# CONTENT

**COURSE INFORMATION LETTER**

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|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚINF/ AOS1/15 | **Course name:** Administration of OS |
| **Course type, scope and the method:**<br>**Course type:** Practice<br>**Recommended course-load (hours):**<br>**Per week:** 2 **Per study period:** 28<br>**Course method:** present | |
| **Number of ECTS credits:** 2 | |
| **Recommended semester/trimester of the course:** 1., 3. | |
| **Course level:** I., II., N | |
| **Prerequisities:** | |
| **Conditions for course completion:**<br>The condition for passing the course is successful realization of a project focused on the network services configuration. | |
| **Learning outcomes:**<br>The result of the education is an understanding of the theoretical and practical background of Windows and Linux operating systems and selected network services. | |
| **Brief outline of the course:**<br>1. Management of Linux operating system (basic system tools for troubleshooting, system startup, network configuration), 2. File systems (general view), 3. File systems (RAID, LVM), 4. Web hosting services I. (basic concept, APACHE), 5. Web hosting services II. (SQL, HTTPS, security, NGINX), 6. File services I. (SAMBA, NFS), 7. File services II. (FTP), 8. Management of local computer network I. (routing, DHCP), 9. Management of local computer network II. (firewall), 10. VPN, 11. SSH and Proxy, 12. Kernel of the Linux operating system, 13. Administration of the Windows operating system. | |
| **Recommended literature:**<br>1. LPIC-1 Exam 102. LPI [online]. Canada: The Linux Professional Institute, 2021 [cit. 2021-9-22]. Dostupné z: https://learning.lpi.org/en/learning-materials/102-500/, 2. Linux - Dokumentační projekt [online]. 4. Praha: Computer Press, 2007 [cit. 2021-9-22]. Dostupné z: https://i.iinfo.cz/files/root/k/LDP_4.pdf, 3. The LPIC2 Exam Prep [online]. Sue B.V. - Open Sourced, 2021 [cit. 2021-9-26]. Dostupné z: https://lpic2book.github.io/src/ | |
| **Course language:**<br>Slovak or English | |
| **Notes:**<br>Content prerequisites: understanding of fundamental concepts of operating systems, computer networks, basic skill in Linux shell (e.g. bash) and Powershell. | |

**Course assessment**
Total number of assessed students: 36

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 58.33 | 22.22 | 11.11 | 0.0 | 8.33 | 0.0 |

**Provides:** doc. RNDr. JUDr. Pavol Sokol, PhD. et PhD., RNDr. Tomáš Bajtoš, PhD.

**Date of last modification:** 26.09.2021

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

**COURSE INFORMATION LETTER**

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚMV/ ATA/22 | **Course name:** Algebra and theoretical arithmetic |

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

**Number of ECTS credits:** 3

**Recommended semester/trimester of the course:** 3.

**Course level:** II.

**Prerequisities:**

**Conditions for course completion:**
During the term, each student receives marks for two written exams. Final marking is assigned based on the overall points for the work throughout the term, for homework and their presentation. Marking classification: A:91%-100%, B:81%-90%, C:71%-80%, D:61%-70%, E:51%-60%, FX:0%-50%

**Learning outcomes:**
Obtain knowledge about sets N, Z, Q and R, about their axiomatic building-up, the operations and the orderigs on them. The student will
1. familiarise themselves with mathematical culture, ways of thinking, self-expression and putting forward arguments,
2. gain a deeper understanding of the base terminology of real analysis, their properties and interconnections,
3. be able to define and interpret key terms, prove their basic properties and relationships,
4. know how to solve tasks focused on utilising the aforementioned concepts and interpret the obtained results.

**Brief outline of the course:**
Ordered Domains, Axioms for Rings, Construction for Rings,
Definition and Properties of the Integers,
Number-Theoretic Properties of the Integers,
The Rational Numbers, The Arithmetic of the Rational Numbers,
Integral Domains and Quotient Fields, The Arithmetic of Sequences,
Cantor Sequences, Null Sequences, The Real Numbers,
Ordered Fields, Relations between Ordered Fields and the Field of Rational Numbers,
the Completeness of the Real Numbers, more Theorems on Ordered and Complete, Ordered Fields,
the Isomorphism of Complete, Ordered Fields,
the Complex Numbers

**Recommended literature:**
T. Katriňák, M. Gavalec, E. Gedeonová, J. Smítal: Algebra a teoretická aritmetika (1), Alfa, Bratislava, 1985.

T. Šalát, A. Haviar, T. Hecht, T. Katriňák: Algebra a teoretická aritmetika (2), Alfa, Bratislava, 1986.
G. Birkhoff, S. Mac Lane: Prehľad modernej algebry, Alfa, Bratislava, 1979.
N. T. Hamilton, J. Landin: Set Theory. The Structure of Arithmetic, Dover Publications, Inc., 2018.

**Course language:**
Slovak

**Notes:**

**Course assessment**
Total number of assessed students: 71

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 43.66 | 26.76 | 14.08 | 12.68 | 2.82 | 0.0 |

**Provides:** prof. RNDr. Jozef Doboš, CSc.

**Date of last modification:** 25.04.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

**COURSE INFORMATION LETTER**

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|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚMV/ AIM/22 | **Course name:** Application of ICT into mathematics teaching |

**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:** II.

**Prerequisities:** ÚMV/DDMb/22

**Conditions for course completion:**
To master specific means of information and communication technologies usable for the support of mathematical education and for solving various types of mathematical problems. To be able to assess and evaluate the suitability and ways of using selected types of modern technologies to support active learning of mathematics. To be able to apply the basic principles of constructivism and research approaches to the teaching of mathematics in the planning and preparation of the teaching of mathematics. To be able to find and prepare ideas and examples for meaningful and effective use of information and communication technologies in the teaching process, to point out several possibilities of solving mathematical problems.
Rating:
Entry questionnaire - 2 b.
Design and solution of motivational word problems for the use of systems of linear equations - 5 b.
Test for the application of a spreadsheet in solving mathematical problems - 4 b.
Project for the application of the EUR model or research-oriented teaching in teaching a selected topic - 10 b.
Didactic processing of a selected construction task - 5 b.
Test for solving construction tasks - 4 b.
Participating in a discussion forum - 2 b.
Use of CAS in solving tasks - 5 b.
Design of examples for the use of CAS in teaching mathematics - 8 b.
Classification scale:
A: 91 % - 100 %, B: 81 % - 90 %, C: 71 % - 80 %, D: 61 % - 70 %, E: 51 % - 60 %, FX: 0 % - 50 %.

**Learning outcomes:**
Students will learn standard work procedures for the use of modern information and communication technologies in solving mathematical problems. Students will be provided with examples and suggestions for the use of modern information technologies in creating a stimulating learning environment supporting active learning mathematics. Students will gain skills in the use of modern information technologies in modeling real situations and exploring mathematical patterns. Development of creative and evaluation skills of students to plan and prepare the teaching of

specific topics in school mathematics with effective and meaningful use of modern information technologies.

**Brief outline of the course:**
1. Integration of modern information technologies into mathematical education.
2. - 3. Possibilities of using mathematical tools of a spreadsheet in modeling and solving algorithmic problems in teaching mathematics.
4. - 5. Constructivist conception of teaching mathematics, research of properties of mathematical objects and their mutual relations.
6. - 7. Solving construction tasks, examining the properties of identical and similar transformations and their use in solving problems.
8. Possibilities of using dynamic geometric systems in solving selected types of stereometry tasks.
9. - 10. Mathematical modeling and problem solving in the CAS environment. The position of CAS in the teaching of mathematics.

**Recommended literature:**
Oldknow, A., Taylor, R., Tetlow, L.: Teaching Mathematics Using ICT, Bloomsbury Publishing, 2010.
Lukáč, S.: Multimédiá a počítačom podporované učenie sa v matematike, PF UPJŠ Košice 2001.
Johnston-Wilder, S., Pimm, D.: Teaching secondary mathematics with ICT, Open University Press, 2005.
Vaníček, J.: Počítačové kognitivní technologie ve výuce geometrie. Pedagogická fakulta Univerzity Karlovy, 2009.

**Course language:**
Slovak

**Notes:**

**Course assessment**
Total number of assessed students: 204

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 43.63 | 28.92 | 15.69 | 7.35 | 4.41 | 0.0 |

**Provides:** doc. RNDr. Stanislav Lukáč, PhD.

**Date of last modification:** 19.04.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

**COURSE INFORMATION LETTER**

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** ÚMV/APM/19 | **Course name:** Applications 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:** 2.

**Course level:** II.

**Prerequisities:**

**Conditions for course completion:**
Presentation on the chosen topic during the seminar.

**Learning outcomes:**
Students get an overview of applications of mathematics and its tools in various areas of human activity.

**Brief outline of the course:**
1. Applications of graphs in analysis of complex networks, their central actors and their community structure.
2. Statistical methods used in shape recognition (geometric morphometrics, principal component analysis, linear regression) with application in the analysis of dinosaur skulls and other examples of the use of shape recognition in practice.

**Recommended literature:**
1. E. A. Robinson, D. H. Ullmann: A mathematical look at politics, CRC Press, 2010.
2. U. Brandes, T. Erlebach: Network Analysis: Methodological Foundations (Lecture Notes in Computer Science, 3418), 2005.
3. Karchynskaya, V., Kopčáková, J., Klein, D., Gába, A., Madarasová-Gecková, A., van Dijk, J. P., de Winter, A. F. a Reijneveld, S. A. (2020). Is BMI a Valid Indicator of Overweight and Obesity for Adolescents? Int. J. Environ. Res. Public Health, 17, 4815.

**Course language:**
Slovak

**Notes:**

**Course assessment**
Total number of assessed students: 28

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 82.14 | 17.86 | 0.0 | 0.0 | 0.0 | 0.0 |

**Provides:** RNDr. Andrej Gajdoš, PhD., doc. RNDr. Martina Hančová, PhD., doc. Mgr. Jozef Kiseľák, PhD., doc. RNDr. Daniel Klein, PhD., prof. RNDr. Tomáš Madaras, PhD.

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| **Date of last modification:** 25.08.2022 |
| **Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD. |

**COURSE INFORMATION LETTER**

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|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** KPPaPZ/SNP/09 | **Course name:** Bullying, Violence and Their Prevention |

**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., 3.

**Course level:** II.

**Prerequisities:**

**Conditions for course completion:**
Active participation in seminars. Detailed information will be given.
Active participation - 20%
Seminar work - 40%
Seminar work 2 - 40%

**Learning outcomes:**
Knowledge: the graduate of the course can summarize the latest knowledge about bullying in schools and its consequences.
Skills. The student is able to analyse problem situations related to bullying and solve them. The student will develop professional skills through the implementation of prevention activities in seminars.
Competences. The graduate of the course is sensitive to the issue of bullying, knows how to identify bullying in the early stages and prevent it from developing into serious forms.

**Brief outline of the course:**
Aggressive behavior. Characteristics of actors of bullying (personality, characteristics of family environment). Manifestations and possible causes of bullying. Bullying as a group process. The role of teacher, school and parent in solving bullying. Possibilities of prevention of bullying at the level of school, class, individuals. Primary, secondary and tertiary prevention. Socio-psychological activities used in the prevention of bullying.

**Recommended literature:**
Kolář, M.: Bolest šikanování. Cesta k zastavení epidemie šikanování ve školách. Portál, Praha, 2001
Jánošová a kol. Psychologie školní šikany. Grada, Praha, 2016
Říčan, P.: Agresivita a šikana mezi dětmi. Portál, Praha, 1995
Janošová, P., Kollerová, L., Cakirpaloglu, P., & Vorlíček, R. (2023). Empatie žáků vůči šikanovaným spolužákům. Československá psychologie, 67(1), 1-14.

**Course language:**

**Notes:**

**Course assessment**
Total number of assessed students: 214

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 85.51 | 13.08 | 0.93 | 0.47 | 0.0 | 0.0 |

**Provides:** doc. Mgr. Mária Bačíková, PhD.

**Date of last modification:** 03.09.2024

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** KPO/ SDaM/15 | **Course name:** Child and Adolescent Sociology |
|---|---|

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

**Number of ECTS credits:** 2

**Recommended semester/trimester of the course:** 3.

**Course level:** 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: 969

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 50.15 | 29.1 | 15.07 | 3.61 | 1.55 | 0.52 |

**Provides:** doc. Mgr. Alexander Onufrák, PhD.

**Date of last modification:** 29.08.2024

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** KPE/ MT/09 | **Course name:** Class Management |
|---|---|

**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:** 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: 607

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 51.89 | 35.42 | 9.88 | 1.48 | 0.49 | 0.82 |

**Provides:** doc. PaedDr. Renáta Orosová, PhD.

**Date of last modification:** 12.03.2024

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

**COURSE INFORMATION LETTER**

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|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚINF/ KKV1/21 | **Course name:** Classical and quantum computations |

**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:** 1., 3.

**Course level:** II., N

**Prerequisities:**

**Conditions for course completion:**
Successful completion of the subject is conditioned by proper acquisition of basic concepts, algorithms and models and demonstrating the ability to apply them creatively. The acquisition of knowledge takes place:
- continuously during the semester in the form of partial assignments,
- a written test during the semester,
- a written test at the exam,
- oral exam.

In order to receive an evaluation, it is necessary to obtain at least 50% of points from each of the three parts (assignments during the semester, written part of the exam, oral part of the exam). The detailed evaluation method is published in the AIS.

**Learning outcomes:**
By completing the subject, the student will get:
- knowledge of the classification and design of probabilistic algorithms,
- basic knowledge of the principles of quantum computers and their differences compared to classical computing models,
- knowledge and skills about the design and functioning of quantum computing and become familiar with the most well-known algorithms,

= basic quantum computer programming skills.

**Brief outline of the course:**
1. Introduction to quantum quantum computers. Basics of classical complexity theory.
2. Boolean circuits and their basic properties.
3. Probability algorithms.
4. BPP class and probability testing.
5. Basic properties of circuits and Fermat's test.
6. Miller - Rabin's test and the position of the BPP class in the hierarchy of complexity models.
7. Introduction to quantum computing and mathematical foundations of quantum theory.
8. Spectral representation of self-adjoint operators.
9. Quantum states and Hilbert vector spaces.
10. Basic quantum operators and basic quantum algorithms.

11. Quantum teleportation, superdense coding and Grover's algorithm.
12. Fourier transformation.
13. Shor's algorithm.

**Recommended literature:**

1. BERMAN,G.P., DOOLEN,G.D., MAINIERI, R., TSIFRINOVIC, V.I. Introduction to Quantum Computers. World Scientific, 2003.
2. GRUSKA, J. Quantum Computing. McGraw-Hill, 1999.
3. JOHNSON, G. A Shortcut Through Time: The Path to the Quantum Computer, Knopf 2003.
4. KITAEV, A.Y., SHEN, A.H., VYALYI, M.N. Classical and Quantum Computation. American Mathematical Society, 2002.
5. NIELSEN, M.A., CHUANG, I.L. Quantum Computation and Quantum Information. Cambridge University Press, 2000.
6. HIRVENSALO, M., Quantum Computing, Springer 2004

**Course language:**
Slovak or english

**Notes:**
Content prerequisites:
Linear algebra, Group theory, Probability theory, Theory of algorithms, Introduction to quantum computers.

**Course assessment**
Total number of assessed students: 93

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 27.96 | 38.71 | 16.13 | 5.38 | 4.3 | 7.53 |

**Provides:** prof. RNDr. Gabriel Semanišin, PhD., Mgr. Viktor Olejár

**Date of last modification:** 25.07.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## 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:** 1.

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

**Prerequisities:**

**Conditions for course completion:**
Two written examinations focused on the construction of Turing machines, creating sequences of (primitive) recursive functions, solving examples. Oral exam focused on the relationship between classes of recursive and computable functions, the problem of stopping a Turing machine.

**Learning outcomes:**
Knowledge of computational model of Turing machine, Goedelian arithmetization, and relationship between Turing computability and recursivity of functions.

**Brief outline of the course:**
1. Turing machine, basic principles of work of Turing machine, formalization of basic notions
2. Shifting of states, compositions of machines, computations on composed machines
3. Modifications of configuration
4. Elementary Turing machines
5. Compositions of elementary Turing machines
6. Primitively recursive functions
7. Primitively recursive predicates
8. Functions and predicates from number theory
9. Goedelian arithmetizationa of Turing computability
10. Recursive functions
11. Relationship of recursivity and Turing computability
12. Halting problem

**Recommended literature:**
1. BRIDGES, Douglas. Computability, A Mathematical Sketch book. Springer--Verlag, 1994. ISBN:: 978-0387941745
2. BUKOVSKÝ, Lev. Teória algoritmov, ES UPJŠ, Košice, 1999. ISBN 8070973730
3. MACHTEY, Michael a Paul YOUNG. An Introduction to the General Theory of Algorithms, North--Holland, Amsterdam 1978.
4. KRAJČI, Stanislav. Teória vypočítateľnosti. http://ics.upjs.sk/~krajci/skola/vyucba/ucebneTexty/vypocitatelnost.pdf

**Course language:**

Slovak

**Notes:**

**Course assessment**
Total number of assessed students: 315

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 51.75 | 11.11 | 11.43 | 5.08 | 5.4 | 15.24 |

**Provides:** doc. RNDr. Ľubomír Antoni, PhD.

**Date of last modification:** 04.01.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

**COURSE INFORMATION LETTER**

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|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚINF/ VKN2/22 | **Course name:** Computational and cognitive neuroscience 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:** 1., 3.

**Course level:** II., N

**Prerequisities:**

**Conditions for course completion:**
Midterm exam
Final exam consisting of written and/or oral part

**Learning outcomes:**
Advanced topics in computational and cognitive neuroscience, and in the tools used in neuroscience.

