Basic programming techniques, creation of user functions and scripts, graphical possibilities for data visualization. Manipulations of mathematical expressions, finding solutions of equalities and inequalities, mathematical analysis, linear algebra, number, graph and set theory in Maple.	
Recommended literature: 1. Shingareva, Lizárraga-Celaya: Maple and Mathematica. A problem solving approach for mathematics, Springer Wien NewYork, 2007 2. Eberhart: Maple problem solving handbook, University of Kentucky, 2009 3. Šťastný: Matematické a statistické výpočty v Microsoft Excelu, Computer Press 2001	
Course language: Slovak	
Notes:	

Course assessment Total number of assessed students: 155					
A	B	C	D	E	FX
18.71	21.94	25.81	21.94	8.39	3.23
Provides: doc. RNDr. Stanislav Lukáč, PhD., RNDr. Daniel Klein, PhD.					
Date of last modification: 26.03.2019					
Approved: prof. RNDr. Katarína Cechlárová, DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/MIE/13	**Course name:** Microeconomics

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., 3.

Course level: I.

Prerequisities:

Conditions for course completion:
The minimum necessary number of points from tests written during semester is 50%, plus the ability of verbal argumentation in the final oral exam.

Learning outcomes:
Understanding of basic principles of microeconomics and ability to apply them in practical situations.

Brief outline of the course:
Economics and economy. Supply and demand. Consumer Theory. Theory of firm. Perfect competition. Monopoly. Labour market. Market failure. Externalities and Public goods.

Recommended literature:
1. http://umv.science.upjs.sk/cechlarova/MIE/MIE.htm - podklady k prednáška, testy na cvičenia, materiály z dennej tlače
2. H.L. Varian, Intermediate Mikroekonomics, WW Norton, 1993
3. J.M. Perloff, Microeconomics, 6th Edtion, Addison Wesley, 2012
4. J. Sloman, Economics, 6th Edition, Prentice Hall, 2006

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 79

A	B	C	D	E	FX
22.78	24.05	17.72	18.99	13.92	2.53

Provides: prof. RNDr. Katarína Cechlárová, DrSc., RNDr. Veronika Jurková, PhD.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/ NMT/10	**Course name:** Numerical mathematics

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 4 / 3 **Per study period:** 56 / 42
Course method: present

Number of ECTS credits: 8

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities: ÚMV/MAN1c/10 and ÚMV/ALG1c/10

Conditions for course completion:
During semester it is possible to obtain at maximum 30 points for creating, debugging and explaining of functioning of programmes devoted to numerical methods. A student is eligible for the oral part of examination after obtaining at least 10 out of the mentioned 30 points. On the oral part of examination a student answers two questions chosen by him/her at random, one from the group A (40 points at maximum) and one from the group B (30 points at maximum). Evaluation scale: A ... 90-100 p., B ... 80-89 p., C ... 70-79 p., D ... 60-69 p., E ... 50-59 p., FX ... 0-49 p.

Learning outcomes:
A student gets acquainted with basic numerical methods, with conditions of their use and with errors accompanying approximations by numerical methods. He/she practically tests his/her own computer programmes corresponding to some numerical methods.

Brief outline of the course:
Interpolation (ordinary, generalised). Numerical differentiation. Numerical integration (rules, errors). Gaussian quadrature. Interval-halving method. Regula falsi method. Newton's method. Method of successive iterations. Bernoulli's method. LU-decomposition. Method of least squares.

Recommended literature:
A. Ralston, A First Course in Numerical Analysis, McGraw-Hill, New York 1965
A. Björck and G. Dahlquist, Numerical Methods, Prentice-Hall, Englewood Cliffs 1974; reprint Dover Publications, Mineola 2003

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 159

A	B	C	D	E	FX
10.06	15.72	8.18	13.84	35.22	16.98

Provides: prof. RNDr. Mirko Horňák, CSc.

Date of last modification: 03.05.2015
Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/POV/10	**Course name:** Practical operations research

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: 6.

Course level: I.

Prerequisities:

Conditions for course completion:
Based on evaluation of individual projects.

Learning outcomes:
To provide the basics of mathematical modelling of real-world problems and selected methods of solving the problems of uni- and multicriterial optimization

Brief outline of the course:
Elements of decision theory, games against nature. Mathematical modelling of real-world problems. Linear and nonlinear models. Multicriterial optimization.