**Brief outline of the course:**
1. Intro: Cognitive psychology, neural modeling.
Theme 1: Topics in cognitive and neural science
2. Neural basis of vision
3. Visual object recognition and visual scene analysis
4. Auditory cognition. Echo suppression. Auditory scene analysis
5. Cortical sound processing.
6. Other topics in the study of brain and main: thinking, consciousness, emotions, motivation
Topic 2: Modeling in cognitive and neural science
7. Intro
8. Connectionism, STM and LTM modeling
9. Additive and shunting neural networks.
10. Learning rule Outstar.
11. Adaptive resonance theory.
12. Statistical and decision-theory modeling
Topic 3: Current research at UPJS
13. Invited lecture

**Recommended literature:**
1. KANDEL, E. R., SCHWARTZ, J. H. and JESSELL, T.M.: Principles of Neural Science. McGraw-Hill, 2021 ISBN-13: 978-1259642234
2. Dayan P and LF Abbott: Theoretical Neuroscience - Computational and Mathematical Modeling of Neural Systems. MIT Press, 2005 ISBN-13: 978-0262541855
3. Thagard P: Mind: Introduction to Cognitive Science, 2nd Edition. Bradford Books. ISBN-13 : 978-0262701099

4. HERTZ, J., KROGH, A. and PALMER R. G.: Introduction to the theory of neural computation. Addison-Wesley 1991 ISBN-13: 978-0201515602

**Course language:**
Slovak or English

**Notes:**
Content prerequisites:
basics of neurobiology, cognitive psychology, linear algebra and differential equations, programing, or instructor's consent

**Course assessment**
Total number of assessed students: 9

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 33.33 | 11.11 | 11.11 | 11.11 | 33.33 | 0.0 |

**Provides:** doc. Ing. Norbert Kopčo, PhD., RNDr. Keerthi Kumar Doreswamy, Ing. Udbhav Singhal, Myroslav Fedorenko

**Date of last modification:** 14.02.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

**COURSE INFORMATION LETTER**

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|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚINF/ VYZ1/15 | **Course name:** Computational complexity |

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

**Number of ECTS credits:** 4

**Recommended semester/trimester of the course:** 3.

**Course level:** II., N

**Prerequisities:**

**Conditions for course completion:**
Oral examination.

**Learning outcomes:**
To give students theoretical background in computational complexity and theory of NP-completeness.

**Brief outline of the course:**
1: Introduction: the notion of computational complexity, computational time, computational model, example - the problem of sorting, computational complexity as an asymptotic function
2: Basic computational models: RAM and RASP computers, the cost of an elementary step on these computers, single-tape Turing machine, multi-tape Turing machine, nondeterministic variants of these computational models, transformations among these models with respect to the time complexity
3: The classes P and NP: basic definitions, presenting (un)undirected graphs on the input, 3COL – the set of all 3-colorable graphs is in NP, 2COL - the set of all 2-colorable graphs is in P, SAT – the set of satisfiable Boolean formulas is in NP, CNF-SAT - Boolean formulas in conjunctive normal form
4: Variants of P and NP: decision problem, the problem of finding a solution, optimization problem, polynomial conversions among different variants
5: NP-completeness: reducibility in polynomial time and its transitivity, definition of the NP-completeness and its basic properties
6: NP-completeness of SAT
7: Variants of SAT: 3CNF-SAT - satisfiability of Boolean formulas in 3-conjunctive normal form, kCNF-SAT, CNF-SAT - satisfiability in k-conjunctive (conjunctive) normal form, 2CNF-SAT is in P
8: 3COL and its variants: 3COL (the problem of coloring vertices of a graph with 3 colors) in NP-complete, consequently: for each k>3, kCOL (the problem of coloring with k colors) is NP-complete as well
9: Colorability of a planar graph with three colors: presenting a planar graph on the input, the proof of NP-completeness, coloring with a larger number of colors
10: Another NP-complete problems: Exact set cover, Clique, Vertex cover

11: Hamiltonian path: Hamiltonian path in a directed and in undirected graph
12: Subset-sum-like problems: Subset Sum - the problem of whether any subset of the integers sum to precisely a target sum, Partition - the problem of whether a given multiset of positive integers can be partitioned into two subsets with equal sums, a “more relaxed” version of Partition - achieving an approximate equality of the sums, distribution of tasks among K parallel processors
13: Beyond P a NP: a review of the basic complexity classes - L, NL, P, NP, PSpace , NPSpace, ExpTime, NExpTime, …, simulation of (non)deterministic space in (non)deterministic time, conversions in opposite directions
14: PSpace: QBF - true quantified Boolean formulas, prenex normal form, Pspace completeness of QBF, PSpace = NPSpace

**Recommended literature:**

1. J.E. Hopcroft, R.Motwani, J.D. Ullman: Introduction to automata theory, languages, and computation, Addison-Wesley, 2007.
2. M. Sipser: Introduction to the Theory of Computation, Thomson, 2nd edition, 2006.
3. L.A.Hemaspaandra, M.Ogihara: Complexity theory companion, EATCS series, texts in computer science, Springer-Verlag, 2002.
4. S. Arora, B. Barak: Computational Complexity: A Modern Approach, Cambridge Univ. Pess, 2009. 5. G.Brassard, P.Bradley: Fundamentals of algorithmics, Prentice Hall, 1996.
6. D.P.Bovet, P.Crescenzi: Introduction to the theory of complexity, Prentice Hall, 1994.
7. C. Calude and J. Hromkovič: Complexity: A Language-Theoretic Point of View, in G. Rozenberg and A. Salomaa, Handbook of Formal Languages II, Springer, 1997.

**Course language:**
Slovak or english

**Notes:**
Content prerequisities:
Basic notions from the theory of automata and formal languages.
Basic skills in programming and design of algorithms (in any programming language).
Basics knowledge in mathematical logic, set theory, and graph theory.

**Course assessment**
Total number of assessed students: 380

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 57.11 | 15.79 | 13.16 | 6.84 | 6.84 | 0.26 |

**Provides:** prof. RNDr. Viliam Geffert, DrSc.

**Date of last modification:** 23.11.2021

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** ÚINF/MSSUI/22 | **Course name:** Computer science and didactics of informatics |
|---|---|

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

**Number of ECTS credits:** 2

**Recommended semester/trimester of the course:**

**Course level:** II.

**Prerequisities:** ÚINF/DIN1b/15 and ÚINF/TIK1/22 and (ÚINF/UGR1/15 or ÚINF/KKV1/21 or ÚINF/UNS1/15 or ÚINF/FO1/15)

**Conditions for course completion:**

**Learning outcomes:**

**Brief outline of the course:**

**Recommended literature:**

**Course language:**

**Notes:**

**Course assessment**
Total number of assessed students: 6

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 50.0 | 16.67 | 0.0 | 0.0 | 33.33 | 0.0 |

**Provides:**

**Date of last modification:** 08.02.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

**COURSE INFORMATION LETTER**

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚINF/ MPPc/15 | **Course name:** Continuous practice teaching I |

**Course type, scope and the method:**
**Course type:** Practice
**Recommended course-load (hours):**
**Per week: Per study period:** 4t
**Course method:** present

**Number of ECTS credits:** 2

**Recommended semester/trimester of the course:** 3.

**Course level:** II.

**Prerequisities:** ÚINF/MPPb/15

**Conditions for course completion:**
Conditions for ongoing evaluation:
1. Observations in 6 lessons of the subject of informatics.
2. Independent leading of 18 lessons of the subject informatics.
3. Participation in analyzes from 20 lessons with a teacher trainer.
4. Active participation in out-of-class and after-school activities.
Conditions for the final evaluation:
1. Submission of 6 observation records from lessons.
2. Submission of 18 lesson projects of preparation for lessons.
3. Submission of a list of observations and own lesson of the trainee.
4. Submission of an evaluation of the trainee's teaching practice.
5. Submission of a report on the continuous pedagogical practice.
6. Submission of a feedback sheet from the continuous pedagogical practice.
Conditions for successful completion of the course:
Fulfillment of all ongoing and final assignments.

**Learning outcomes:**
Under the professional supervision of an experienced teacher trainer, the student acquires practical pedagogical skills in teaching the subject of informatics. He gets acquainted with school life, out-of-class and after-school activities activities.

**Brief outline of the course:**
Observations of teacher trainer lessons, consultations of lesson preparations, preparation of teaching aids, leading own lessons, methodological and scientific analysis of lessons, active participation in out-of-class and after-school activities.

**Recommended literature:**
KOSOVÁ, Beata, Alena TOMENGOVÁ et al., 2015. Profesijná praktická príprava budúcich učiteľov [online]. Banská Bystrica: Vydavateľstvo Belianum, Univerzita Mateja Bela, Banská Bystrica, 226 pp. [cited. 2021-7-28]. ISBN 978-80-557-0860-7. Available from: https://publikacie.umb.sk/publication/publicationFileDownload.php?ID=18667
OROSOVÁ, Renáta and Zuzana BOBEROVÁ, 2016. Pregraduálna príprava učiteľov: Organizácia pedagogickej praxe na UPJŠ [online]. Košice: Univerzita Pavla Jozefa Šafárika

v Košiciach, 142 pp. [cited 2021-7-28]. ISBN 978-80-8152-460-8. Available from: https://unibook.upjs.sk/sk/pedagogika/342-pregradualna-priprava-ucitelov-organizacia-pedagogickej-praxe-na-upjs
BOBEROVÁ, Zuzana, 2017. Začínajúci učiteľ a školská legislatíva I. [online]. Košice: Univerzita Pavla Jozefa Šafárika v Košiciach, 104 pp. [cited 2021-7-28]. ISBN 978-80-8152-490-5. Available from: https://unibook.upjs.sk/sk/pedagogika/398-zacinajuci-ucitel-a-skolska-legislativa-i
Current informatics textbooks for primary and secondary schools in Slovakia.

**Course language:**
Slovak

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

**Course assessment**
Total number of assessed students: 22

| abs | n |
|---|---|
| 100.0 | 0.0 |

**Provides:** doc. RNDr. Ľubomír Šnajder, PhD.

**Date of last modification:** 04.08.2021

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

**COURSE INFORMATION LETTER**

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚMV/ VSPc/15 | **Course name:** Continuous practice teaching I |

**Course type, scope and the method:**
**Course type:** Practice
**Recommended course-load (hours):**
**Per week: Per study period:** 4t
**Course method:** present

**Number of ECTS credits:** 2

**Recommended semester/trimester of the course:** 3.

**Course level:** II.

**Prerequisities:** ÚMV/VPPb/15

**Conditions for course completion:**
Teaching of a specified number of hours and visitations of specified number of classes (18 teaching and 6 visitation of classes).
Submission of written assignments (reflection on teaching practice, statement of teaching hours and classes visitations, selected lesson plans).

**Learning outcomes:**
Application of the knowledge acquired in didactic courses focused on teaching mathematics in pedagogical practice. Development of the student's self-reflection within the framework of the analysis of the lessons taught by the student. Identification of the student's weaknesses in order to shift his/her knowledge. Acquaint students with the atmosphere and the organization of school.

**Brief outline of the course:**
Visitations of classes in selected lessons
Analysis of lessons
Lesson plans preparation
Classes managed according to prepared lesson plan
Reflection on realized classes

**Recommended literature:**
Mathematics curricula and textbooks for middle and secondary schools
Hejný, M.: Teória vyučovania matematiky 2. Bratislava : SPN 1989
M. Hejný, J. Novotná, N. Stehlíková: Dvacet pět kapitol z didaktiky matematiky 2, Univerzita Karlova v Praze - Pedagogická fakulta, Praha, 2004

**Course language:**
Slovak

**Notes:**

**Course assessment**
Total number of assessed students: 130

| abs | n |
|---|---|
| 100.0 | 0.0 |

**Provides:** doc. RNDr. Ingrid Semanišinová, PhD., doc. RNDr. Dušan Šveda, CSc., RNDr. Veronika Hubeňáková, PhD.

**Date of last modification:** 24.08.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

**COURSE INFORMATION LETTER**

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚINF/ MPPd/15 | **Course name:** Continuous practice teaching II |

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

**Number of ECTS credits:** 2

**Recommended semester/trimester of the course:** 4.

**Course level:** II.

**Prerequisities:** ÚINF/MPPc/15

**Conditions for course completion:**
Conditions for ongoing evaluation:
1. Observations in 8 lessons of the subject of informatics.
2. Independent leading of 30 lessons of the subject informatics.
3. Participation in analyzes from 30 lessons with a teacher trainer.
4. Active participation in out-of-class and after-school activities.
Conditions for the final evaluation:
1. Submission of 8 observation records from lessons.
2. Submission of 30 lesson projects of preparation for lessons.
3. Submission of a list of observations and own lesson of the trainee.
4. Submission of an evaluation of the trainee's teaching practice.
5. Submission of a report on the continuous pedagogical practice.
6. Submission of a feedback sheet from the continuous pedagogical practice.
Conditions for successful completion of the course:
Fulfillment of all ongoing and final assignments.

**Learning outcomes:**
Under the professional supervision of an experienced teacher trainer, the student acquires practical pedagogical skills in teaching the subject of informatics. He gets acquainted with school life, out-of-class and after-school activities activities.

**Brief outline of the course:**
Observations of teacher trainer lessons, consultations of lesson preparations, preparation of teaching aids, leading own lessons, methodological and scientific analysis of lessons, active participation in out-of-class and after-school activities.

**Recommended literature:**
KOSOVÁ, Beata, Alena TOMENGOVÁ et al., 2015. Profesijná praktická príprava budúcich učiteľov [online]. Banská Bystrica: Vydavateľstvo Belianum, Univerzita Mateja Bela, Banská Bystrica, 226 pp. [cited. 2021-7-28]. ISBN 978-80-557-0860-7. Available from: https://publikacie.umb.sk/publication/publicationFileDownload.php?ID=18667
OROSOVÁ, Renáta and Zuzana BOBEROVÁ, 2016. Pregraduálna príprava učiteľov: Organizácia pedagogickej praxe na UPJŠ [online]. Košice: Univerzita Pavla Jozefa Šafárika

v Košiciach, 142 pp. [cited 2021-7-28]. ISBN 978-80-8152-460-8. Available from: https://unibook.upjs.sk/sk/pedagogika/342-pregradualna-priprava-ucitelov-organizacia-pedagogickej-praxe-na-upjs
BOBEROVÁ, Zuzana, 2017. Začínajúci učiteľ a školská legislatíva I. [online]. Košice: Univerzita Pavla Jozefa Šafárika v Košiciach, 104 pp. [cited 2021-7-28]. ISBN 978-80-8152-490-5. Available from: https://unibook.upjs.sk/sk/pedagogika/398-zacinajuci-ucitel-a-skolska-legislativa-i
Current informatics textbooks for primary and secondary schools in Slovakia.

**Course language:**
Slovak

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

**Course assessment**
Total number of assessed students: 17

| abs | n |
|---|---|
| 100.0 | 0.0 |

**Provides:** doc. RNDr. Ľubomír Šnajder, PhD.

**Date of last modification:** 04.08.2021

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

**COURSE INFORMATION LETTER**

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚMV/ VSPd/15 | **Course name:** Continuous practice teaching II |
| **Course type, scope and the method:**<br>**Course type:** Practice<br>**Recommended course-load (hours):**<br>**Per week: Per study period:** 6t<br>**Course method:** present | |
| **Number of ECTS credits:** 2 | |
| **Recommended semester/trimester of the course:** 4. | |
| **Course level:** II. | |
| **Prerequisities:** ÚMV/VSPc/15 | |
| **Conditions for course completion:**<br>Teaching of a specified number of hours and visitations of specified number of classes (30 teaching and 8 visitation of classes).<br>Submission of written assignments (reflection on teaching practice, statement of teaching hours and classes visitations, selected lesson plans). | |
| **Learning outcomes:**<br>Application of the knowledge acquired in didactic courses focused on teaching mathematics in pedagogical practice. Development of the student's self-reflection within the framework of the analysis of the lessons taught by the student. Identification of the student's weaknesses in order to shift his/her knowledge. Acquaint students with the atmosphere and the organization of school. | |
| **Brief outline of the course:**<br>Visitations of classes in selected lessons<br>Analysis of lessons<br>Lesson plans preparation<br>Classes managed according to prepared lesson plan<br>Reflection on realized classes | |
| **Recommended literature:**<br>Mathematics curricula and textbooks for middle and secondary schools<br>Hejný, M.: Teória vyučovania matematiky 2. Bratislava : SPN 1989<br>M. Hejný, J. Novotná, N. Stehlíková: Dvacet pět kapitol z didaktiky matematiky 2, Univerzita Karlova v Praze - Pedagogická fakulta, Praha, 2004 | |
| **Course language:**<br>Slovak | |
| **Notes:** | |

**Course assessment**
Total number of assessed students: 101

| abs | n |
|---|---|
| 100.0 | 0.0 |

**Provides:** doc. RNDr. Ingrid Semanišinová, PhD., doc. RNDr. Dušan Šveda, CSc., RNDr. Veronika Hubeňáková, PhD.

**Date of last modification:** 24.08.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** KPE/ TTUP/15 | **Course name:** Creating Text Teaching Aids |
|---|---|

**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:** 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: 273

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 57.14 | 31.5 | 8.06 | 2.56 | 0.73 | 0.0 |

**Provides:** doc. PaedDr. Renáta Orosová, PhD., Mgr. Zuzana Vagaská, PhD.

**Date of last modification:** 12.03.2024

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚINF/ ODPU/22 | **Course name:** Defence of diploma thesis |
| **Course type, scope and the method:**<br>**Course type:**<br>**Recommended course-load (hours):**<br>**Per week: Per study period:**<br>**Course method:** present | |
| **Number of ECTS credits:** 14 | |
| **Recommended semester/trimester of the course:** | |
| **Course level:** II. | |
| **Prerequisities:** | |
| **Conditions for course completion:**<br>The diploma thesis is the result of the student's own work. It must not show elements of academic fraud and must meet the criteria of good research practice defined in the Rector's Decision no. 21/2021, which lays down the rules for assessing plagiarism at Pavol Jozef Šafárik University in Košice and its components. Fulfillment of the criteria is verified mainly in the process of supervision and in the process of thesis defense. Failure to do so is reason for disciplinary action. | |
| **Learning outcomes:**<br>The diploma thesis demonstrates mastery of extended theory and professional terminology of the field of study, acquisition of knowledge, skills and competencies in accordance with the declared profile of the graduate of the study program, as well as the ability to apply them creatively in solving selected field problems. Student demonstrates the ability of independent professional work in terms of content, formal and ethical. Further details on the diploma thesis are determined by Directive no. 1/2011 on the basic requirements of final theses and the Study Regulations of UPJŠ in Košice for the 1st, 2nd and combined 1st and 2nd degree. | |
| **Brief outline of the course:**<br>1. Elaboration of the diploma thesis in accordance with the instructions of the supervisor.<br>2, Presentation of the results of the diploma thesis before the examination commission.<br>3. Answering questions related to the topic of the diploma thesis within the discussion. | |
| **Recommended literature:**<br>The recommended literature is determined individually in accordance with the topic of the diploma thesis. | |
| **Course language:**<br>Slovak and optionally English. | |
| **Notes:** | |

**Course assessment**
Total number of assessed students: 4

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 50.0 | 25.0 | 0.0 | 0.0 | 25.0 | 0.0 |

**Provides:**

**Date of last modification:** 08.02.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

**COURSE INFORMATION LETTER**

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚINF/ TSM1a/15 | **Course name:** Development and processing of multimedia |

**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., 3.

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

**Prerequisities:**

**Conditions for course completion:**
Conditions for ongoing evaluation:
1. Creation of an educational animation.
2. Creation of a poster with vector and raster graphics.
3. Creation of an educational audio recording.
4. Creation of an instructional educational video.
Conditions for successful completion of the course:
Obtaining at least 50% of points for ongoing assignments.

**Learning outcomes:**
After completing this course, students are able to:
a) deepen the knowledge of the principles of multimedia and to practice skills in the creation and processing of multimedia,
b) create multimedia teaching aids with accompanying methodological commentary for teaching selected topics of school informatics,
c) analyze and discuss the issue of teaching the creation and processing of multimedia in school informatics.

**Brief outline of the course:**
1. Digitization and processing of raster image.
2. Digitization and processing of raster image.
3. Creating animations.
4. Creation of vector graphics.
5. Creation of vector graphics.
6. Creation of vector graphics.
7. 3D modeling and printing
8. 3D modeling and printing
9. Digitization and sound processing.
10. Digitization and sound processing.
11. Digitization and video processing.
12. Digitization and video processing.

**Recommended literature:**

LACHS, V., 2000. Making Multimedia in the Classroom. London : RoutledgeFalemer. ISBN 0415216842.
GÖBEL, S. et al., 2006. Technologies for Interactive Digital Storytelling and Entertainment (LNCS 4326). Darmstadt : Springer. ISBN 3540499342.
ADÁMEK, R. et al., 2010. Moderná didaktická technika v práci učiteľa. Elfa, s.r.o., Košice. ISBN 978-80-8086-135-3.
GUNIŠ, Ján, Ľudmila JAŠKOVÁ, Katarína MIKOLAJOVÁ and Jana PEKÁROVÁ, 2009. Ďalšie vzdelávanie učiteľov základných škôl a stredných škôl v predmete informatika: Multimédiá. Bratislava: Štátny pedagogický ústav, 52 p. ISBN 978-80-89225-51-4. Also available from: https://www.statpedu.sk/files/sk/o-organizacii/projekty/projekt-dvui/publikacie/multimedia.pdf
ŠNAJDER, Ľubomír and Marián KIREŠ, 2005. Informatika pre stredné školy - Práca s multimédiami: tematický zošit. Bratislava: Slovenské pedagogické nakladateľstvo. ISBN 80-10-00422-7.

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

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

**Course assessment**
Total number of assessed students: 22

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 59.09 | 18.18 | 13.64 | 4.55 | 4.55 | 0.0 |

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

**Date of last modification:** 24.08.2021

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

**COURSE INFORMATION LETTER**

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚINF/ TSM1b/15 | **Course name:** Development and processing of multimedia |

**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:** II.

**Prerequisities:**

**Conditions for course completion:**
Conditions for ongoing evaluation:
1. Programmed SVG image.
2. Programmed animation.
3. Programmed sound or melody.
4. Programmed multimedia application.
Conditions for successful completion of the course:
Obtaining at least 50% of points for ongoing assignments.

**Learning outcomes:**
After completing this course, students are able to:
a) explain the basic principles and procedures in multimedia programming,
b) design and program multimedia applications.

**Brief outline of the course:**
1. Programming of still images.
2. Programming of still images.
3. Programming of still images.
4. Programming of still images.
5. Animation programming.
6. Animation programming.
7. Animation programming.
8. Programming of sounds and melodies.
9. Programming of sounds and melodies.
10. Programming of sounds and melodies.
11. Creating a multimedia application.
12. Creating a multimedia application.

**Recommended literature:**
SATHAYE, Ninad, 2010. Python Multimedia: Beginner's Guide. Birmingham, UK: Packt Publishing. ISBN 978-1-849510-16-5.
GUNIŠ, Ján, Viera MICHALIČKOVÁ, Martin CÁPAY a Ľubomír ŠNAJDER, 2020. Riešenie problémov a programovanie [online]. Bratislava: Centrum vedecko-technických informácií SR

[cited 2021-7-10]. ISBN 9788089965625. Available from: https://registracia.itakademia.sk/media/themes/nip-rpp.pdf
BLAHO, Andrej, 2016. Programovanie v Pythone 1 (prednášky k predmetu Programovanie (1) 1-AIN-130/13) [online]. Bratislava: Knižničné a edičné centrum FMFI UK, 322 s. [cited 2021-7-10]. ISBN 978-80-8147-067-7. Available from: http://python.input.sk/

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

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

**Course assessment**
Total number of assessed students: 6

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 16.67 | 66.67 | 16.67 | 0.0 | 0.0 | 0.0 |

**Provides:** doc. RNDr. Ľubomír Šnajder, PhD.

**Date of last modification:** 24.08.2021

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** KPPaPZ/VPU/17 | **Course name:** Developmental Psychology for Teachers |
|---|---|

**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:** II.

**Prerequisities:**

**Conditions for course completion:**
active participation in seminars - 20%
seminar work according to the current instructions on the electronic bulletin board- 40%
final test - 40%
Detailed and updated information will be posted on the electronic board

**Learning outcomes:**
The graduate will understand the principles of developmental psychology, and will be able to characterize the norm in separate developmental stages with a specific focus on the period of school age and adolescence. As part of the seminar work, a students will process current knowledge published in foreign journals. They will have a knowledge about the current social discourse on the topics covered. The graduate will be able to consider various aspects of the possible influence of parents and friends on the development of piupils and apply the knowledge of developmental psychology in the practice of the teacher.

**Brief outline of the course:**
Determinants and factors of development, cognitive development, personality development. Socialization in separate developmental stages (family, peers, school). Specifics of development in the period of school age, in pubescence and adolescence. Parents and their role in child development. Application of knowledge of developmental psychology in the teacher's practice - communication with students in different developmental stages, creating a teacher-student relationship with respect to the development needs of the student.

**Recommended literature:**
Bačíková a kol. (2023). Keď dieťa potrebuje nielen psychológa. Grada publishing.
Vágnerová, M. Vývojová psychologie. Portál, Praha 2000
Říčan, P. Cesta životem. Portál, Praha, 2004.
Thorová, K. Vývojová psychologie. Portál, Praha, 2015.
Macek, P. Adolescence. Praha: Portál, 2003
Matějček, Z. - rôzne diela
Bačíková, M. Psychológia rodičovskej kontroly, Šafárik Press, Košice 2019

**Course language:**

**Notes:**

**Course assessment**
Total number of assessed students: 109

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 77.98 | 15.6 | 3.67 | 2.75 | 0.0 | 0.0 |

**Provides:** doc. Mgr. Mária Bačíková, PhD.

**Date of last modification:** 03.09.2024

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** ÚINF/ DIN1a/15 | **Course name:** Didactics of informatics |
|---|---|

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

**Number of ECTS credits:** 3

**Recommended semester/trimester of the course:** 2.

**Course level:** II.

**Prerequisities:**

**Conditions for course completion:**
Conditions for ongoing evaluation:
1. Proposal of a thematic plan for teaching informatics at secondary or elementary school extended by 1 disponible hour.
2. Creation of a concept map and specific educational objectives for selected topic of school informatics.
3. Creation of a graded system of tasks for teaching selected topic of school informatics.
4. Proposal for the preparation of a lesson with a 5E inquiry cycle.
Conditions for successful completion of the course:
Obtaining at least 50% of points for ongoing assignments.

**Learning outcomes:**
After completing this course, students are able to:
a) acquire an overview of the objectives, content, modern methods and aids for teaching school informatics,
b) create conceptual map, cognitive objectives and graded tasks collection for seleced topic of school informatics,
c) create a inquiry-based methodology of teaching a seleced topic of school informatics.

**Brief outline of the course:**
1. Objectives and content of teaching informatics in primary and secondary schools. State educational program. Informatics textbooks.
2. Maturita on informatics. Examples of school educational programs. Designing own thematic plan.
3. Logical structure of the curriculum, conceptual mapping. Determination of specific educational objectives and creation of a concept map for a selected topic of school informatics (RBT).
4. Educational task, its forms, and parameters. A graded system of tasks.
5. Creation of a graded system of tasks for teaching a selected topic of school informatics.
6. Activating methods of teaching school informatics (discussion and situational methods).
7. Activating methods of teaching school informatics (staging methods, educational games, scientific humor).
8. Activating methods of teaching school informatics (problem teaching, peer learning).

9. Activating methods of teaching school informatics (project teaching, flipped learning).
10. Inquiry-based learning, inquiry cycle, inquiry skills, levels of inquiry, 5E learning cycle.
11. Formative assessment, cognitive and metacognitive tools. Creating a worksheet with selected formative assessment tools.
12. Creating preparation for a lesson with a 5E learning cycle.

**Recommended literature:**

HAZZAN, Orit, Tami LAPIDOT and Noa RAGONIS, 2011. Guide to teaching computer science: an activity-based approach. New York: Springer. ISBN 9780857294425.
LAU, William, 2017. Teaching Computing in Secondary Schools: A Practical Handbook [online]. Taylor & Francis Group, 211 p. [cited 2021-7-10]. ISBN 9781315298191. Available from: https://ebookcentral.proquest.com/lib/upjs-ebooks/detail.action?docID=5056529
ČAPEK, Robert, 2015. Moderní didaktika: lexikon výukových a hodnoticích metod. Praha: Grada. Pedagogika (Grada). ISBN 978-80-247-3450-7.
LUKÁČ, Stanislav, Ľubomír ŠNAJDER, Ján GUNIŠ and Zuzana JEŠKOVÁ, 2016. Bádateľsky orientované vyučovanie matematiky a informatiky na stredných školách [online]. Košice: Prírodovedecká fakulta UPJŠ v Košiciach [cited 2021-7-10]. ISBN 978-80-8152-471-4. Available from: https://unibook.upjs.sk/img/cms/2016/pf/bov.pdf
SPENDLOVE, David, 2015. 100 Ideas for Secondary Teachers: Assessment for Learning [online]. Bloomsbury Publishing, 129 p. [cited 2021-7-9]. ISBN 9781472911018. Available from:: https://ebookcentral.proquest.com/lib/upjs-ebooks/detail.action?docID=1990785
GANAJOVÁ, Mária, Beáta BRESTENSKÁ, Ján GUNIŠ, et al., 2021. Formatívne hodnotenie vo výučbe prírodných vied, matematiky a informatiky. Košice: Univerzita Pavla Jozefa Šafárika v Košiciach. ISBN 978-80-8152-973-3.
GUNIŠ, Ján, Miloslava SUDOLSKÁ and Ľubomír ŠNAJDER, 2009. Ďalšie vzdelávanie učiteľov základných a stredných škôl v predmete informatika: Aktivizujúce metódy vo výučbe školskej informatiky. Bratislava: Štátny pedagogický ústav, 40 p. ISBN 978-80-89225-96-5. Also available from: https://www.statpedu.sk/files/sk/o-organizacii/projekty/projekt-dvui/publikacie/aktivizujuce_metody.pdf

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

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

**Course assessment**
Total number of assessed students: 80

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 30.0 | 18.75 | 20.0 | 18.75 | 11.25 | 1.25 |

**Provides:** doc. RNDr. Ľubomír Šnajder, PhD., PaedDr. Ján Guniš, PhD., univerzitný docent

**Date of last modification:** 01.08.2021

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

**COURSE INFORMATION LETTER**

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚINF/ DIN1b/15 | **Course name:** Didactics of informatics |

**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:** II.

**Prerequisities:**

**Conditions for course completion:**
Conditions for ongoing evaluation:
1. Creation of an interactive educational aid.
2. Microteaching with a sample solution of an algorithmic problem.
3. Assessment of administered didactic test.
4. Creation of an assignment and a commented author's solution of the STEAM task for the PALMA junior competition, correction, and assessment of student solutions.
Conditions for the final evaluation:
1. Elaboration of a final paper focused on the conceptual process, creation of assignments with various didactic functions, naming misconceptions, and assessment of learning outcomes of selected topics of school informatics.
2. Presentation of own teacher's portfolio with discussion.
Conditions for successful completion of the course:
Obtaining at least 50% of points for ongoing and final assignments.

**Learning outcomes:**
After completing this course, students are able to:
a) select and explain essential concepts for a selected topic of school informatics,
b) create and present an assignment and a sample solution to an algorithmic problem,
c) analyze and assess students' assignments and identify their misconceptions,
d) design and discuss the methodology of teaching a selected topic of school informatics, which includes its own interactive teaching aid,
e) complete your own teaching portfolio.

**Brief outline of the course:**
1. Assessment of students' learning outcomes in school informatics. Didactic tests.
2. Assessment of student projects. Student portfolio.
3. Conceptual process in school informatics.
4. Informatics concepts in informatics competitions (iBobor).
5. Informatics concepts in activities outside the computer (Computer Science Unplugged).
6. Methodology of teaching selected topics in the field of Representation and tools (coding, compression).

7. Methodology of teaching selected topics in the field of Representation and tools (encryption, steganography).
8. Methodology of teaching selected topics in the field of Representation and tools (data analysis and visualization).
9. Methodology of teaching selected topics in the field of Communication and Cooperation (communication and collaboration tools).
10. Methodology of teaching selected topics in the field of hardware and software (kits with sensors and actuators).
11. Methodology of teaching selected topics in the field of Information Society (information security and cybersecurity).
12. Completion of the portfolio of an informatics teacher (thematic plan, preparations from teaching self-reflection of student, worksheet with formative assessment tools, interactive educational aid, sample solution of an algorithmic problem, maturita assignment, system of tasks with increasing difficulty, assessment of an administered didactic test).

**Recommended literature:**

HAZZAN, Orit, Tami LAPIDOT and Noa RAGONIS, 2011. Guide to teaching computer science: an activity-based approach. New York: Springer. ISBN 9780857294425.
LAU, William, 2017. Teaching Computing in Secondary Schools: A Practical Handbook [online]. Taylor & Francis Group, 211 p. [cited 2021-7-10]. ISBN 9781315298191. Available from: https://ebookcentral.proquest.com/lib/upjs-ebooks/detail.action?docID=5056529
COMPUTER SCIENCE EDUCATION RESEARCH GROUP AT THE UNIVERSITY OF CANTERBURY, NEW ZEALAND. Computer Science Field Guide: An online interactive resource for high school students learning about computer science [online]. [cited 2021-7-10]. Available from: https://www.csfieldguide.org.nz/en/
COMPUTER SCIENCE EDUCATION RESEARCH GROUP AT THE UNIVERSITY OF CANTERBURY, NEW ZEALAND. Computer Science without a computer [online]. [cited 2021-7-10]. Available from: https://csunplugged.org/en/
QUEEN MARY, UNIVERSITY OF LONDON. Computer Science For Fun: A magazine where the digital world meets the real world [online]. [cited 2021-7-10]. Available from: http://www.cs4fn.org/
GUNIŠ, Ján and Ľubomír ŠNAJDER, 2009. Ďalšie vzdelávanie učiteľov základných škôl a stredných škôl v predmete informatika: Tvorba úloh a hodnotenie žiakov v predmete informatika. Bratislava: Štátny pedagogický ústav, 40 p. ISBN 978-80-8118-012-5. Also available from: https://www.statpedu.sk/files/sk/o-organizacii/projekty/projekt-dvui/publikacie/tvorba_uloh_a_hodnotenie.pdf
GUNIŠ, Ján and Ľubomír ŠNAJDER, 2010. Ďalšie vzdelávanie učiteľov základných škôl a stredných škôl v predmete informatika: Metodika výučby tematickej oblasti Informácie okolo nás. Bratislava: Štátny pedagogický ústav, 40 p. ISBN 978-80-8118-030-9. Also available from: https://www.statpedu.sk/files/sk/o-organizacii/projekty/projekt-dvui/publikacie/metodika_informacie_okolo_nas.pdf
GUNIŠ, Ján and Ľubomír ŠNAJDER, 2010. Ďalšie vzdelávanie učiteľov základných škôl a stredných škôl v predmete informatika: Metodika výučby tematickej oblasti Komunikácia prostredníctvom IKT. Bratislava: Štátny pedagogický ústav, 32 p. ISBN 978–80–8118–036-1. Also available from: https://www.statpedu.sk/files/sk/o-organizacii/projekty/projekt-dvui/publikacie/metodika_komunikacia_prostrednictvom_ikt.pdf
GUNIŠ, Ján and Ľubomír ŠNAJDER. Ďalšie vzdelávanie učiteľov základných škôl a stredných škôl v predmete informatika: Metodika výučby oblastí Princípy fungovania IKT a Informačná spoločnosť. Bratislava: Štátny pedagogický ústav, 32 p. ISBN 978–80–8118–045-3. Also

available from: https://www.statpedu.sk/files/sk/o-organizacii/projekty/projekt-dvui/publikacie/metodika_informacna_spolocnost.pdf

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

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

**Course assessment**
Total number of assessed students: 158

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 18.99 | 32.91 | 23.42 | 15.82 | 8.23 | 0.63 |

**Provides:** doc. RNDr. Ľubomír Šnajder, PhD., PaedDr. Ján Guniš, PhD., univerzitný docent

**Date of last modification:** 01.08.2021

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** ÚMV/ DDMa/22 | **Course name:** Didactics of mathematics I |
|---|---|

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

**Number of ECTS credits:** 2

**Recommended semester/trimester of the course:** 1.

**Course level:** II.

**Prerequisities:**

**Conditions for course completion:**
Active participation - 40% of assessment
Seminar works - 60% of assessment

**Learning outcomes:**
The student understands the term function and its various aspects also in the context of different definitions of the term function. He looks critically at the school curriculum from the point of view of the development of the concept of function. It characterizes high-quality formative assessment and can react differently to correct and incorrect student solutions. He applies the acquired knowledge in the design of the lesson plan. He knows the MTSK model and knows how to use it as a tool for his self-reflection.

**Brief outline of the course:**
The concept of function in mathematics, its aspects, and definitions. The concept of function in the school curriculum, knowledge of the structure of mathematics with respect to the concept of function. Proximal formative assessment, knowledge of the characteristics of learning mathematics. Instrumented formative assessment with a focus on the use of digital technologies for assessment in mathematics. Selection of tasks and digital tools for teaching functions. MTSK model as a tool for teacher self-reflection.

**Recommended literature:**
Slovak and Czech mathematics textbooks for secondary education. National mathematics curriculum of Slovakia, Czech republic and USA.

**Course language:**
Slovak

**Notes:**

**Course assessment**
Total number of assessed students: 123

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 47.15 | 34.15 | 11.38 | 4.07 | 3.25 | 0.0 |

| |
|---|
| **Provides:** RNDr. Veronika Hubeňáková, PhD. |
| **Date of last modification:** 26.08.2022 |
| **Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD. |

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** ÚMV/ DDMb/22 | **Course name:** Didactics of 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:** 2.