Recommended literature:
electronic information sources

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 33

A	B	C	D	E	FX
69.7	18.18	6.06	0.0	6.06	0.0

Provides: prof. RNDr. Tomáš Madaras, PhD.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚMV/ ZUC/10	**Course name:** Principles of book-keeping

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: 4

Recommended semester/trimester of the course: 5.

Course level: I.

Prerequisities:

Conditions for course completion:
Three tests: single-entry accountig (complex example), double-entry accounting (complex example), conceptual apparatus of accounting. The final evaluation is given at the basis of partial tests.

Learning outcomes:
To learn basics of economic conceptual and procedural apparatus of accounting.

Brief outline of the course:
The history and legal regulations of accounting. Structure of accounting in a bussines company, bank and insurance company; accounting information system. Various kinds of business, trade licence and trade law. Company subjects, banks and insurance companies - the financial instruments. Single-entry accountig system, statements. Assets and its sources. Assets and liability pricing. Balance principle. Assets and liabilities list. Balance sheet, structure of assets and liabilities. Double-entry accounting records. Account, accounting on accounts of balance sheet and income statement. Synthetic and analytical records. Account classification of business companies, banks and insurance companies, the principles of its construction. Balance sheet, income statement. Financial statement (simple and consolidated).

Recommended literature:
Soukupová B., Šlosárová A., Baštincová A.: Účtovníctvo. Bratislava: Iura Edition, 2001
Máziková a kol.: Účtovníctvo (učebné texty). Bratislava: Iura Edition, 2009
Beňová E. a kol.: Financie a mena. Bratislava: Iura Edition, 2005
The Law of NR SR no. 43/2002 Z. z. on accounting, the law on income tax no. 595/2003 Z. z.

Course language:
Slovak

Notes:

Course assessment Total number of assessed students: 106					
A	B	C	D	E	FX
16.04	16.98	31.13	19.81	15.09	0.94
Provides: RNDr. Daniel Klein, PhD.					
Date of last modification: 03.05.2015					
Approved: prof. RNDr. Katarína Cechlárová, DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/ PSTa/10	**Course name:** Probability and statistics I

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: 4.

Course level: I.

Prerequisities: ÚMV/MAN1c/10 or ÚMV/MAN2c/10 or ÚMV/MAN3c/10

Conditions for course completion:
To obtain at least 50% in two written tests during the semester.
Total evaluation based on written tests and oral exam.

Learning outcomes:
To obtain knowledge of the axiomatic theory of probability, random variables and their characteristics, special types of distributions and their applications.

Brief outline of the course:
Probability space, definitions and properties of probability. Conditional probability and independence. Random variables, their distribution function and characteristics. Mean, variance and skewness.. Discrete and absolutely continuous distributions. Quantile and characteristic functions, their properties. Relation between characteristic function and moments. Median and mode. Transformation of random variables. Special types of distributions with applications (binomial, Poisson, geometric, uniform, exponential, normal, chí-square, Student, Fisher). Central limit theorem.

Recommended literature:
1. Skřivánková V.: Pravdepodobnosť v príkladoch, UPJŠ, Košice, 2006 (in Slovak)
2. DeGroot, M. H., Schervish, M. J.: Probability and Statistics, 4th ed., Pearson, Boston, 2012
3. Evans, M. J., Rosenthal, J. S.: Probability and Statistics: The Science of Uncertainty, 2nd Ed., W. H. Freeman, 2009
4. Riečan et al.: Pravdepodobnosť a matematická štatistika, Alfa, Bratislava, 1984 (in Slovak)

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 334

A	B	C	D	E	FX
8.08	14.37	17.37	25.75	23.95	10.48

Provides: doc. RNDr. Valéria Skřivánková, CSc., RNDr. Martina Hančová, PhD.
Date of last modification: 27.09.2017
Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/ PSTb/10	**Course name:** Probability and statistics 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 ECTS credits: 5

Recommended semester/trimester of the course: 5.

Course level: I., II.

Prerequisities:

Conditions for course completion:
To obtain at least 50% in two written tests during the semester. Total evaluation based on written tests and oral exam.

Learning outcomes:
Student should obtain the knowledge about basic statistical methods and the ability to apply theoretical knowledge in practical problems solving.