**Course level:** II.

**Prerequisities:** ÚMV/DDMa/22

**Conditions for course completion:**
Conditions for continuous evaluation:
1. Participation in teaching in accordance with the study rules and instructions of the teacher.
2. Activity at seminars.
3. Homework and continuous written tests.
4. Seminar work - creation of an output didactic test
Conditions for successful completion of the course:
1. Participation in teaching in accordance with the study regulations and according to the instructions of the teacher;
2. Credits will be awarded to a student who obtains at least 50% of points from homework, at least 50% of points
from written tests, at least 50% of points from the seminar work and at least 50% from the oral exam.
3. Continuous assessment - 60% of the total assessment, oral exam - 40% of the overall assessment
At least 90% of points must be obtained to obtain an A rating, at least 80% to obtain a B rating, at least 70% to obtain a C rating, at least 60% to obtain a D rating, and at least 50% points to obtain an E rating.

**Learning outcomes:**
Students will learn the basic principles of teaching mathematics in secondary and primary schools, strategies for solving problems, creating problem systems, logical-didactic analysis of the curriculum and creating didactic tests. At the same time, they will demonstrate the ability to prepare for teaching specific topics with priority in primary school.

**Brief outline of the course:**
1. Subject of Didactics of Mathematics, the development of mathematics and mathematics education.
2. Aims and objectives of mathematics teaching
3. Planning in mathematics teaching Logical and didactical curriculum analysis Determination of learning objectives
4. - 5. Didactical principles, methods of mathematics teaching
6. - 7. Assessment of learning outcomes, the creation of didactic tests
8. Mathematical problems

9. - 10. Construction numeric fields,
11. Theory of elementary functions,
12. - 13. Synthetic and analytic geometry

**Recommended literature:**

[1] M.Hejný a kol.: Teorie vyučovania matematiky, SPN Blava 1989, (in slovak)
[2] L.Frantíková,K.Hončarivová,O.Kopanev: Didaktika matematiky, UPJŠ 1982 (in slovak)
[3] R.Fischer,G.Malle: Človek a matematika, SPN Bratislava 1992 (in slovak)
[4] Polya, G.: How to solve it, Princeton University Press, 1957.
[5] Hejný, M., Kuřina, F.: Dítě, škola a matematika: Konstruktivistické přístupy k vyučování. Portál, Praha 2001. (in czech)
[5] Textbooks and collections of assignments for secondary and primary schools

**Course language:**
Slovak

**Notes:**

**Course assessment**
Total number of assessed students: 133

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 36.09 | 31.58 | 21.05 | 8.27 | 3.01 | 0.0 |

**Provides:** doc. RNDr. Dušan Šveda, CSc.

**Date of last modification:** 05.05.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

**COURSE INFORMATION LETTER**

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚMV/ DDMc/22 | **Course name:** Didactics of 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:** 3.

**Course level:** II.

**Prerequisities:** ÚMV/DDMb/22

**Conditions for course completion:**
Conditions for continuous evaluation:
1. Participation in teaching in accordance with the study rules and instructions of the teacher.
2. Activity.
3. Homework and written tests.
4. Seminar work and its presentation at the seminar - lesson plan on the selected topic
Conditions for successful completion of the course:
1. Participation in teaching in accordance with the study regulations and according to the instructions of the teacher;
2. Credits will be awarded to a student who scores at least 50% on homework assignments, at least 50% on written tests, and at least 50% on a seminar work. A grade of A requires at least 90%, a grade of B requires at least 80%, a grade of C requires at least 70%, a grade of D requires at least 60%, and a grade of E requires at least 50%.

**Learning outcomes:**
The student demonstrates a shift in students' cognitive understanding specifically by orienting to some familiar general student problems (e.g., distinguishing between sentences and definitions) and to specific problems in some areas of mathematics (e.g., incorrect use of the equals sign) when solving a homework assignment.
While solving problems on written tests, the student will show that he or she has a conceptual understanding of mathematical concepts, properties and methods from school mathematics and is familiar with some standard and nonstandard procedures that students use when learning mathematics.
When presenting the seminar work, the student demonstrates that he/she is aware of the potential of the chosen topic, the necessary input knowledge of the pupils and the connections within the topic and with other topics, and has developed the objectives of the lesson properly. Furthermore, he/she demonstrates that he/she is aware of the possibilities of the proposed activities, teaching methods, selected tasks (what are their weaknesses and strengths). Demonstrates that he/she reflects on the response to a pupil's mistake in order to help him/her in his/her learning.

**Brief outline of the course:**

The content is based on current research findings related to mathematics teacher's specialised knowledge model. We focus mainly on pedagogical content knowledge, specifically knowledge of features of learning mathematics, knowledge of mathematics teaching, and knowledge of mathematics learning standards.
This knowledge is developed in the context of the five essential topics:
- Numbers, variables and numerical operations with numbers
- Relationships, functions, tables, diagrams
- Geometry and measurement
- Combinatorics, probability, statistics
- Logic, reasoning, proofs.
Within these essential topics we deal with the cognitive process of students, different representations of mathematical concepts, students' difficulties and their possible causes, teaching mathematical proofs, developing students' creativity, ways of motivating pupils, and also some didactical theories, such as Van Hiele's theory of geometric thinking. In each topic area we focus on critical points in terms of students' learning and the teaching of mathematics, preferably in secondary school.

**Recommended literature:**

[1] M.Hejný a kol. Teória vyučovania matematiky. Bratislava: SPN, 1989.
[2] Hejný, M.; Kuřina, F. Dítě, škola a matematika: konstruktivistické přístupy k vyučování. Praha: Portál, 2001.
[3] Hejný, M.; Novotná, J.; Stehlíková, N. Dvacet pět kapitol z didaktiky matematiky. Praha: PedF UK, 2004.
[4] Fischer, R.; Malle, G. Člověk a matematika, Bratislava: SPN, 1992.
[5] Vondrová Naďa a kol. Kritická místa matematiky základní školy v řešení žáků. Praha: Karolinum, 2016.
[6] Textbooks and collections of problems and taks for secondary and middle school.

**Course language:**
Slovak

**Notes:**

**Course assessment**
Total number of assessed students: 125

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 59.2 | 14.4 | 16.0 | 5.6 | 4.0 | 0.8 |

**Provides:** doc. RNDr. Ingrid Semanišinová, PhD.

**Date of last modification:** 14.04.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** ÚINF/ DPRG/19 | **Course name:** Didactics of programming |
|---|---|

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

**Number of ECTS credits:** 4

**Recommended semester/trimester of the course:** 2.

**Course level:** II.

**Prerequisities:**

**Conditions for course completion:**
Conditions for ongoing evaluation:
1. Creation of an assignment and an commented author's solution of a task using several problem-solving strategies.
2. Proposal of a pair of maturita assignments with solutions and methodological comments.
3. Creation of an assignment and an commented author's solution of the STEAM task for the PALMA junior competition, correction and evaluation of student solutions.
Conditions for the final evaluation:
1. Creation and presentation of the final project with a collection of solved and commented tasks for a selected topic of programming in Python.
2. Elaboration of a final test focused on the elaboration of sample and commented solutions to given problems in Python and Scratch languages.
Conditions for successful completion of the course:
Obtaining at least 50% of points for ongoing and final assignments.

**Learning outcomes:**
After completing this course, students are able to:
a) define specific educational objectives for a selected topic of programming,
b) create assignments and sample solutions for STEAM tasks using various problem-solving strategies,
c) analyze and evaluate solutions to student tasks and identify their misconceptions,
d) design a methodology for teaching a selected programming topic.

**Brief outline of the course:**
1. Educational standards in programming in secondary and primary schools. Graduation in informatics.
2. Programming competitions.
3. Algorithmic thinking. Algorithmic games.
4. Computational thinking. Problem solving strategies.
5. Data structures around us, algorithms over data structures.
6. Teaching selected algorithms and problem solving strategies (recursion).
7. Basic concepts and misconceptions of programming.

8. Teaching programming in Scratch.
9. Teaching programming in AppInventor.
10. Teaching programming in Python.
11. Programming of mathematical models of selected phenomena/systems.
12. Specifics of computer arithmetic.

**Recommended literature:**

BEECHER, Karl, 2017. Computational thinking: A beginner's guide to problem-solving and programming. © BCS Learning & Development, 308 p. ISBN 978-1-78017-36-41.
COMPUTING AT SCHOOL. Computational Thinking Concepts and Approaches Barefoot [online]. [cited 2021-7-12]. Available from: https://www.barefootcomputing.org/concept-approaches/computational-thinking-concepts-and-approaches
FINCHER, Sally and Marian PETRE, 2004. Computer science education research. New York: Taylor & Francis. ISBN 9789026519697.
GUTSCHANK, Jörg et al. 2019. coding in STEM Education [online]. Berlin: Science on Stage Deutschland e.V., 76 p. [cited 2021-7-10]. ISBN 978-3-942524-58-2. Available from: https://www.science-on-stage.eu/sites/default/files/material/coding_in_stem_education_en_2nd_edition.pdf
BRIGGS, Jason R., 2013. Python for kids: a playful introduction to programming. San Francisco: No Starch Press. ISBN 1593274076.
BLAHO, Andrej, 2016. Programovanie v Pythone 1 (prednášky k predmetu Programovanie (1) 1-AIN-130/13) [online]. Bratislava: Knižničné a edičné centrum FMFI UK, 322 p. [cited 2021-7-10]. ISBN 978-80-8147-067-7. Available from: http://python.input.sk/
ŠNAJDER, Ľubomír and Ján GUNIŠ, 2014. Tvorba úloh pre programátorské súťaže [online]. 1. Košice: Prírodovedecká fakulta UPJŠ v Košiciach, 79 p. [cited 2021-7-10]. ISBN 978-80-8152-139-3. Available from: https://unibook.upjs.sk/img/cms/2014/pf/tvorba-uloh-pre-prog-sutaze.pdf
GUNIŠ, Ján and Ľubomír ŠNAJDER, 2021. Programovanie v Pythone 1. Košice: Prírodovedecká fakulta UPJŠ v Košiciach, 170 p. ISBN 978-80-8152-969-6. Also available from: https://unibook.upjs.sk/img/cms/2021/pf/programovanie-v-pythone-1.pdf
GUNIŠ, Ján, Viera MICHALIČKOVÁ, Martin CÁPAY and Ľubomír ŠNAJDER, 2020. Riešenie problémov a programovanie [online]. Bratislava: Centrum vedecko-technických informácií SR [cited 2021-7-10]. ISBN 9788089965625. Available from: https://registracia.itakademia.sk/media/themes/nip-rpp.pdf
ŠNAJDER, Ľubomír, Gabriela LOVÁSZOVÁ, Viera MICHALIČKOVÁ and Ján GUNIŠ, 2020. Programovanie mobilných zariadení [online]. Bratislava: Centrum vedecko-technických informácií SR, 300 p. [cited 2020-11-30]. ISBN 978-80-89965-63-2. Available from: https://registracia.itakademia.sk/media/themes/nip-pmz.pdf

**Course language:**

Slovak and partly English due to selected programs and information sources

**Notes:**

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

**Course assessment**

Total number of assessed students: 149

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 14.77 | 33.56 | 22.15 | 14.09 | 12.08 | 3.36 |

| |
|---|
| **Provides:** doc. RNDr. Ľubomír Šnajder, PhD. |
| **Date of last modification:** 03.08.2021 |
| **Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD. |

## COURSE INFORMATION LETTER

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚINF/ DPP2/14 | **Course name:** Diploma Project II |
| **Course type, scope and the method:**<br>**Course type:**<br>**Recommended course-load (hours):**<br>**Per week: Per study period:**<br>**Course method:** present | |
| **Number of ECTS credits:** 2 | |
| **Recommended semester/trimester of the course:** 2. | |
| **Course level:** II. | |
| **Prerequisities:** | |
| **Conditions for course completion:** | |
| **Learning outcomes:** | |
| **Brief outline of the course:** | |
| **Recommended literature:** | |
| **Course language:** | |
| **Notes:** | |
| **Course assessment**<br>Total number of assessed students: 15 | |

| abs | n |
|---|---|
| 100.0 | 0.0 |

| |
|---|
| **Provides:** |
| **Date of last modification:** |
| **Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD. |

## COURSE INFORMATION LETTER

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|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚINF/ DPP3/14 | **Course name:** Diploma Project III |
| **Course type, scope and the method:**<br>**Course type:**<br>**Recommended course-load (hours):**<br>**Per week: Per study period:**<br>**Course method:** present | |
| **Number of ECTS credits:** 2 | |
| **Recommended semester/trimester of the course:** 3. | |
| **Course level:** II. | |
| **Prerequisities:** | |
| **Conditions for course completion:** | |
| **Learning outcomes:** | |
| **Brief outline of the course:** | |
| **Recommended literature:** | |
| **Course language:** | |
| **Notes:** | |
| **Course assessment**<br>Total number of assessed students: 9 | |

| abs | n |
|---|---|
| 100.0 | 0.0 |

| |
|---|
| **Provides:** |
| **Date of last modification:** |
| **Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD. |

## COURSE INFORMATION LETTER

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|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚMV/ DPP2a/22 | **Course name:** Diploma project I |
| **Course type, scope and the method:**<br>**Course type:**<br>**Recommended course-load (hours):**<br>**Per week: Per study period:**<br>**Course method:** present | |
| **Number of ECTS credits:** 1 | |
| **Recommended semester/trimester of the course:** 1. | |
| **Course level:** II. | |
| **Prerequisities:** | |
| **Conditions for course completion:** | |
| **Learning outcomes:** | |
| **Brief outline of the course:** | |
| **Recommended literature:** | |
| **Course language:** | |
| **Notes:** | |
| **Course assessment**<br>Total number of assessed students: 14 | |

| abs | n |
|---|---|
| 100.0 | 0.0 |

| |
|---|
| **Provides:** |
| **Date of last modification:** 24.08.2022 |
| **Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD. |

## COURSE INFORMATION LETTER

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|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚMV/ DPP2b/22 | **Course name:** Diploma project II |
| **Course type, scope and the method:**<br>**Course type:**<br>**Recommended course-load (hours):**<br>**Per week: Per study period:**<br>**Course method:** present | |
| **Number of ECTS credits:** 1 | |
| **Recommended semester/trimester of the course:** 2. | |
| **Course level:** II. | |
| **Prerequisities:** | |
| **Conditions for course completion:** | |
| **Learning outcomes:** | |
| **Brief outline of the course:** | |
| **Recommended literature:** | |
| **Course language:** | |
| **Notes:** | |
| **Course assessment**<br>Total number of assessed students: 14 | |

| abs | n |
|---|---|
| 100.0 | 0.0 |

| |
|---|
| **Provides:** |
| **Date of last modification:** 24.08.2022 |
| **Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD. |

## COURSE INFORMATION LETTER

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|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚMV/ DPP2c/22 | **Course name:** Diploma project III |
| **Course type, scope and the method:**<br>**Course type:**<br>**Recommended course-load (hours):**<br>**Per week: Per study period:**<br>**Course method:** present | |
| **Number of ECTS credits:** 1 | |
| **Recommended semester/trimester of the course:** 3. | |
| **Course level:** II. | |
| **Prerequisities:** | |
| **Conditions for course completion:** | |
| **Learning outcomes:** | |
| **Brief outline of the course:** | |
| **Recommended literature:** | |
| **Course language:** | |
| **Notes:** | |
| **Course assessment**<br>Total number of assessed students: 15 | |
| abs | n |
| 100.0 | 0.0 |
| **Provides:** | |
| **Date of last modification:** 24.08.2022 | |
| **Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD. | |

## COURSE INFORMATION LETTER

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|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚMV/ DPP2d/22 | **Course name:** Diploma project IV |
| **Course type, scope and the method:**<br>**Course type:**<br>**Recommended course-load (hours):**<br>**Per week: Per study period:**<br>**Course method:** present | |
| **Number of ECTS credits:** 2 | |
| **Recommended semester/trimester of the course:** 4. | |
| **Course level:** II. | |
| **Prerequisities:** | |
| **Conditions for course completion:** | |
| **Learning outcomes:** | |
| **Brief outline of the course:** | |
| **Recommended literature:** | |
| **Course language:** | |
| **Notes:** | |
| **Course assessment**<br>Total number of assessed students: 14 | |

| abs | n |
|---|---|
| 100.0 | 0.0 |

| |
|---|
| **Provides:** |
| **Date of last modification:** 24.08.2022 |
| **Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD. |

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** KPPaPZ/PUDU/15 | **Course name:** Drug Addiction Prevention in Educational Practice |
|---|---|

**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:** II.

**Prerequisities:**

**Conditions for course completion:**
1st part of the semester evaluation: active participation in the training part (30p). 2nd part of the semester evaluation: active participation in workshops (20p) 3rd part of the semester evaluation - preparation (10p) and implementation (10p) of block activities (20p, minimum 11 points). 4th part of the evaluation - written knowledge exam (20p, minimum 11 points). In total, students can get 90p and the final grade is as follows: 90 - 82: A 81 - 73: B 72 - 66: C 65 - 59: D 58 - 54: E 53 and less: FX. Detailed information in the electronic bulletin board of the course in AIS2. The teaching of the subject will be realized by a combined method.

**Learning outcomes:**
The student understands principals of research data based prevention of risk behavior, can describe and explain the determinants of risk behavior as well as protective and risk factors for substance use. Understands and adequately interprets the theory explaining the background of substance and non-substance addictions.
The student is also able to state and classify the types and forms of prevention, strategies and approaches in prevention, can distinguish effective strategies from ineffective ones.
The student is able to apply the learned rules, procedures and competencies for the work of a teacher in the field of drug use prevention, as well as the acquired professional skills for the work of a teacher and prevention coordinator at school.

**Brief outline of the course:**
Psychological, pedagogical-psychological, medical and legal-forensic aspects of substance use prevention
Prevention of substance use based on risk and resilience
Primary, secondary and tertiary prevention of substance use
Universal, selective and indicated prevention of substance use
Effective substance prevention strategies based on research data
Preparation and implementation of components of effective substance use prevention programs

**Recommended literature:**
Orosová, O. a kol. (2012). Základy prevencie užívania drog a problematického používania internetu v školskej praxi. Košice: UPJŠ.

Sloboda, Z., & Bukoski, J. (Eds.). (2006). Handbook of Drug Abuse Prevention: Theory, Science, and Practice. New York: Springer.
National and international scientific journals.

**Course language:**
slovak

**Notes:**

**Course assessment**
Total number of assessed students: 420

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 50.71 | 41.43 | 7.14 | 0.71 | 0.0 | 0.0 |

**Provides:** prof. PhDr. Oľga Orosová, CSc., Mgr. Viera Čurová, PhD., Mgr. Janka Liptáková, PhDr. Anna Janovská, PhD., Mgr. Zuzana Michalove

**Date of last modification:** 24.06.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

**COURSE INFORMATION LETTER**

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚMV/ DGE/22 | **Course name:** Dynamic geometry |

**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:** 3.

**Course level:** II.

**Prerequisities:**

**Conditions for course completion:**
Master the concept of dynamic geometric systems and commands for creating and modifying dynamic constructions. To be able to use dynamic geometric systems in the study of the properties of geometric shapes and the discovery of geometric patterns. To be able to effectively use the commands of dynamic geometric systems for modeling various situations, solving geometric problems, exploring geometric transformations, exploring graphs of functions, data processing.
Rating:
Test requiring the solution of geometric problems using classical tools and the use of a dynamic geometric system - 16 b.
Elaboration of a project focused on the use of a dynamic geometric system in solving geometric problems on a selected topic - 16 b.
Classification scale:
A: 91 % - 100 %, B: 81 % - 90 %, C: 71 % - 80 %, D: 61 % - 70 %, E: 51 % - 60 %, FX: 0 % - 50 %.

**Learning outcomes:**
Skills to create dynamic constructions in a dynamic geometric system and to use commands usable in solving geometric problems. Knowledge and skills to effectively use geometric, algebraic and other types of tools in experimenting with geometric objects and their attributes, in discovering invariant properties of geometric shapes and geometric relationships between objects in triangles, quadrilaterals, conic sections and in basic types of spatial bodies. Be able to use geometric transformations in solving more complex constructing tasks.

**Brief outline of the course:**
1.-4. Constructions and investigation of properties and geometric relations in triangles, quadrilaterals, circles and their use in solving construction problems. Menelaos's theorem, Ceva's theorem, Varignon's theorem, Ptolemy's theorem, cyclic and tangential quadrilaterals, center of gravity of triangles and quadrilaterals.
5. Investigation of sets of points with a given property.
6. Discovering and testing geometric relationships.
7. Composing congruent transformations. Use of congruent and similar transformations and circular inversion for solving tasks.

8. Mathematical modeling, investigation of functional dependencies between quantities, solving problems to find extremes.
9.-10. Constructions of bodies, mutual positions of geometric shapes in space, sections of bodies, intersection of a line with a body.

**Recommended literature:**

Vaníček, J.: Počítačové kognitivní technologie ve výuce geometrie, Pedagogická fakulta Univerzity Karlovy, 2009
Stahl, G.: Dynamic-Geometry activities with GeoGebra for Virtual Math Teams, The Math Forum at Drexel University, 2012.
De Villiers, M., D.: Rethinking proof with the Geometer's Sketchpad. Key Curriculum Press, 2003.

**Course language:**
Slovak

**Notes:**

**Course assessment**
Total number of assessed students: 66

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 54.55 | 24.24 | 16.67 | 4.55 | 0.0 | 0.0 |

**Provides:** doc. RNDr. Stanislav Lukáč, PhD.

**Date of last modification:** 19.04.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** KPPaPZ/VP/09 | **Course name:** Educational Counselling |
|---|---|

**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:** 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: 233

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 73.82 | 16.31 | 6.44 | 2.58 | 0.86 | 0.0 |

**Provides:** PhDr. Anna Janovská, PhD.

**Date of last modification:** 14.09.2024

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** KPE/ ZSP/15 | **Course name:** Essentials of Special Education |
|---|---|

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

**Number of ECTS credits:** 2

**Recommended semester/trimester of the course:** 3.

**Course level:** 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: 702

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 55.98 | 24.22 | 11.11 | 5.13 | 2.85 | 0.71 |

**Provides:** PaedDr. Michal Novocký, PhD.

**Date of last modification:** 14.09.2024

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** KPE/ ZZP/12 | **Course name:** Experiential Education |
|---|---|

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

**Number of ECTS credits:** 4

**Recommended semester/trimester of the course:** 1., 3.

**Course level:** 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: 410

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 44.63 | 37.8 | 13.66 | 3.66 | 0.24 | 0.0 |

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

**Date of last modification:** 14.09.2024

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

**COURSE INFORMATION LETTER**

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚINF/ FO1/15 | **Course name:** Formal languages and automata |

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

**Number of ECTS credits:** 5

**Recommended semester/trimester of the course:** 1., 3.

**Course level:** II.

**Prerequisities:**

**Conditions for course completion:**
Test and 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:**
1: Pushdown automata: definition of a pushdown automaton, accepting by final states, accepting by empty pushdown
2: Deterministic pushdown automata: examples of application in practice
3: Context-free grammars: basic definition, leftmost derivation, derivation tree, elimination of rules of type A→epsilon and A→B, Chomsky normal form
4: Relation between context-free grammars and pushdown automata: transforming context-free grammar to a pushdown automaton, transforming pushdown automaton to a context-free grammar
5: Pumping lemma I: Statement of the lemma and its proof
6: Pumping lemma II: applications of the lemma
7: Closure properties of context-free languages
8: Closure properties of deterministic context-free languages
9: Pushdown automata producing an output: basic definitions and properties, applications in practice
10: Context-sensitive languages: context-sensitive grammar, nondeterministic linear-bounded Turing machine (LBA), transforming context-sensitive grammar to an LBA, transforming LBA to a context-sensitive grammar
11: Closure properties of context-sensitive languages
12: Recursively enumerable languages: phrase-structure grammar, nondeterministic and deterministic Turing machine, transforming nondeterministic Turing machine to a phrase-structure grammar, transforming phrase-structure grammar to a deterministic Turing machine, closure properties
13: Universal Turing machine
14: Algorithmically undecidable problems of the formal language theory

**Recommended literature:**

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

**Course language:**
Slovak or English

**Notes:**
Content prerequisities:
1. Basic mathematical background (proof by contradicion and by mathematical induction), basic notions from the set theory (union, intersection, complement, cartesian product).
2. Basic knowledge about finite state automata and regular languages.

**Course assessment**
Total number of assessed students: 13

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 38.46 | 38.46 | 15.38 | 7.69 | 0.0 | 0.0 |

**Provides:** prof. RNDr. Viliam Geffert, DrSc., RNDr. Juraj Šebej, PhD.

**Date of last modification:** 23.11.2021

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** ÚINF/ ZNA1/21 | **Course name:** Foundations of knowledge systems |
|---|---|

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

**Number of ECTS credits:** 4

**Recommended semester/trimester of the course:** 2.

**Course level:** II.

**Prerequisities:**

**Conditions for course completion:**
Test of theoretical knowledge in the middle of the semester.
Written and oral exam.

**Learning outcomes:**
The goal is to teach students some advanced applications of logic, fuzzy logic and basic clustering methods, especially in database and knowledge systems.

**Brief outline of the course:**
1. basic notions of Ordered sets and Formal concept analysis, motivation example
2. closure operator, closure system, Galois conection and concept lattice, example
3. basic notions of fuzzy logic, one-sided and fuzzy formal concept analysis
4. basic algorithms of Formal concept analysis
5. optimal decomposition of formal context, optimal factors, algorithms, example
6. intercontextual structures, bonds, direct products and selection of best bonds, relationship with factorisation
7. aplications on real data

**Recommended literature:**
1. Bělohlávek, R. (2002). Fuzzy Relational Systems: Foundations and Principles. New York: Kluwer Academic/Plenum Publishers.
2. Carpineto, C., & Romano, G. (2004). Concept Data Analysis: Theory and Applications. Hoboken, NJ: John Wiley & Sons, Inc.
3. Ganter, B., & Wille, R. (1999). Formal Concept Analysis: Mathematical Foundations. Berlin: Springer.
4. Guniš, J., Šnajder, L., Antoni, L., Eliaš, P., Krídlo, O., & Krajči, S. (2024). Formal Concept Analysis of Students' Solutions on Computational Thinking Game. IEEE Transactions on Education. doi:10.1109/TE.2024.3442612.
5. Krídlo, O., Antoni, Ľ., & Krajči, S. (2022). Selection of appropriate bonds between L-fuzzy formal contexts for recommendation tasks. Information Sciences, 606, 21-37. ISSN 0020-0255. https://doi.org/10.1016/j.ins.2022.05.047.

6. Krídlo, O., López-Rodríguez, D., Antoni, Ľ., Eliaš, P., Krajči, S., & Ojeda-Aciego, M. (2023). Connecting concept lattices with bonds induced by external information. Information Sciences, 648, 119498. ISSN 0020-0255. https://doi.org/10.1016/j.ins.2023.119498.
7. Pitka, T., Bucko, Ľ., Šnajder, L., et al. (2024). Time analysis of online consumer behavior by decision trees, GUHA association rules, and formal concept analysis. Journal of Marketing Analytics. https://doi.org/10.1057/s41270-023-00274-y.

**Course language:**
Slovak or English

**Notes:**
content prerequisites: basics of logic, introduction to computer science

**Course assessment**
Total number of assessed students: 99

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 53.54 | 4.04 | 19.19 | 8.08 | 12.12 | 3.03 |

**Provides:** doc. RNDr. Ondrej Krídlo, PhD.

**Date of last modification:** 03.11.2024

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** ÚMV/ GEO2a/22 | **Course name:** Geometry I |
|---|---|

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

**Number of ECTS credits:** 3

**Recommended semester/trimester of the course:** 2.

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

**Prerequisities:**

**Conditions for course completion:**
In the covered areas of geometry, the ability to formulate definitions and statements, to present proofs of statements, to explain individual steps in proofs and to solve selected problems related to given topics is required. Evaluation: A ... at least 90%, B ... at least 80%, C ... at least 70%, D ... at least 60%, E ... at least 50%, FX ... less than 50%

**Learning outcomes:**
Acquired knowledge about the axiom system of Euclidean geometry, about the validity of the basic tools of planimetry, about sets of points of a given property, about congruence transformations and homothety in the plane, about important points, lines and circles in triangles and about quadrilaterals and their properties. The ability to use the above knowledges and tools to solve problems on this area. A new look at classical geometric results.

**Brief outline of the course:**
- (week 1-3) Hilbert's axiom system (axioms, triangle congruence theorems, pairs of congruent or "complementary" angles, basic proportionality theorem, triangle similarity theorems)
- (week 4-5) Basic tools of planimetry (Euclid's theorem, Pythagorean theorem, Thales' theorem, law of cosines, extended law of sines, central and inscribed angle theorem, area of a triangle)
- (week 6) Point sets of the given property (bisectors, equidistants, Apollonius circle)
- (week 7) Transformations (congruence transformations of the plane, homothety in the plane)
- (week 8-11) Points and lines connected with a triangle (Menelaus's theorem, Ceva's theorem, points of interest, the incircle and excircles, pedal triangles, Euler line, nine-point circle, Simson lines)
- (week 12-13) Quadrangles (Varignon's parallelogram, cyclic quadrangles, Ptolemy's theorem, Brahmagupta's formula)

**Recommended literature:**
1. D. Hilbert, Grundlagen der Geometrie, Teubner, 1968.
2. H.G. Forder, Foundations of Euclidean geometry, Dover Publ., 1958.
3. H.S.M. Coxeter, S.L. Greitzer, Geometry revisited, MAA, 1967.
4. R.A. Johnson, Advanced Euclidean geometry, Dover Publ., 2007.
5. D.A. Brannan, M.F. Esplen, J.J. Gray, Geometry, Cambridge Univ. Press, 2007.

**Course language:**
Slovak

**Notes:**

**Course assessment**
Total number of assessed students: 222

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 19.37 | 18.02 | 28.38 | 13.51 | 16.67 | 4.05 |

**Provides:** RNDr. Igor Fabrici, Dr. rer. nat.

**Date of last modification:** 29.02.2024

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** ÚMV/ GEO2d/22 | **Course name:** Geometry IV |
|---|---|

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

**Number of ECTS credits:** 5

**Recommended semester/trimester of the course:** 1.

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

**Prerequisities:**

**Conditions for course completion:**
In the covered areas of geometry, the ability to formulate definitions and statements, to present proofs of statements, to explain individual steps in proofs and to solve selected problems related to given topics is required. During the semester (continuous assessment) two tests take place, from which 50% of points can be obtained, and from the oral exam alike 50% can be obtained. Evaluation: A ... at least 90%, B ... at least 80%, C ... at least 70%, D ... at least 60%, E ... at least 50%, FX ... less than 50%

**Learning outcomes:**
Acquired knowledge of the properties of affine, isometric and similarity transformations, understanding of important statements and methods, knowledge of the use of isometric and similarity transformations in construction and optimization problems and the ability to solve other problems in this area.

**Brief outline of the course:**
- (week 1-2) Quadric surfaces (circular and general quadric surfaces)
- (week 3-7) Affine transformations (associated transformation, matrix representation, affinities, fixed points and lines, pseudo-reflections)
- (week 8-10) Isometric transformations (matrix representation, isometries, classification in the plane, composiion of reflections)
- (week 11-12) Similarity transformations (matrix representation, similarities, homothety, composition of homotheties)
- (week 13-14) Geometry of circles (the power of a point with respect to a circle, radical axis of two circles, pencils of circles)

**Recommended literature:**
1. M. Sekanina et al, Geometry 2, SPN, 1988 (in slovak).
2. O. Šedivý et al, Geometry 2, SPN, 1987 (in slovak).
3. H.S.M. Coxeter, Introduction to geometry, Wiley, 1989.
4. J.T. Smith, Methods of geometry, Wiley, 2000.

**Course language:**
Slovak

**Notes:**

**Course assessment**
Total number of assessed students: 196

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 15.31 | 15.82 | 24.49 | 19.39 | 18.37 | 6.63 |

**Provides:** RNDr. Igor Fabrici, Dr. rer. nat., RNDr. Daniela Šabaková

**Date of last modification:** 14.04.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** KPPaPZ/PsZ/15 | **Course name:** Health Psychology |
|---|---|

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

**Number of ECTS credits:** 2

**Recommended semester/trimester of the course:** 4.

**Course level:** II.

**Prerequisities:**

**Conditions for course completion:**
Active participation in seminars, preparation and presentation of seminar work, final evaluation

**Learning outcomes:**
The aim of the course is to provide students with the latest knowledge and background of Health Psychology as well as forms of its application in order to improve the mental and physical health of individuals and society. The graduate of the course will understand the principles of health psychology, will be familiar with the current social discourse on the topics covered. The student will learn to use the acquired knowledge in school practice.

**Brief outline of the course:**
1. Health psychology. Definition of health. Bio-psycho-social model of health.
2. Mental health and quality of life, well being.
3. Physiological aspects of mental health, lifestyle
4. Stress. Coping, resilience.
5. Psychosomatic diseases, placebo.
6. Social support and its importance for health.
7. Burnout syndrome.
8. The meaning of life, faith.
9. Health-related behavior and prevention. Risky behavior, excessive use of the Internet and screens.
10. Socio-economic inequalities in health. Unemployment and health.

**Recommended literature:**
Křivohlavý, J.: Psychologie zdraví. Praha: Portál, 2001
Kebza, V.: Psychosociální determinanty zdraví. Praha: Academia, 2005
Křivohlavý, J.: Psychologie nemoci. Praha : Grada, 2002
Sarafino, E.P.: Health Psychology: Biopsychosocial Interactions, John Wiley & Sons, 2007
Taylor, E.: Health Psychology. Singapore: McGraw-Hill, 2006
Vollrath M.E.: Handbook of Personality and Health. Chichester: John Wiley & Sons, 2006

**Course language:**

**Notes:**

**Course assessment**
Total number of assessed students: 122

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

**Provides:** doc. Mgr. Gabriel Baník, PhD.

**Date of last modification:** 22.06.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** ÚINF/ TIK1/22 | **Course name:** Information theory, encoding |
|---|---|

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

**Number of ECTS credits:** 3

**Recommended semester/trimester of the course:** 1.

**Course level:** II.

**Prerequisities:**

**Conditions for course completion:**
Satisfiable knowledge of basic notions

**Learning outcomes:**
To understand principles of lossless coding and entropy and their mutual relationship.

**Brief outline of the course:**
1. Word and language
2. Decodable codes
3. Prefix-free codes
4. Krafto-McMillan inequality
5.-7. Entropy
8.-9. Price of code sequence
10. Shannon's theorem
11. Fano's code sequence
12. Huffman's optimal code sequence

**Recommended literature:**
1. D. Hankersson, G. Harris, P. Johnson: Introduction to Information Theory and Data Compression, CRC Pr., 1998.
2. J. Adámek: Kódovaní a teorie informace, Vydavatelství ČVUT, Praha 1994
3. J. Černý: Entrópia a informácia v kybernetike, Alfa 1981

**Course language:**
Slovak

**Notes:**

**Course assessment**
Total number of assessed students: 124

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 58.87 | 19.35 | 12.1 | 4.03 | 0.0 | 5.65 |

**Provides:** prof. RNDr. Stanislav Krajči, PhD.

| |
|---|
| **Date of last modification:** 08.02.2022 |
| **Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD. |

**COURSE INFORMATION LETTER**

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** KPPaPZ/UPN/17 | **Course name:** Introduction into Psychology of Religion |

**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:** II.

**Prerequisities:**

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

**Learning outcomes:**
The student wil acquire a basic overview of the origin and current state of knowledge in the field of research and application the psychology of religion. He/she will be able to described, explaine, and evaluate this knowlege. The student will be able to apply the acquired knowledge in the basic orientation in the field, and develop critical thinking and will be able to apply and integrate already acquired knowledge from other (psychological) distributions

**Brief outline of the course:**
1. History of psychology of religion in national and world context
2. Psychological perspective on religion and religious experience
3. Psychology of religion in an interdisciplinary context
4. Basic approaches to psychological interpretation and selected views
5. Different types of religious experience
6. Psychological view of religion from a biodromal perspective
7. Spirituality versus religiosity in a postmodern society
8. Coping in the context of religiosity
9. Psychotherapy and religion, pastoral psychology

**Recommended literature:**
Eliade, M. (1994). Posvátné a profánní. Praha: Česká křesťanská akademie.
Eliade, M. (1995). Dějiny náboženského myšlení 1. Praha: Oikoymenh.
Freud, S. (1999). Nutkavá jednání a náboženské úkony. In Freud, S., Spisy z let 1906–1909. Praha: Psychoanalytické nakladatelství.
Fromm, E. (2003). Psychoanalýza a náboženství. Praha: Aurora
Erikson, E. (1996). Mladý muž Luther: studie psychoanalytická a historická. Praha: Psychoanalytické nakladatelství.
James, W. (1930). Druhy náboženské zkušenosti. Praha: Melantrich.
Jung, C. G. (1993). Analytická psychologie: Její teorie a praxe. Praha: Academia.