Brief outline of the course:
Random vectors, their distributions and characteristics. Joint and marginal distributions. Correlation and regression, properties of correlation coefficient. Random sample, sampling distributions and characteristics. Some important statistics and their distributions. Point estimators and their properties. Maximum likelihood method. Interval estimates, confidence interval construction.Testing of statistical hypothesis, critical region, level of significance. Methods for searching optimal critical regions. Some important parametric and nonparametric tests.

Recommended literature:

1. Skřivánková V.: Pravdepodobnosť v príkladoch, UPJŠ, Košice, 2006 (in Slovak)
2. Skřivánková V.-Hančová M.: Štatistika v príkladoch, UPJŠ, Košice, 2005 (in Slovak)
3. CASELLA, G., BERGER, R., Statistical Inference, 2nd ed., Duxbury Press, 2002
4. DeGroot, M. H., Schervish, M. J.: Probability and Statistics, 4th ed., Pearson, Boston, 2012
5. Utts, J.M., Heckard, R.F.: Mind od Statistics, 5th ed., Thomson Brooks/Cole, 2014
6. Anděl J.: Základy matematické statistiky, MatfyzPress, Praha, 2011 (in Czech)

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 175

A	B	C	D	E	FX
20.0	21.14	17.71	24.0	10.86	6.29

Provides: doc. RNDr. Valéria Skřivánková, CSc., RNDr. Martina Hančová, PhD.
Date of last modification: 18.03.2019
Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚINF/ PAZ1a/15	**Course name:** Programming, algorithms, and complexity

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 3 / 4 **Per study period:** 42 / 56
Course method: present

Number of ECTS credits: 8

Recommended semester/trimester of the course: 1.

Course level: I.

Prerequisities:

Conditions for course completion:
Get a prescribed minimum number of points for activities of continuous assessment and for solving tasks during final practical test.

Learning outcomes:

Brief outline of the course:
First part of the course (with turtle graphics): New Eclipse project, interactive communication with objects, simple turtle graphics, making user methods, local variables, variable types, arithmetic and logical expressions, random numbers, conditions, loops for and while, debugging, references, chars, Strings, arrays, instance variables, mouse events, simple array algorithms.
Second part of the course (without turtle graphics): Exceptions, using try-catch-finally block, files and directories, conversion from string variables, encapsulation, constructors with parameters, constructors hierarchy, getters and setters, interfaces, inheritance and polymorphism, abstract classes and methods, packages, visibility modifiers, sorting using Arrays.sort() and interfaces Comparable and Comparator, Java Collections Framework: autoboxing, interface List, ArrayList, LinkedList, interface Set and class HashSet, methods equals() and hashCode(), for-each loop, interface Map and class HashMap, custom Exceptions, rethrowing exceptions, exceptions' inheritance, Runtime exceptions, Errors, static variables and methods.

Recommended literature:
1. ECKEL, B.: Thinking in Java, Pearson, 2006, ISBN: 978-01-318-7248-6
2. PECINOVSKÝ, R.: OOP - Naučte se myslet a programovat objektově, Computer Press, a.s., Brno, 2010, ISBN: 978-80-251-2126-9
3. SIERRA, K., BATES, B. Head First Java, O'Reilly Media; 2nd edition, 2005, ISBN: 978-05-960-0920-5

Course language:
Slovak language, english language is required only to read Java API documentation.

Notes:

Course assessment
Total number of assessed students: 665

A	B	C	D	E	FX
16.39	7.52	11.43	15.49	14.59	34.59

Provides: RNDr. František Galčík, PhD., RNDr. Matej Nikorovič, PhD., RNDr. Ľubomír Antoni, PhD., RNDr. Zuzana Bednárová, PhD., RNDr. Miroslav Opiela, RNDr. Juraj Šebej, PhD.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/ PAZ1b/15	**Course name:** Programming, algorithms, and complexity
Course type, scope and the method: **Course type:** Lecture / Practice **Recommended course-load (hours):** **Per week:** 2 / 4 **Per study period:** 28 / 56 **Course method:** present	
Number of ECTS credits: 7	
Recommended semester/trimester of the course: 2.	
Course level: I.	
Prerequisities: ÚINF/PAZ1a/15	
Conditions for course completion: Get a given minimum number of points for activities of continuous assessment and for solving tasks during final practical test. The final practical test focuses on application of known algorithms and techniques of efficient algorithm design.	
Learning outcomes:	
Brief outline of the course: Recursion and its applications, fractals. Binary search and simple sorting algorithm with quadratic time complexity. Time and space complexity of algorithms, analysis of time complexity, O-notation. Basic data structures and their applications: linked list, stack, and queue. Hierarchical data and their representation, trees, tree traversals, binary search trees. Arithmetic expressions, evaluation of an arithmetic expression. Efficient sorting algorithm: QuickSort, MergeSort, and HeapSort. Backtrack. Techniques "divide and conquer" and dynamic programming as methods for design of efficient algorithms. Basic graph algorithms for unweighted graphs (Breadth-first search, Depth-first search, graph connectivity, graph components, graph bridges, topological sort) and for weighted graphs (shortest paths: Bellman-Ford algorithm, Dijkstra algorithm, Floyd-Warshallov algorithm; minimum spanning tree: Prim algorithm, Kruskal algorithm). String algorithms. Greedy algorithms.	
Recommended literature: WRÓBLEWSKI, P.: Algoritmy, datové struktury a programovací techniky. Computer Press, Brno, 2004 CORMEN, T.H., LEISERSON, Ch.E., RIVEST, R.L, STEIN, C. Introduction to Algorithms. The MIT Press, 2009. KLEINBERG, J., TARDOS, E.: Algorithm Design, Cornell University, Addison Wesley, New York, 2006.	
Course language: Slovak language, literature is available in english and czech language.	
Notes:	

Course assessment
Total number of assessed students: 1142

A	B	C	D	E	FX
12.17	6.48	9.28	20.05	22.85	29.16

Provides: doc. RNDr. Gabriela Andrejková, CSc., RNDr. František Galčík, PhD., PaedDr. Ján Guniš, PhD.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚTVŠ/ ÚTVŠ/CM/13	**Course name:** Seaside Aerobic Exercise

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: Per study period: 36s
Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course:

Course level: I., II.

Prerequisities:

Conditions for course completion:
Conditions for course completion:
Attendance

Learning outcomes:
Learning outcomes:
Students will be provided an overview of possibilities how to spend leisure time in seaside conditions actively and their skills in work and communication with clients will be improved. Students will acquire practical experience in organising the cultural and art-oriented events, with the aim to improve the stay and to create positive experiences for visitors.

Brief outline of the course:
Brief outline of the course:
1. Basics of seaside aerobics
2. Morning exercises
3. Pilates and its application in seaside conditions
4. Exercises for the spine
5. Yoga basics
6. Sport as a part of leisure time
7. Application of projects of productive spending of leisure time for different age and social groups (children, young people, elderly)
8. Application of seaside cultural and art-oriented activities in leisure time

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 42

abs	n
11.9	88.1

Provides: Mgr. Alena Buková, PhD., Mgr. Agata Horbacz, PhD.
Date of last modification: 15.03.2019
Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/SMA/10	**Course name:** Seminar in macroeconomics

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 2., 4.

Course level: I.

Prerequisities: ÚMV/MAE/10

Conditions for course completion:
Active work during semester, acceptable results of projects and their presentation in the class.

Learning outcomes:
Extend the knowledge acquired in Macroeconomics.

Brief outline of the course:
The work in seminar consists of study of extended topics in Macroeconomics, projects aimed at collecting and interpreting data, work with recent journal and newspapers publications.

Recommended literature:
[B] Olivier Blanchard, Alessia Amighini, Francesco Giavazzi:MACROECONOMICS, A EUROPEAN PERSPECTIVE, Pearson Education, 2010
[M] N.GREGORY MANKIW, MACROECONOMICS, 7th Edition, Harvard University,Worth Publishers 2009
Newspapers and journals, in particular The Economist, Hospodárske noviny, SME.

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 54

A	B	C	D	E	FX
25.93	44.44	16.67	5.56	5.56	1.85

Provides: prof. RNDr. Katarína Cechlárová, DrSc.

Date of last modification: 31.01.2019

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/ SMI/10	**Course name:** Seminar in microeconomics

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 2., 4.

Course level: I.

Prerequisities: ÚMV/MIE/13

Conditions for course completion:
Active work during semester, acceptable results of projects and their presentation in the class.

Learning outcomes:
Extend the knowledge and skills obtained in the subject Microeconomics.

Brief outline of the course:
The work in seminar consists of study of extended topics in Microeconomics, projects aimed at collecting and interpreting data, work with recent journal and newspapers publications.