Křivohlavý, J. (2000). Pastorální péče. Praha: Oliva
Pargament, K. (1997), Psychology of religion and coping,
Říčan, P. (2007). Psychologie náboženství a spirituality. Praha: Portál.
Říčan P. (2002), Psychologie náboženství, Portál, Praha,
Stríženec, M. (2001) Súčasná psychológia náboženstva

**Course language:**

**Notes:**

**Course assessment**
Total number of assessed students: 77

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

**Provides:** Mgr. Jozef Benka, PhD.

**Date of last modification:** 24.06.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** KPPaPZ/ZMPPV/15 | **Course name:** Introduction to Research Methodoly in Education and Psychology |
|---|---|

**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:** 2.

**Course level:** II.

**Prerequisities:** KPPaPZ/PPgU/15 and KPE/PDU/15

**Conditions for course completion:**
- active participation in seminars, presentation of assignments in groups, final exam

**Learning outcomes:**
The graduate of the course will gain information about the research methodology, will understand the basic methods of pedagogical and psychological research that can be used in the practice of the teacher. Within the seminars, students will develop professional skills through their own demonstration of a specific research method. The graduate of the course will be able to carry out simple scientific research, present the results of research and read the results of the latest research in the field of pedagogy and psychology.

**Brief outline of the course:**
Research in pedagogy and psychology. Scientific research, scientific thinking. Parts of a research project. Research planning. Topic selection, research problem formulation. Types of research plans. Hypothesis, variables, operationalization. Ethical issues of scientific research. Experiment (experiment problems, control of variables in the experiment). Experimental plans, quasi-experiment. Reliability and validity of research. Research sample, methods of sample selection. Data collection techniques - questionnaire, interview, sociometry, semantic differential, observation, tests. Introduction to qualitative methodology. Possibilities of quantitative data processing. How to write a scientific article, presentation, poster, qualification work. Interpretation of findings, integration of findings into context.

**Recommended literature:**
Bačíková, M., Janovská, A., Orosová, O. Základy metodológie pedagogicko-psychologického výskumu. 2.doplnené vydanie. Šafárik Press, 2019. dostupné online: https://unibook.upjs.sk/img/cms/2019/FF/zaklady-metodologie-ped-psych-vyskumu-2-vyd-web.pdf
Gavora, P.: Úvod do pedagogického výskumu. Bratislava, UK 1999.
Švec, Š. a kol.: Metodológia vied o výchove. Bratislava, Iris 1998. Turek, I.: K základom pedagogického výskumu. Prešov, KPÚ 1991.
Ferjenčík, J.: Úvod do metodológie psychologického výskumu. Praha, Portál 2000.
http://www.e-metodologia.fedu.uniba.sk/

**Course language:**

**Notes:**

**Course assessment**
Total number of assessed students: 825

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 19.27 | 28.48 | 24.61 | 19.03 | 8.48 | 0.12 |

**Provides:** doc. Mgr. Mária Bačíková, PhD., PhDr. Anna Janovská, PhD.

**Date of last modification:** 24.06.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** ÚINF/UGR1/15 | **Course name:** Introduction to computer graphics |
|---|---|

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

**Number of ECTS credits:** 5

**Recommended semester/trimester of the course:** 1., 3.

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

**Prerequisities:**

**Conditions for course completion:**

**Learning outcomes:**
To provide the students with knowledge of graphics algorithms and basic principles of computer graphics.

**Brief outline of the course:**
Graphics hardware, input and output devices. Color models, palettes. Raster graphics algorithms for drawing 2D primitives. Filling and clipping. Curve modeling, interpolations and approximations, spline forms, Bézier curves, B-splines, surfaces. Homogenous coordinates, affine transformations, perspective and parallel projections. Visible-surface determination, illumination and shading. Rendering techniques, photorealism, textures, ray tracing, radiosity. Object representations, computer animation, virtual reality.

**Recommended literature:**
FOLEY, J. D., van DAM, A., FEINER, S., HUGHES, J.: Computer Graphics: Principles and Practice, Addison-Wesley, 1991
MORTENSON, M.E.: Geometric modeling, 2.ed., Willey, 1997

**Course language:**

**Notes:**

**Course assessment**
Total number of assessed students: 326

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 12.58 | 10.12 | 13.8 | 23.62 | 32.21 | 7.67 |

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

**Date of last modification:** 08.01.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** ÚMV/ LTM2/22 | **Course name:** Logic and set theory |
|---|---|

**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:** 1.

**Course level:** II.

**Prerequisities:**

**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. 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: 280

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 12.86 | 18.93 | 18.93 | 16.43 | 31.07 | 1.79 |

**Provides:** RNDr. Jaroslav Šupina, PhD., RNDr. Adam Marton, PhD.

**Date of last modification:** 18.02.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

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|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚINF/ LOP1/15 | **Course name:** Logic programming |
| **Course type, scope and the method:**<br>**Course type:** Lecture / Practice<br>**Recommended course-load (hours):**<br>**Per week:** 2 / 2 **Per study period:** 28 / 28<br>**Course method:** present | |
| **Number of ECTS credits:** 5 | |
| **Recommended semester/trimester of the course:** 2., 4. | |
| **Course level:** I., II. | |
| **Prerequisities:** | |
| **Conditions for course completion:**<br>Evaluation of active participation in exercises and homework, test of theoretical knowledge during the semester. Written and oral exam together with assessment from exercises. | |
| **Learning outcomes:**<br>To learn bases of declarative programming (as complementary method to procedural programming) and basic methods of implementations of logic programming languages. | |
| **Brief outline of the course:**<br>1. Introduction to logic<br>2. theory, models, Herbrand model<br>3. SLD resolution<br>4. Basics of Prolog language<br>5. Prologue in examples<br>6. Lists<br>7., 8., 9. Data analysis in Prolog<br>10., 11., 12. Graph theory in Prolog | |
| **Recommended literature:**<br>BRATKO, Ivan. Prolog. Programming for Artificial Intelligence. 2 ed. Wokingham: Addison-Wesley, 1990. ISBN 0-201-41606-9.<br>NILSON U., MALUSINSKI J.: Logic, Programming and Prolog, John Wiley & Sons Ltd. 1995<br>NIENHUYIS-CHENG Sh.H., WOLF R.: Foundations of Inductive Logic Programming, Springer-Verlag, 1997 | |
| **Course language:**<br>Slovak or English | |
| **Notes:**<br>Prerequisites: none | |

**Course assessment**
Total number of assessed students: 339

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 24.48 | 13.27 | 16.52 | 22.42 | 21.83 | 1.47 |

**Provides:** doc. RNDr. Ondrej Krídlo, PhD.

**Date of last modification:** 23.11.2021

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

**COURSE INFORMATION LETTER**

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚINF/ STU1/16 | **Course name:** Machine learning |

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

**Number of ECTS credits:** 5

**Recommended semester/trimester of the course:** 2.

**Course level:** II.

**Prerequisities:**

**Conditions for course completion:**
The realization of a project focused on the application of machine solution methods in solving practical tasks. Successful completion of two written tests based on machine learning, probabilistic learning, classification tasks. Successful completion of the written and oral part of the exam based on machine learning, probabilistic learning, classification tasks.

**Learning outcomes:**
The result of education is an understanding of the basic principles of machine learning. The student will gain the ability to analyze data using selected methods of machine learning and artificial intelligence. Can work with a selected tool for modeling neural networks.

**Brief outline of the course:**
1. Learning algorithms, concepts, hypotheses. Training and learning, learning by construction and numbering.
2. Boolean formulas and their representation. Learning algorithms for monocells. Hypothesis space representation.
3. Probabilistic learning. An estimate of the number of examples needed to achieve some accuracy and credibility.
4. Probabilistic learning and consistent algorithms.
5. Relationships between attribute sets and predicted variables. Regression. Linear modeling using the least squares method of deviations.
6. Linear modeling, generalization, nonlinear responses from a linear model, data validation. Classification.
7. Linear modeling using probability theory and maximum confidence.
8. VC (Vapnik - Cervonenkis) dimension of its relation to perceptrons.
9. Bayesian approach to learning. SVM.
10. Clustering.
11. Hidden Markov models.

**Recommended literature:**
1. ANTHONY, Martin a Norman BIGGS. Computational Learning Theory, Cambridge University Press, 1997. ISBN 978-0521599221.
2. BROWNLEE, Jason. Machine Learning Mastery With Python. 2019.

3. WATT, Jeremy, Reza BORHANI a Aggelos K. KATSAGGELOS. Machine learning refined: foundations, algorithms, and applications. Cambridge: Cambridge University Press, 2016. ISBN 978-1-107-12352-6.

**Course language:**
Slovak language or English language

**Notes:**

**Course assessment**
Total number of assessed students: 75

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 37.33 | 17.33 | 26.67 | 12.0 | 6.67 | 0.0 |

**Provides:** doc. RNDr. Ľubomír Antoni, PhD., doc. RNDr. Gabriela Andrejková, CSc., RNDr. Zoltán Szoplák, RNDr. Šimon Horvát, PhD.

**Date of last modification:** 31.03.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** ÚMV/DPU/22 | **Course name:** Magister thesis and its defense |
|---|---|

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

**Number of ECTS credits:** 14

**Recommended semester/trimester of the course:**

**Course level:** II.

**Prerequisities:**

**Conditions for course completion:**
The diploma thesis is the result of the student's own work. It must not show elements of academic fraud and must meet the criteria of good research practice defined in the Rector's Decision no. 21/2021, which lays down the rules for assessing plagiarism at Pavol Jozef Šafárik University in Košice and its components. Fulfillment of the criteria is verified mainly in the process of supervision and in the process of thesis defense. Failure to do so is reason for disciplinary action.

**Learning outcomes:**
The diploma thesis demonstrates mastery of extended theory and professional terminology of the field of study, acquisition of knowledge, skills and competencies in accordance with the declared profile of the graduate of the study program, as well as the ability to apply them creatively in solving selected field problems. Student demonstrates the ability of independent professional work in terms of content, formal and ethical. Further details on the diploma thesis are determined by Directive no. 1/2011 on the basic requirements of final theses and the Study Regulations of UPJŠ in Košice.

**Brief outline of the course:**
1. Elaboration of the diploma thesis in accordance with the instructions of the supervisor.
2. Presentation of the results of the diploma thesis before the examination commission.
3. Answering questions related to the topic of the diploma thesis within the discussion.

**Recommended literature:**
The recommended literature is determined individually in accordance with the topic of the diploma thesis.

**Course language:**
Slovak

**Notes:**

**Course assessment**
Total number of assessed students: 14

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 85.71 | 0.0 | 0.0 | 14.29 | 0.0 | 0.0 |

| |
|---|
| **Provides:** |
| **Date of last modification:** 19.04.2022 |
| **Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD. |

**COURSE INFORMATION LETTER**

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚMV/ MZF/22 | **Course name:** Mathematical foundations of financial literacy |

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

**Number of ECTS credits:** 2

**Recommended semester/trimester of the course:** 1.

**Course level:** II.

**Prerequisities:**

**Conditions for course completion:**
Improving knowledge and skills from the use of standard methods in solving mathematical problems in the topics: sequences, infinite series, financial mathematics. Developing the ability to analyze and explain various problem-solving strategies.
Conditions for continuous evaluation:
1. Participation in teaching in accordance with the study rules and instructions of the teacher.
2. Active participation in the exercises.
3. Elaboration of two tests.
Conditions for successful completion of the course:
A grade of A requires at least 90%, a grade of B requires at least 80%, a grade of C requires at least 70%, a grade of D requires at least 60%, and a grade of E requires at least 50%.

**Learning outcomes:**
The student is able to explain the basic concepts and methods of solving mathematical problems selected from various areas of school mathematics. The student is able to apply the acquired knowledge in finding and using various strategies for solving problems. The student will get acquainted with typical and more demanding tasks from school mathematics and with specific knowledge gaps and misconceptions that occur in their solution in the teaching of mathematics in primary and secondary school. The student will learn to use different models in solving problems in financial mathematics, which will support the development of his/her financial literacy.
The student is able to assess whether the student's non-standard solution is correct or not, and can explain his decision.

**Brief outline of the course:**
Sequences, sequence properties, limit of a sequence, convergence and divergence of sequences.
Arithmetic and geometric sequence and their use in solving problems.
Infinite series, convergence of infinite series, infinite geometric series.
Basic concepts, methods, models in financial mathematics: currency, exchange rate, insurance, taxes, interest, simple and compound interest, regular deposits and withdrawals, loan repayment, mortgages.

**Recommended literature:**
1. Kohanová, I., Slavičková, M.: Finančná matematika pre budúcich učiteľov matematiky.

Knižničné a edičné centrum FMFI UK, 2013.
2. Larson, L.C., Metódy riešenia matematických problémov, Bratislava, Alfa, 1990.
3. Lengyelfalusy, T., Kochol, M., Zábojníková, N.: Metódy riešenia matematických úloh 2. Žilinská univerzita v Žiline, 2009.
4. Učebnice a zbierky úloh z matematiky.

**Course language:**
Slovak

**Notes:**

**Course assessment**
Total number of assessed students: 136

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 35.29 | 16.91 | 23.53 | 13.97 | 8.82 | 1.47 |

**Provides:** doc. RNDr. Stanislav Lukáč, PhD.

**Date of last modification:** 19.04.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** ÚINF/MLO/22 | **Course name:** Mathematical logic |
|---|---|

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

**Number of ECTS credits:** 5

**Recommended semester/trimester of the course:** 1.

**Course level:** II.

**Prerequisities:**

**Conditions for course completion:**
Knowledge of studied notions will be evaluated.

**Learning outcomes:**
Understanding of basic concepts of mathematical logic.

**Brief outline of the course:**
1.--2. Boolean algebra
3.--4. Filters and ultrafilters
5.--6. Rasiowa-Sikorski's theorem
7. Safe substitution
8. Lindenbaum-Tarski's algebra
9.--11. Syntactical interpretation
12. Completeness

**Recommended literature:**
1. Krajči S., https://ics.upjs.sk/~krajci/skola/vyucba/ucebneTexty/logika-stromy.pdf
2. Goldstern M., Judah H.: The Incompleteness Phenomenon, A New Course in Mathematical Logic, A K Peters, Wellesley, Massachusetts, 1995

**Course language:**
Slovak

**Notes:**

**Course assessment**
Total number of assessed students: 9

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 33.33 | 11.11 | 11.11 | 22.22 | 22.22 | 0.0 |

**Provides:** prof. RNDr. Stanislav Krajči, PhD.

**Date of last modification:** 12.11.2021

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** ÚMV/ MRUc/22 | **Course name:** Mathematical problem solving strategies 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:** 2.

**Course level:** II.

**Prerequisities:**

**Conditions for course completion:**
Assessment is given on the basis of the results of written examinations carried out during the semester and active participation in exercises.
Classification scale:
A: 91%-100%, B: 81%-90%, C: 71%-80%, D: 61%-70%, E: 51%-60%, FX: 0%-50%.

**Learning outcomes:**
Students become familiar with the tasks, methods of problem solving, solving strategies and with specific problems of teaching mathematics at primary and secondary schools. The student will
1. familiarise themselves with mathematical culture, ways of thinking, self-expression and putting forward arguments,
2. gain a deeper understanding of the base terminology of real analysis, their properties and interconnections,
3. be able to define and interpret key terms, prove their basic properties and relationships,
4. know how to solve tasks focused on utilising the aforementioned concepts and interpret the obtained results.

**Brief outline of the course:**
Basic knowledge of school mathematics, Euclid's algorithm, Diophantine equations, Number systems, Divisibility rules, Congruence classes of integers, Algebraic numbers, Motion problems, Working together word problems, Mixture Word Problems, Optimization word problems.

**Recommended literature:**
Hecht, T., Sklenáriková, Z., Metódy riešenia matematických úloh, Bratislava, SPN, 1992.
Hecht, T. a kol., Matematika pre 1.-4. ročník gymnázií a SOŠ, OrbisPictusIstropolitana, Bratislava 1999-2002.
Krantz, S.G., Techniques of Problem Solving, AMS, 1997.
Larson, L.C., Metódy riešenia matematických problémov, Bratislava, Alfa, 1990.

**Course language:**
Slovak

**Notes:**

**Course assessment**
Total number of assessed students: 162

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 45.68 | 28.4 | 9.88 | 7.41 | 8.64 | 0.0 |

**Provides:** prof. RNDr. Jozef Doboš, CSc.

**Date of last modification:** 25.04.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

**COURSE INFORMATION LETTER**

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚMV/ MDM/22 | **Course name:** Mathematics and didactics of mathematics |
| **Course type, scope and the method:**<br>**Course type:**<br>**Recommended course-load (hours):**<br>**Per week: Per study period:**<br>**Course method:** present | |
| **Number of ECTS credits:** 2 | |
| **Recommended semester/trimester of the course:** | |
| **Course level:** II. | |
| **Prerequisities:** ÚMV/DDMc/22 | |
| **Conditions for course completion:**<br>Appropriate knowledge and competencies from the profile courses of specialisation Teaching mathematics, demonstrating the ability to synthesise the acquired knowledge and procedures and apply them to problems concerning mathematics teaching and learning. | |
| **Learning outcomes:**<br>Verification of acquired student competencies in accordance with the graduate profile. | |
| **Brief outline of the course:**<br>1. Number sets<br>2. Sets and statements<br>3. Number theory<br>4. Powers, polynomials, fractional expressions<br>5. Equations and inequalities<br>6. Planimetry<br>7. Stereometry<br>8. Analytical geometry<br>9. Elementary functions, basic properties<br>10. Goniometry<br>11. Sequences and series<br>12. Combinatorics<br>13. Probability and statistics<br>Within each topic, the student has to demonstrate:<br>• An overview of and understanding of the key mathematical ideas that underpin secondary school mathematics.<br>• An understanding of the important principles that must be considered when teaching a given topic.<br>• The ability to apply knowledge in school mathematics, for example, to know what types of problems the pupil is expected to solve, what are the objectives of teaching, how the ideas about basic concepts from the topic are created, and so on. | |
| **Recommended literature:**<br>Information sources recommended within individual profile courses. | |

**Course language:**
Slovak

**Notes:**

**Course assessment**
Total number of assessed students: 30

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 40.0 | 20.0 | 16.67 | 13.33 | 6.67 | 3.33 |

**Provides:**

**Date of last modification:** 16.08.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

**COURSE INFORMATION LETTER**

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚFV/ MDT/19 | **Course name:** Modern Didactical Technology |

**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:** II.

**Prerequisities:**

**Conditions for course completion:**
Summary evaluation based on ongoing assessment:
1. Active participation at the seminars (in the contact or online form) with minimum 80% participation.
2. Practical ongoing assignments (10) and their defense. At least 50% must be obtained from each assignment elaborated according to assessment criteria.

**Learning outcomes:**
Student graduated from subject will be able:
- recognize current available digital tools and their parameters for educational activities,
- to use all types of actual digital tools in education of science or humanities,
- to design and realize educational activities by using the modern technologies.

**Brief outline of the course:**
00. Introduction - goals and didactic principles
01. Modern hybrid classroom in 21st century
02. Digital learning spaces in 21st century
03. Cloud repositories, services, modern web-browser
04. Cloud editors for notes, texts, spreadsheets and presentations
05. Digital text (scan, OCR, voice recognition, Kami pdf)
06. Digital image and audio (digital recording and editing)
07. Interactive E-voting and videoconference systems in education
08. Digital collaborative technologies (social e-reader, collaborative whiteboard)
09. Virtual and digitally based experiments, digital databases
10. Education video (digital recording and editing)
11. Smartphone and tablet in classic and blended education
12. Teaching tools and digital teacher's workspace

**Recommended literature:**
1. Kireš, M. et al.: Modern didactical technics in teacher practice (in Slovak), Košice: Elfa, 2010
2 . Redecker, C., & Punie, Y. (2017). European Framework for the Digital Competence of Educators: DigCompEdu. Luxembourg: Publications Office of the European Union.

3. C. R. Tucker, T. Wycoff, J. T. Green, Blended Learning in Action: A Practical Guide Toward Sustainable Change. Thousand Oaks: Corwin Press, 2016.
4. D. Bannister, Guidelines on Exploring and Adapting: LEARNING SPACES IN SCHOOLS. Brussels: European Schoolnet, 2017.
5. current information from web sites related to didactical technologies,
catalogues of teaching tools,
current articles about modern trends in science and humanities education.

**Course language:**
Slovak, English

**Notes:**

**Course assessment**
Total number of assessed students: 121

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 56.2 | 27.27 | 12.4 | 2.48 | 1.65 | 0.0 |

**Provides:** doc. RNDr. Jozef Hanč, PhD.

**Date of last modification:** 07.07.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** KPE/ PDK/17 | **Course name:** Pedagogical Communication |
|---|---|

**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:** 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: 181

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 75.14 | 23.2 | 1.66 | 0.0 | 0.0 | 0.0 |

**Provides:** Mgr. Beáta Sakalová, PhD.

**Date of last modification:** 14.09.2024

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** KPE/PDD/17 | **Course name:** Pedagogical Diagnostics |
|---|---|

**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:** 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: 113

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 85.84 | 10.62 | 3.54 | 0.0 | 0.0 | 0.0 |

**Provides:** PaedDr. Michal Novocký, PhD., Mgr. Beáta Sakalová, PhD.

**Date of last modification:** 12.03.2024

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** KPE/ PD/22 | **Course name:** Pedagogy |
|---|---|

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

**Number of ECTS credits:** 2

**Recommended semester/trimester of the course:**

**Course level:** II.

**Prerequisities:** KPE/PDU/15

**Conditions for course completion:**
Obtaining the required number of credits in the prescribed composition by the study plan.

**Learning outcomes:**
The student is able to demonstrate the acquired competencies in accordance with the profile of the graduate.

**Brief outline of the course:**
1. Pedagogy, basic pedagogical categories, system of pedagogical scientific disciplines.
2. Education, pages and functions of education, educational process, self-education.
3. Factors of education, educated individual, pedagogue, pedagogical profession, professional competencies.
4. School education, family education.
5. Educational goals, taxonomy, requirements, classification of educational goals.
6. Methods of education.
7. Pedagogical principles.
8. School system of the Slovak Republic.
9. Didactics, basic questions of didactics, current starting points of didactics.
10. Objectives of the teaching process, the teacher's work with the objectives of teaching.
11. Content of education, basic curriculum, extension curriculum, elements and components of curriculum.
12. Assessment in school education, types, functions and criteria of assessment.
13. Pedagogical control, methods and forms of pedagogical control.
14. Teacher's work planning, written preparation of the teacher for teaching.
15. Teaching process, stages of the teaching process and their didactic functions.
16. Organizational forms of teaching, lesson, stages, types of lessons.
17. Teaching methods, classification, functions, selection of teaching methods.
18. Didactic principles of the teaching process.
19. Basic pedagogical documents, textbook, functions and structural components of the textbook.
20. Current concepts of the teaching process.

**Recommended literature:**
Čapek, R.: Moderní didaktika. Praha: Grada, 2016.

Dytrtová, R., Krhutová, M. Učitel. Příprava na profesi. Praha: Grada, 2009.
Kalhous, Z. – Obst, O. 2002. Školní didaktika. Praha: Portál, 2002.
Petlák, E.: Kapitoly zo súčasnej didaktiky. Bratislava: IRIS, 2005.
Prucha, J.: Moderní pedagogika. Praha: Portál, 2012.
Turek, I.: Didaktika. Bratislava: Wolters Kluwer, 2014.
Vališová, A., Kasíková, H.: Pedagogika pro učitele. Praha: Grada, 2010.
Zormanová, L.: Obecná didaktika. Praha: Grada, 2014.

**Course language:**

**Notes:**

**Course assessment**
Total number of assessed students: 25

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 24.0 | 44.0 | 16.0 | 12.0 | 4.0 | 0.0 |

**Provides:**

**Date of last modification:** 12.03.2024

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

**COURSE INFORMATION LETTER**

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** KPE/ PPD/22 | **Course name:** Pedagogy and Psychology |
| **Course type, scope and the method:**<br>**Course type:**<br>**Recommended course-load (hours):**<br>**Per week: Per study period:**<br>**Course method:** present | |
| **Number of ECTS credits:** 2 | |
| **Recommended semester/trimester of the course:** | |
| **Course level:** II. | |
| **Prerequisities:** KPE/PDU/15 and KPPaPZ/PPgU/15 | |
| **Conditions for course completion:**<br>Obtaining the required number of credits in the prescribed composition by the study plan. | |
| **Learning outcomes:**<br>The student is able to demonstrate the acquired competencies in accordance with the profile of the graduate. | |
| **Brief outline of the course:**<br>Pedagogy: 1. Pedagogy, basic pedagogical categories, system of pedagogical scientific disciplines. 2. Education, pages and functions of education, educational process, self-education.3. Factors of education, educated individual, pedagogue, pedagogical profession, professional competencies.4. School education, family education. 5. Educational goals, taxonomy, requirements, classification of educational goals.6. Methods of education. 7. Pedagogical principles. 8. School system of the Slovak Republic. 9. Didactics, basic questions of didactics, current starting points of didactics. 10. Objectives of the teaching process, the teacher's work with the objectives of teaching.11. Content of education, basic curriculum, extension curriculum, elements and components of curriculum. 12. Assessment in school education, types, functions and criteria of assessment.13. Pedagogical control, methods and forms of pedagogical control.14. Teacher's work planning, written preparation of the teacher for teaching.15. Teaching process, stages of the teaching process and their didactic functions.16. Organizational forms of teaching, lesson, stages, types of lessons.17. Teaching methods, classification, functions, selection of teaching methods. 18. Didactic principles of the teaching process. 19. Basic pedagogical documents, textbook, functions and structural components of the textbook.20. Current concepts of the teaching process.<br>Psychology: 1.Psychology as a science, goals and subject of psychology in terms of influential psychological directions.2.Pedagogical psychology in teacher training, its subject, function.3.Psychology in school practice: professional forms of control and assistance, psychological examination, counseling process. Crisis intervention. Code of ethics.4.Psychology in school practice: approaches and models of prevention, prevention spectrum, protective and risk factors of risk behavior of schoolchildren in the context of the theory of triadic influence.5.Psychology in school practice: effective strategies for prevention of substance use.6.Psychology of education from from the point of view of psychodynamic approach (Psychoanalysis and Individual Psychology) .7.Psychology of education from the point of | |

view of humanistic psychology.8.Psychology of education from the point of view of cognitive psychology.9.Psychology of learning and types of learning supplemented by examples from school practice. / success in the context of individual theories of cognitive development.11. Nutritional peculiarities, school non-success / intelligence in terms of intelligence.12. Memory and developmental peculiarities, school non-success 13. Attention and developmental peculiarities, school non / success peculiarities of individual types of family, educational styles.15.Social relations at school, me modes of cognition of interaction U and Ž. Psychosocial climate of school class and school, methods of cognition, sociometry.16.Social influence: presence of others, interpersonal influences and meaningful understanding of social influence in teacher's work.17.Teacher as a professional, his professional ability, teaching style, attitudes towards students, expectations towards students, coping with stress, burnout syndrome.18.Students: gifted and talented, school failure, non-thriving pupils and failing pupils, pupils' self-efficacy.19. Types of research plans and their creation (setting goals, hypotheses, variables, selection of research sample) in the context of pedagogical-psychological research.20. Selected methods of pedagogical-psychological research - questionnaire, interview, observation and possibilities of their use in school practice.

**Recommended literature:**

Pedagogika:
Čapek, R.: Moderní didaktika. Praha: Grada, 2016.
Dytrtová, R., Krhutová, M. Učitel. Příprava na profesi. Praha: Grada, 2009.
Kalhous, Z. – Obst, O. 2002. Školní didaktika. Praha: Portál, 2002.
Petlák, E.: Kapitoly zo súčasnej didaktiky. Bratislava: IRIS, 2005.
Prucha, J.: Moderní pedagogika. Praha: Portál, 2012.
Turek, I.: Didaktika. Bratislava: Wolters Kluwer, 2014.
Vališová, A., Kasíková, H.: Pedagogika pro učitele. Praha: Grada, 2010.
Zormanová, L.: Obecná didaktika. Praha: Grada, 2014.
Psychológia:
Mareš, J.: Pedagogická psychologie. Praha : Grada 2013.
Mareš, J., & ČÁP, J.: Psychologie pro učitele. Praha: Portál, 2001.
Džuka, J.: Základy pedagogickej psychológie. Prešov: UK 2003.
Orosová, O. a kol: Psychológia a pedagogická psychológia 1. Košice: UPJŠ, 2005.
Orosová, O. a kol.: Základy prevencie užívania drog a problematického používania internetu v školskej praxi. Košice: UPJŠ 2012.
Bačíková, M., Janovská, A. (2019) . Základy metodológie pedagogicko-psychologického výskumu. Sprievodca pre študentov učiteľstva. 2. rozšírené vydanie. Šafárik press, Košice.
Gavora, P. a kol. (2010). Elektronická učebnica pedagogického výskumu. Bratislava: Univerzita Komenského, 2010. dostupné online na www. e-metodologia. fedu. uniba. sk.
Vágnerová, M.: Základy psychológie. Praha : Karolinum 2005.
Vágnerová, M.: Vývojová psychológie. Praha : Karolinum 2005.
Vágnerová, M.: Škoní podadenská psychologie pro pedagogy. Praha : Karolinum 2005. Výrost, J., Slaměník, I.: Sociální psychologie. Praha : Grada 2008.
Výrost, J., Salměník, I.: Aplikovaná sociální psychológie I. Praha: Portál 1998.
Strana: 2
Fontana, D. : Psychologie ve školní praxi. Praha: Portál 1997.
Zelina, M.: Stratégie a metódy rozvoja osobnosti. Bratislava, Iris: 1996.
Křivohlavý, J.: Pozitívni psychologie. Praha: Portál 2004.
Křivohlavý, J.: Psychologie zdraví. Praha: Portál 2003.

**Course language:**

**Notes:**

**Course assessment**
Total number of assessed students: 157

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 31.85 | 33.76 | 24.2 | 8.92 | 0.64 | 0.64 |

**Provides:**

**Date of last modification:** 12.03.2024

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

**COURSE INFORMATION LETTER**

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚINF/ PDSI2/22 | **Course name:** Pro-seminar to diploma thesis in informatics |

**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:** 1.

**Course level:** II.

**Prerequisities:**

**Conditions for course completion:**
Conditions for ongoing evaluation:
1. Analysis of the informatics curriculum of a selected country.
2. Analysis of selected contributions of educational journals.
3. Analysis of selected papers of conference proceedings.
4. Analysis of a selected educational project.
Conditions for the final evaluation:
1. Creation of a thesis assignment (title, objectives, literature, supervisor).
2. Creation of an overview of the current state of the studied issue.
3. Creation and presentation of the thesis website.
Conditions for successful completion of the course:
Fulfillment of all ongoing and final assignments.

**Learning outcomes:**
The student will get an idea of a thesis focused on the teaching of informatics (its types, structure and life cycle).
The student actively exploit educational information resources (publication databases, journals and conference proceedings, educational projects).
The student gains an overview of the content of informatics teaching at home and abroad, as well as the teaching of current topics in informatics.
The student will create an overview of the current state of teaching issues related to the selected topic of the master thesis.

**Brief outline of the course:**
1. Master theses focused on teaching informatics (types of theses, structure of thesis, life cycle of theses).
2. Analysis of selected theses on teaching informatics (CRZP).
3. Overview of information resources (curricula of informatics abroad, available publication databases, journals and conference proceedings, educational projects).
4. Study and analysis of informatics curricula in selected countries (CSTA, UK, Czech Republic).
5. Study and analysis of selected papers of educational journals (INFEDU, C&E, JTIE, ICTE, MFI, OMFI, sciED).

6. Study and analysis of selected papers of educational journals (INFEDU, C&E, JTIE, ICTE, MFI, OMFI, sciED).
7. Study and analysis of selected papers of conference proceedings (DidInfo, ISSEP, EduLearn, MIPRO, ICETA).
8. Study and analysis of selected conference proceedings (DidInfo, ISSEP, EduLearn, MIPRO, ICETA).
9. Study and analysis of selected educational projects (NP ITA, ĎVUi, PRIM, eTwinning).
10. Study and analysis of selected educational projects (NP ITA, ĎVUi, PRIM, eTwinning).
11. Creation of a diploma website with an overview of the current state of the topic of the diploma thesis.
12. Creation of a diploma website with an overview of the current state of the topic of the diploma thesis.

**Recommended literature:**

MEŠKO, Dušan, Dušan KATUŠČÁK and Ján FINDRA, 2013. Akademická príručka: Chcete byť úspešní na vysokej škole? 3. vydanie. Osveta, 495 pp. ISBN 9788080633929.
KATUŠČÁK, Dušan, 2013. Ako písať záverečné a kvalifikačné práce. Enigma, 162 pp. ISBN 8089132454.
COMPUTER SCIENCE TEACHERS ASSOCIATION. Home Page
Computer Science Teachers Association [online]. [cited 2021-7-30]. Available from: https://www.csteachers.org/
ASSOCIATION FOR COMPUTING MACHINERY. The ACM Digital Library [online]. [cited 2021-7-30]. Available from: https://dl.acm.org/
SPRINGER NATURE SWITZERLAND AG. Home - Springer [online]. [cited 2021-7-30]. Available from: https://link.springer.com/
BAČÍKOVÁ, Mária, Anna JANOVSKÁ and Oľga OROSOVÁ, 2019. Základy metodológie pedagogicko-psychologického výskumu: Sprievodca pre študentov učiteľstva [online]. 2. doplnené vydanie. Košice: Univerzita Pavla Jozefa Šafárika v Košiciach, 195 pp. [cited 2021-7-29]. ISBN 978-80-8152-805-7. Available from: https://unibook.upjs.sk/sk/filozoficka-fakulta/1266-zaklady-metodologie-pedagogicko-psychologickeho-vyskumu-sprievodca-pre-studentov-ucitelstva
Informatics in Education. Vilnius University Institute of Data Science and Digital Technologies. ISSN 2335-8971 (online). Also available from: https://infedu.vu.lt/journal/INFEDU
Matematika–fyzika–informatika. Praha: PROMETHEUS. ISSN 1805-7705. Also available from: http://www.mfi.upol.cz/index.php/mfi/index
UNIVERZITA MATEJA BELA V BANSKEJ BYSTRICI, TECHNICKÁ UNIVERZITA V LIBERCI, 2021. Zborníky medzinárodnej konferencie DidInfo (od roku 2011) [online]. [cited 2021-7-30]. Available from: http://www.didinfo.net/minule-rocniky
CENTRUM VEDECKO-TECHNICKÝCH INFORMÁCIÍ SR. Centrálny register záverečných a kvalifikačných prác [online]. [cited 2021-7-30]. Available from: https://cms.crzp.sk/

**Course language:**

Slovak and partly English due to selected information sources

**Notes:**

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

**Course assessment**
Total number of assessed students: 5

| abs | n |
|---|---|
| 100.0 | 0.0 |

**Provides:** doc. RNDr. Ľubomír Šnajder, PhD.

**Date of last modification:** 08.02.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** KPPaPZ/PASZ/17 | **Course name:** Problem and Aggressive Behaviour of Pupils. Etiology, Prevention and Intervention. |
|---|---|

**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:** II.

**Prerequisities:**

**Conditions for course completion:**

**Learning outcomes:**

**Brief outline of the course:**
General principles of mental development as a basis for recognizing mental disorders in children and adolescents. Etiology of mental disorders and developmental disorders in children and adolescents. Definition of aggressive behavior. Concepts of aggression vs. aggressiveness. Theoretical approaches to aggression. Causes and factors of aggressive behavior. Violence at school and in the family. Bullying. Psychology of problem students. Problems resulting from disturbed behavior. Problems arising from group relationships. Adolescent lifestyle issues. Problems resulting from impaired emotional experience. Solving problematic and aggressive behavior in the school environment. School classroom management, group preventive and intervention work with the classroom. Crisis intervention. Work with parents of problem students. Principles of interviewing a parent. Cooperation with other experts. Prevention of aggressive and problematic behavior at school. Classroom and school climate, school prevention programs.
Viac o tomto zdrojovom texteNa získanie ďalších informácií o preklade sa vyžaduje zdrojový text
Odoslať spätnú väzbu
Bočné panely

**Recommended literature:**

**Course language:**

**Notes:**

**Course assessment**
Total number of assessed students: 125

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 80.0 | 14.4 | 5.6 | 0.0 | 0.0 | 0.0 |

**Provides:** PhDr. Anna Janovská, PhD.

**Date of last modification:** 14.09.2024

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

**COURSE INFORMATION LETTER**

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** KPPaPZ/KPE/EPU/15 | **Course name:** Professional Ethics for Teachers and School Counsellors |

**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:** II.

**Prerequisities:**

**Conditions for course completion:**
1. Active participation in seminars (max. 1 absence) - 30p, 2. Preparation for the seminar - 40p, 3. Preparation (description and analysis) of the moral dilemma - 30p. By summing the points obtained during the semester, the student obtains the final evaluation according to the scale: A 87 - 100, B 77 - 86, C 69 - 76, D 61 - 68, E 56 - 60, FX 55 and less. Detailed information in the electronic board of the course in AIS2. The teaching of the subject will be realized by a combined method.

**Learning outcomes:**
The student will understand the principles of teacher ethics and the ethics of the educational counselor as one of the branch types of professional ethics. The student can theoretically reflect on the ethical and moral issues of the teaching profession and the function of the educational counselor (including the formulation of moral values, principles and standards of the teaching profession and the function of the educational counselor in the form of codes of ethics). He is able to analyze and solve practical moral problems in pedagogical practice, which supports the development of professional skills of students. The student is able to critically evaluate situations with a moral context thanks to the opportunity to discuss moral and ethical issues in an open way.