Recommended literature:
1. Newpapers and journals
2. H.L. Varian, Mikroekonomie, Victoria Publishing, Praha, 1995/ Varian: Intermediate Microeconomics, W.W. Norton, 1993
3. J.M. Perloff, Microeconomics, 6th Edtion, Addison Wesley, 2012
4. J. Sloman, Economics, 6th Edition, Prentice Hall, 2006

Course language:
Slovak or English

Notes:

Course assessment
Total number of assessed students: 51

A	B	C	D	E	FX
49.02	11.76	17.65	13.73	7.84	0.0

Provides: prof. RNDr. Katarína Cechlárová, DrSc.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/SDR/10	**Course name:** Seminar on differential equations

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities:

Conditions for course completion:
Final grading reflects the activity of the student during the semester and the quality of presentation of a paper (or papers).

Learning outcomes:
Gain, extend knowledge of some areas in the theory of differential and difference equations.

Brief outline of the course:
The work in seminar consists of study of selected topics in the theory of differential and difference equations extending knowledge obtained in the course Differential equations, and their presentation.

Recommended literature:
Journal literature.

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 6

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

Provides: Mgr. Jozef Kiseľák, PhD., RNDr. Ivan Mojsej, PhD.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/ SHM/10	**Course name:** Seminar on history of mathematics

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 5.

Course level: I., II.

Prerequisities:

Conditions for course completion:
Homework, presentation on the chosen topic during the seminar.
More than 91 points - evaluation of A.
81-90 points - evaluation of B.
71-80 points - rating C.
61-70 points - evaluation of D.
51-60 points - evaluation of E.
Less than 50 points - FX evaluation.

Learning outcomes:
Students get an overview of the history of the development of certain mathematical disciplines and selected terms and about parallel between phylogenesis and ontogenesis of mathematical thinking.

Brief outline of the course:
Mathematics in Early Civilizations. Greek Mathematics. Mathematics in the Near and Far East (Arabia, China, India). Medieval European Mathematics. The Renaissance of Mathematics. The Beginning of Modern Mathematics.

Recommended literature:
Burton, D. M.: The History of Mathematics: An Introduction. McGraw−Hill, 2007.
Devlin, K.: Jazyk matematiky. Dokořán, 2002 (in czech)
Kolman, A.: Dejiny matematiky ve starověku. Academia, Praha, 1968 (in slovak)
Juškevič, A. P.: Dejiny matematiky ve středověku. Academia, Praha 1977 (in slovak)
Znám,Š. a kol.: Pohľad do dejín matematiky. Alfa, Bratislava, 1986 (in slovak)
Konforovič, A.G.: Významné matematické úlohy, SPN Praha, 1989 (in slovak)

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 145

A	B	C	D	E	FX
80.0	7.59	6.9	2.76	2.76	0.0

Provides: RNDr. Ingrid Semanišinová, PhD.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚTVŠ/ TVa/11	**Course name:** Sports Activities I.

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 1.

Course level: I., I.II., II.

Prerequisities:

Conditions for course completion:
Conditions for course completion:
Min. 80% of active participation in classes.

Learning outcomes:
Learning outcomes:
Increasing physical condition and performance within individual sports. Strengthening the relationship of students to the selected sports activity and its continual improvement.

Brief outline of the course:
Brief outline of the course:
Within the optional subject, the Institute of Physical Education and Sports of Pavol Jozef Šafárik University provides for students the following sports activities: aerobics, basketball, badminton, floorball, yoga, pilates, swimming, body-building, indoor football, self-defence and karate, table tennis, sports for unfit persons, streetball, tennis, and volleyball.
In the first two semesters of the first level of education students will master basic characteristics and particularities of individual sports, motor skills, game activities, they will improve level of their physical condition, coordination abilities, physical performance, and motor performance fitness. Last but not least, the important role of sports activities is to eliminate swimming illiteracy and by means of a special program of medical physical education to influence and mitigate unfitness.
In addition to these sports, the Institute offers for those who are interested winter and summer physical education trainings with an attractive program and organises various competitions, either at the premises of the faculty or University or competitions with national or international participation.

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 12947

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
88.64	0.06	0.0	0.0	0.0	0.03	7.22	4.05

Provides: doc. PhDr. Ivan Šulc, CSc., Mgr. Zuzana Küchelová, PhD., Mgr. Peter Bakalár, PhD., doc. PaedDr. Ivan Uher, PhD., Mgr. Agata Horbacz, PhD., Mgr. Marek Valanský, prof. RNDr. Stanislav Vokál, DrSc., Mgr. Dávid Kaško, Mgr. Aurel Zelko, PhD., Mgr. Dana Dračková, PhD., Mgr. Marcel Čurgali, PaedDr. Jana Potočníková, PhD.

Date of last modification: 18.03.2019

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚTVŠ/ TVb/11	**Course name:** Sports Activities II.
Course type, scope and the method: **Course type:** Practice **Recommended course-load (hours):** **Per week:** 2 **Per study period:** 28 **Course method:** present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 2.	
Course level: I., I.II., II.	
Prerequisities:	
Conditions for course completion: Conditions for course completion: Final assessment and active participation in classes - min. 75%.	
Learning outcomes: Learning outcomes: Increasing physical condition and performance within individual sports. Strengthening the relationship of students to the selected sports activity and its continual improvement.	
Brief outline of the course: Brief outline of the course: Within the optional subject, the Institute of Physical Education and Sports of Pavol Jozef Šafárik University provides for students the following sports activities: aerobics, basketball, badminton, floorball, yoga, pilates, swimming, body-building, indoor football, self-defence and karate, table tennis, sports for unfit persons, streetball, tennis, and volleyball. In the first two semesters of the first level of education students will master basic characteristics and particularities of individual sports, motor skills, game activities, they will improve level of their physical condition, coordination abilities, physical performance, and motor performance fitness. Last but not least, the important role of sports activities is to eliminate swimming illiteracy and by means of a special program of medical physical education to influence and mitigate unfitness. In addition to these sports, the Institute offers for those who are interested winter and summer physical education trainings with an attractive program and organises various competitions, either at the premises of the faculty or University or competitions with national or international participation.	
Recommended literature:	
Course language:	
Notes:	

Course assessment
Total number of assessed students: 11186

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
85.58	0.55	0.02	0.0	0.0	0.05	9.99	3.8

Provides: doc. PhDr. Ivan Šulc, CSc., Mgr. Zuzana Küchelová, PhD., doc. PaedDr. Ivan Uher, PhD., Mgr. Peter Bakalár, PhD., Mgr. Agata Horbacz, PhD., Mgr. Marek Valanský, prof. RNDr. Stanislav Vokál, DrSc., Mgr. Dávid Kaško, Mgr. Aurel Zelko, PhD., Mgr. Dana Dračková, PhD., Mgr. Marcel Čurgali, PaedDr. Jana Potočníková, PhD.

Date of last modification: 18.03.2019

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚTVŠ/ TVc/11	**Course name:** Sports Activities III.

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 3.

Course level: I., I.II., II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 7741

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
90.03	0.04	0.01	0.0	0.0	0.03	4.04	5.85

Provides: doc. PhDr. Ivan Šulc, CSc., Mgr. Zuzana Küchelová, PhD., doc. PaedDr. Ivan Uher, PhD., Mgr. Peter Bakalár, PhD., Mgr. Agata Horbacz, PhD., Mgr. Marek Valanský, prof. RNDr. Stanislav Vokál, DrSc., Mgr. Dávid Kaško, Mgr. Aurel Zelko, PhD., Mgr. Dana Dračková, PhD., Mgr. Marcel Čurgali, PaedDr. Jana Potočníková, PhD.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚTVŠ/ TVd/11	**Course name:** Sports Activities IV.

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 4.

Course level: I., I.II., II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 5086

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
85.19	0.29	0.04	0.0	0.0	0.0	6.78	7.69

Provides: doc. PhDr. Ivan Šulc, CSc., Mgr. Zuzana Küchelová, PhD., Mgr. Peter Bakalár, PhD., doc. PaedDr. Ivan Uher, PhD., Mgr. Agata Horbacz, PhD., Mgr. Marek Valanský, prof. RNDr. Stanislav Vokál, DrSc., Mgr. Lucia Kršňáková, PhD., Mgr. Dávid Kaško, Mgr. Aurel Zelko, PhD., Mgr. Dana Dračková, PhD., Mgr. Marcel Čurgali, PaedDr. Jana Potočníková, PhD.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/ SVK/10	**Course name:** Students scientific conference

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

Number of ECTS credits: 4

Recommended semester/trimester of the course:

Course level: I., II.

Prerequisities:

Conditions for course completion:

Learning outcomes:
Individual scientific work of students. Publishing of obtained results in a written form and as a public presentation.

Brief outline of the course:

Recommended literature:
With respect to the research problematics (article in journals, books).

Course language:
Slovak or English

Notes:

Course assessment
Total number of assessed students: 94

A	B	C	D	E	FX
98.94	1.06	0.0	0.0	0.0	0.0

Provides: prof. RNDr. Mirko Horňák, CSc.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚTVŠ/ LKSp/13	**Course name:** Summer Course-Rafting of TISA River
Course type, scope and the method: **Course type:** Practice **Recommended course-load (hours):** **Per week: Per study period:** 36s **Course method:** present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course:	
Course level: I., II.	
Prerequisities:	
Conditions for course completion: Conditions for course completion: Attendance Final assessment: Raft control on the waterway (attended/not attended)	
Learning outcomes: Learning outcomes: Students have knowledge of rafts (canoe) and their control on waterway.	
Brief outline of the course: Brief outline of the course: 1. Assessment of difficulty of waterways 2. Safety rules for rafting 3. Setting up a crew 4. Practical skills training using an empty canoe 5. Canoe lifting and carrying 6. Putting the canoe in the water without a shore contact 7. Getting in the canoe 8. Exiting the canoe 9. Taking the canoe out of the water 10. Steering a) The pry stroke (on fast waterways) b) The draw stroke 11. Capsizing 12. Commands	
Recommended literature:	
Course language:	
Notes:	

Course assessment Total number of assessed students: 151	
abs	n
45.03	54.97
Provides: Mgr. Peter Bakalár, PhD.	
Date of last modification: 18.03.2019	
Approved: prof. RNDr. Katarína Cechlárová, DrSc.	

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚTVŠ/ KP/12	**Course name:** Survival Course
Course type, scope and the method: **Course type:** Practice **Recommended course-load (hours):** **Per week: Per study period:** 36s **Course method:** present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course:	
Course level: I., II.	
Prerequisities:	
Conditions for course completion: Conditions for course completion: Attendance Final assessment: continuous fulfilment of all tasks within the course	
Learning outcomes: Learning outcomes: Students will be familiarized with principles of safe stay and movement in extreme natural conditions as they will obtain theoretical knowledge and practical skills to solve the extraordinary and demanding situations connected with survival and minimization of damage to health. The course develops team work and students will learn how to manage and face the situations that require overcoming of obstacles.	
Brief outline of the course: Brief outline of the course: Lectures: 1. Principles of behaviour and safety for movement and stay in unknown mountains 2. Preparation and leadership of tour 3. Objective and subjective danger in mountains 4. Principles of hygiene and prevention of damage to health in extreme conditions Exercises: 1. Movement in terrain, orientation and navigation in terrain (compasses, GPS) 2. Preparation of improvised overnight stay 3. Water treatment and food preparation.	
Recommended literature:	
Course language:	
Notes:	

Course assessment Total number of assessed students: 392	
abs	n
44.39	55.61
Provides: Mgr. Marek Valanský, MUDr. Peter Dombrovský	
Date of last modification: 15.03.2019	
Approved: prof. RNDr. Katarína Cechlárová, DrSc.	

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚINF/TYS1/15	**Course name:** Typographical systems

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:
To provide the basic information on principles for typesetting of documents containing mathematical formulas in Plain TeX, AMS-TeX, and LaTeX.

Brief outline of the course:
Typesetting of a plain text, special text symbols, using of text fonts. TeX macros. Enumerations in text and footnote command. Parameter setting determining the appearance of the pages. Typesetting of mathematical formulas in text and displays, aligning formulas. Definitions of TeX macros. Making tables and pictures. Definitions, theorems, and proofs in a mathematical document. Contents, bibliography, sections in a document.

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 246

A	B	C	D	E	FX
47.97	18.29	19.51	6.5	6.91	0.81

Provides: doc. RNDr. Stanislav Krajči, PhD.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Katarína Cechlárová, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚTVŠ/ZKLS//13	**Course name:** Winter Ski Training Course
Course type, scope and the method: **Course type:** Practice **Recommended course-load (hours):** **Per week:** 36 **Per study period:** 504 **Course method:** present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course:	
Course level: I., II.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Notes:	

Course assessment
Total number of assessed students: 97

abs	n
32.99	67.01

Provides: doc. PhDr. Ivan Šulc, CSc., Mgr. Marek Valanský
Date of last modification: 03.05.2015
Approved: prof. RNDr. Katarína Cechlárová, DrSc.