**Brief outline of the course:**
Moral emotions (theories of emotion, the center of emotions in the brain, types of emotions and their manifestations)
Development of moral reasoning, cognitive approaches to moral reasoning and their comparison (Piaget, Kohlberg, Gilligan, Eisenberg, Selman, Lind),
Moral behavior (from the point of view of learning theories) and moral (vs. social and emotional) intelligence in the work of a teacher
Possibilities of examining moral behavior and judgment (socio-psychological research of conformity, obedience, aggression and psychodiagnostic approaches to the determination of moral judgment)
Morality and professional ethics in general (ethical principles in helping professions) and codes of ethics
Professional ethics of the teacher and educational counselor (terminology, concepts, main principles of teacher ethics) and teacher ethics codes

Moral dilemmas and ways of solving them, MD of teaching practice
Possibilities of influencing and stimulating moral judgment, use of moral dilemma in education
Cheating and other unethical manifestations in the school environment, ethics and etiquette of final exams

**Recommended literature:**

Ráczová, Babinčák, P. Základy psychológie morálky. Košice : Equilibria, 2009. - 130 s. ISBN 9788070977866 (brož.).
Gluchmanová, M. K niektorým terminologickým otázkam učiteľskej etiky. Pedagogická orientace 2007, č. 2, s. 11–25. ISSN 1211-4669.
Malankievičová, S. Profesijná etika: FF PU. 2008.
Miezgová J., Vargová, D. Etika. SPN Mladé letá 2007.
Remišová A. Dejiny etického myslela v Európe a USA. Bratislava, Kalligram 2008.
Zelina, M. Teória výchovy alebo hľadanie dobra. Bratislava SPN 2010.
Gluchmanová, M. Uplatnenie princípov a hodnôt etiky sociálnych dôsledkov v učiteľskej etike. Prešov: FF PU,2009. 222 s. ISBN 978-80-555-0042-3
Campbell, E. The Ethical Teacher. Berkshire (England): Open University Press, 2003. 178 s. ISBN 03-3521-219-0.

**Course language:**
slovak

**Notes:**

**Course assessment**
Total number of assessed students: 550

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 97.27 | 2.36 | 0.36 | 0.0 | 0.0 | 0.0 |

**Provides:** doc. Mgr. Gabriel Baník, PhD.

**Date of last modification:** 24.06.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** ÚINF/JAC1/15 | **Course name:** Programming language C |
|---|---|

**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., 3.

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

**Prerequisities:**

**Conditions for course completion:**
Practics attendance and activity. Home assigment
Final project.

**Learning outcomes:**
The student will gain the ability to create source code files in the C programming language, which is the primary system programming language used in the creation of operating systems and system components, as well as firmware for embedded devices. The aim of the exercise is to guide students from the simple language constructs to a full understanding of working with pointers and their use in the management of static and dynamic memory.

**Brief outline of the course:**
1. Short overview of language history, explanation of terms, code compilation, linking and program execution.
2. Variables and data types, unary, binary and ternary operations, operator precedence.
3. Cycles, conditions. Structures, unions and enumerators.
4. Functions.
5. Pointers - concept, implementation, pointer arithmetic.
6. Fields - principle, implementation.
7. Dynamic memory allocation.
8. N-dimensional fields and pointers.
9. Text strings.
10. Input and output, command line arguments, process return codes.
11. Dynamic fields and structures.
12. Basic operations with regular files.
13. Pointer to a function.
14. Compiling a program from source code using the "make" utility.

**Recommended literature:**
1. KERNIGHAN, Brian W., Dennis M. RITCHIE. Programovací jazyk C. Brno: Computer Press, 2006. ISBN:802510897X.
2. PRATA, Stephen. C Primer Plus. 6th Edition. Addison-Wesley Professional, 2014. ISBN 9780321928429.

3. SEACORD, Robert C. Effective C: An Introduction to Professional C Programming. San Francisco, United States: No Starch Press, 2020. ISBN 9781718501041.

**Course language:**
Slovak or English

**Notes:**

**Course assessment**
Total number of assessed students: 268

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 38.06 | 19.78 | 14.55 | 14.93 | 8.96 | 3.73 |

**Provides:** RNDr. PhDr. Peter Pisarčík

**Date of last modification:** 08.10.2021

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

**COURSE INFORMATION LETTER**

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** KPPaPZ/PPgU/15 | **Course name:** Psychology and Educational Psychology |

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

**Number of ECTS credits:** 5

**Recommended semester/trimester of the course:** 1.

**Course level:** II.

**Prerequisities:**

**Conditions for course completion:**
Assessment: A maximum of 40 points can be earned during the semester (through two assignments and a written verification). Exam entry criteria: Active participation in exercises and a minimum of 30 points earned during the semester. Continuous assessment (40%) and written examination (60%). For more information and updates, refer to the electronic board of the course AIS2. Final evaluation: A 87 – 100 B 77 – 86 C 69 – 76 D 61 – 68 E 56 – 60 FX 55 and less Combined method. The information will be yearly specified on the electronic noticeboard of the course in AIS2, aleternatively in LMS UPJŠ or MS Teams environment.

**Learning outcomes:**
Students will be able to show understanding of the human behaviour in educational situations.
Students will be able to describe, explain and justify possible teachers‘ decisions by using psychological concepts, principles and theories.
Students will be able to apply the psychological findings in the field of education.
Students will be able to explain how adolescents learn and retain new information, to explain their behaviour in response to educational environment.
Students will be able to explain the desired data-based modification of adolescents‘ behaviour to bring an all-round development of his personality and school performance, to explain the desired data-based modification of the behaviour of adolescents with educational problems, with disadvantages.

**Brief outline of the course:**
Introduction: The content of the course is based on current knowledge of psychological disciplines, especially pedagogical and school psychology.
Teaching is realized by a combination of lectures with engaging narrative interpretation and seminars using interactive, experiential methods, discussion and open communication with mutual respect, support of independence, activity and motivation of students.
Syllabus: Goals and Subject of Psychology and Educational Psychology, the field and its transformations (Educational psychology and its changes over time, its mission, and possible personality transformations). School psychology, school psychologist. Professional forms of support in school practice. Psychological assessment. Counseling process. Crisis intervention. Effective strategies and programs for the prevention of risky behavior among schoolchildren.

Risk/protective factors of risky behavior. Implementation of psychological concepts of personality into school practice. Psychological and educational-psychological characteristics of learning (psychology of learning, types of learning, learning styles). Developmental characteristics and school (un)success (Cognitive, social, emotional, and personality development in childhood and adolescence, Psychological characteristics of adolescence and adulthood. Intelligence, memory, attention, and developmental characteristics of schoolchildren, and school (un)success). Social psychology of the school (teacher-student relationships, methods of understanding teacher-student interaction, the psychosocial climate of the school) and family (factors of family functionality, functional/problematic/dysfunctional/non-functional family, parenting styles). Main actors: Teacher (the teacher as a professional, their professional competence, teaching style, attitudes toward students, expectations of students, coping with stress, burnout syndrome), students (gifted and talented, school failure, successful/unsuccessful students, and failing students, student self-efficacy), school class (as a small social group, internal and external differentiation, bullying, and prevention), psychosocial climate of the school class.

**Recommended literature:**

Compulsory:

Lectures (Literary sources in published lectures)

Mareš, J.: Pedagogická psychologie. Praha : Grada 2013.

Recommended:

Mareš, J., & ČÁP, J.: Psychologie pro učitele. Praha: Portál, 2001.
Džuka, J.: Základy pedagogickej psychológie. Prešov: UK 2003.
Orosová, O. a kol: Psychológia a pedagogická psychológia 1. Košice: UPJŠ, 2005.
Orosová, O. a kol.: Základy prevencie užívania drog a problematického používania internetu v školskej praxi. Košice: UPJŠ 2012.
Vágnerová, M.: Základy psychológie. Praha : Karolinum 2005.
Vágnerová, M.: Vývojová psychológie. Praha : Karolinum 2005.
Vágnerová, M.: Škoní podadenská psychologie pro pedagogy. Praha : Karolinum 2005. Výrost, J., Slaměník, I.: Sociální psychologie. Praha : Grada 2008.
Výrost, J., Salměník, I.: Aplikovaná sociální psychológie I. Praha: Portál 1998.
Fontana, D. : Psychologie ve školní praxi. Praha: Portál 1997.
Zelina, M.: Stratégie a metódy rozvoja osobnosti. Bratislava, Iris: 1996.
Křivohlavý, J.: Pozitívni psychologie. Praha: Portál 2004.
Křivohlavý, J.: Psychologie zdraví. Praha: Portál 2003.

ELECTRONIC INFORMATION RESOURCES (UL UPJŠ)

**Course language:**

slovak

**Notes:**

**Course assessment**

Total number of assessed students: 1736

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 11.0 | 20.16 | 23.85 | 22.41 | 20.22 | 2.36 |

**Provides:** prof. PhDr. Oľga Orosová, CSc., PhDr. Anna Janovská, PhD.

**Date of last modification:** 09.09.2024

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

**COURSE INFORMATION LETTER**

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** KPPaPZ/PTPN/17 | **Course name:** Psychology of Creativity and Working with Gifted Students in Teacher Practice |

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

**Number of ECTS credits:** 2

**Recommended semester/trimester of the course:** 2.

**Course level:** II.

**Prerequisities:**

**Conditions for course completion:**
1. active participation in lessons (max. 2 absences) - 30p, 2. own output at the seminar - 40p, 3. seminar work - 30p. By summing the points obtained during the semester, the student obtains the final evaluation according to the given scale: A 87 - 100, B 77 - 86, C 69 - 76, D 61 - 68, E 56 - 60, FX 55 and less. Detailed information in the electronic board of the course in AIS2. The teaching of the subject will be realized by a combined method.

**Learning outcomes:**
The student understands the basic factors and process of creativity. The student is able to explain the specifics of working with the gifted. He knows the methods of identifying talent and also can apply methods to support creativity and the development of talent in the implementation of creative creativity in education.

**Brief outline of the course:**
The concept of creativity.
A brief history of the theory of creativity.
Social, psychological and biological factors of creativity.
Cognitive processes in creativity.
Creativity and cognitive style.
Development of creativity.
Talent and giftedness.
Methods of determining creativity and talent.
Methods of developing creativity and talent.
Creativity and talent development programs. Specifics of working with the gifted children.

**Recommended literature:**
DOČKAL, V. (2006): Inteligencia a tvorivosť, tvorivé nadanie od intelektovej schopnosti po štruktúru osobnosti. In: KUSÁ, D. a kol. EDS. (2006): Zjavná a skrytá tvorivosť. Bratislava: Slovak Academic Press
HŘÍBKOVÁ, L. (2009): Nadání a nadaní. Pedagogicko- psychologické přístupy, modely, výzkumy a jejich vztah ke školské praxi. Praha: Grada Publishing
DACEY, J.S.- LENNON, K.H. (2000): Kreativita. Praha: Grada

GROSS, M.U.M. (2009): Highly Gifted Young People: Development from Childhood to Adulthood. In: SHAVININA, L. (2009): International Handbook on Giftedness. Part one. Springer
KUSÁ, D. a kol. EDS. (2006): Zjavná a skrytá tvorivosť. Bratislava: Slovak Academic Press
KOLKOVÁ, S. (2000): Tvorivosť a jej rozvoj vo voľnočasových aktivitách detí (v školskom klube). Bratislava: Metodické centrum v Bratislave
LOKŠOVÁ, I., - LOKŠA, J.: (2003): Tvořivé vyučování. Praha: Grada
LAZNIBATOVÁ, J. (2004): Špecifiká vývinu a vzdelávania nadaných detí. In: Psychológia a patopsychológia dieťaťa, roč.39, č. 2-3
LAZNIBATOVÁ, J. (2001): Nadané dieťa, jeho vývin, vzdelávanie a podporovanie. Bratislava: Iris
MESÁROŠOVÁ, M. (1998): Nadané deti. Poznávanie a rozvíjanie ich osobnosti. Prešov: Manacon
SZOBIOVÁ, E. (2004): Tvorivosť – Od záhady k poznaniu. Bratislava: Stimul - Centrum informatiky a vzdelávania FIF UK
National and international scientific journlas

**Course language:**
slovak

**Notes:**

**Course assessment**
Total number of assessed students: 81

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

**Provides:** Mgr. Lucia Barbierik, PhD.

**Date of last modification:** 24.06.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** KSSFaK/ ČGUAP/15 | **Course name:** Reading Literacy in Educational Process |
| **Course type, scope and the method:**<br>**Course type:** Lecture<br>**Recommended course-load (hours):**<br>**Per week:** 2 **Per study period:** 28<br>**Course method:** present | |
| **Number of ECTS credits:** 2 | |
| **Recommended semester/trimester of the course:** 2. | |
| **Course level:** II. | |
| **Prerequisities:** | |
| **Conditions for course completion:** | |
| **Learning outcomes:** | |
| **Brief outline of the course:** | |
| **Recommended literature:** | |
| **Course language:** | |
| **Notes:** | |
| **Course assessment**<br>Total number of assessed students: 44 | |

| abs | n |
|---|---|
| 100.0 | 0.0 |

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|---|
| **Provides:** doc. PaedDr. Ivica Hajdučeková, PhD. |
| **Date of last modification:** 15.09.2023 |
| **Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD. |

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** ÚINF/ PPU1a/15 | **Course name:** Running practice |
|---|---|

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

**Number of ECTS credits:** 2

**Recommended semester/trimester of the course:** 2.

**Course level:** II.

**Prerequisities:**

**Conditions for course completion:**
Conditions for continuous evaluation:
Active participation in the selected type of internship based on the instructions given by the internship supervisor.
Conditions for the final evaluation:
Evaluation of the student's approach to the internship and the work performed in the internship by the internship supervisor.

**Learning outcomes:**
Experiences with the implementation of a selected type of internship.

**Brief outline of the course:**
The exact content of the internship is specified by the internship supervisor. Students choose from a menu of topics presented by the course administrator. Typical topics of practice are:
1. assistance in the realization of exercises for yunger studnets, providing feedback to students on submitted homeworks
2. assistance in the installation and maintenance of computer and network infrastructure at UPJŠ
3. realizations of courses for working with specific software
4. creation of overviews from freely available sources

**Recommended literature:**
The study or technical literature is determined individually depending on the focus of the internship by the internship supervisor.

**Course language:**
Slovak or English

**Notes:**

**Course assessment**
Total number of assessed students: 216

| abs | n |
|---|---|
| 97.69 | 2.31 |

| |
|---|
| **Provides:** Ing. Miron Kuzma, PhD. |
| **Date of last modification:** 23.11.2021 |
| **Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD. |

**COURSE INFORMATION LETTER**

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚINF/ MPPb/15 | **Course name:** Scheduled practice teaching |

**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:** 1

**Recommended semester/trimester of the course:** 2.

**Course level:** II.

**Prerequisities:** KPE/MPPa/15 and KPE/PDU/15 and (KPPaPZ/PaSPP/09 or KPPaPZ/PPgU/15)

**Conditions for course completion:**
Conditions for ongoing evaluation:
1. Observations for 11 lessons of the subject of informatics.
2. Independent leading 1 lesson from the subject of informatics.
3. Participation in 6 analyzes from lessons.
4. Participation in a reflexive colloquium with a didactician of informatics.

Conditions for the final evaluation:
1. Submission of 11 observation records.
2. Submission of a project of preparation for a lesson.
3. Submission of a list of observations and own lesson of the trainee.
4. Submission of evaluation of pedagogical output of the trainee.
5. Submission of a report on ongoing pedagogical practice.

Conditions for successful completion of the course:
Fulfillment of all ongoing and final assignments.

**Learning outcomes:**
Students acquire knowledge by observing the practical application of teaching skills for teaching the subject of informatics and get to know the organization of school work. They also acquire their first experience with the practical implementation of a informatics lesson.

**Brief outline of the course:**
Students observe the process of teaching informatics at secondary and primary school and analysed it with teacher trainer. Practice takes place continuously during the course of the semester. Practice is scheduled once a week at the time of first to third lesson in schools.
The first two lessons are students observing/teaching, the third lesson is for analysis of the first two under the guidance of a teacher trainer.

**Recommended literature:**
KOSOVÁ, Beata, Alena TOMENGOVÁ et al., 2015. Profesijná praktická príprava budúcich učiteľov [online]. Banská Bystrica: Vydavateľstvo Belianum, Univerzita Mateja Bela, Banská Bystrica, 226 pp. [cited. 2021-7-28]. ISBN 978-80-557-0860-7. Available from: https://publikacie.umb.sk/publication/publicationFileDownload.php?ID=18667

OROSOVÁ, Renáta and Zuzana BOBEROVÁ, 2016. Pregraduálna príprava učiteľov: Organizácia pedagogickej praxe na UPJŠ [online]. Košice: Univerzita Pavla Jozefa Šafárika v Košiciach, 142 pp. [cited 2021-7-28]. ISBN 978-80-8152-460-8. Available from: https://unibook.upjs.sk/sk/pedagogika/342-pregradualna-priprava-ucitelov-organizacia-pedagogickej-praxe-na-upjs
BOBEROVÁ, Zuzana, 2017. Začínajúci učiteľ a školská legislatíva I. [online]. Košice: Univerzita Pavla Jozefa Šafárika v Košiciach, 104 pp. [cited 2021-7-28]. ISBN 978-80-8152-490-5. Available from: https://unibook.upjs.sk/sk/pedagogika/398-zacinajuci-ucitel-a-skolska-legislativa-i
Current informatics textbooks for primary and secondary schools in Slovakia.

**Course language:**
Slovak

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

**Course assessment**
Total number of assessed students: 74

| abs | n |
|---|---|
| 100.0 | 0.0 |

**Provides:** doc. RNDr. Ľubomír Šnajder, PhD.

**Date of last modification:** 01.08.2021

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

**COURSE INFORMATION LETTER**

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚMV/ VPPb/15 | **Course name:** Scheduled practice teaching |
| **Course type, scope and the method:**<br>**Course type:** Practice<br>**Recommended course-load (hours):**<br>**Per week: Per study period:** 36s<br>**Course method:** present | |
| **Number of ECTS credits:** 1 | |
| **Recommended semester/trimester of the course:** 2. | |
| **Course level:** II. | |
| **Prerequisities:** KPE/MPPa/15 and KPE/PDU/15 and (KPPaPZ/PaSPP/09 or KPPaPZ/PPgU/15) | |
| **Conditions for course completion:**<br>Teaching of a specified number of hours and visitations of specified number of classes (1 teaching and 11 visitation of classes).<br>Submission of written assignments (reflection on teaching practice, statement of teaching hours and classes visitations, selected lesson plans). | |
| **Learning outcomes:**<br>Application of the knowledge acquired in didactic courses focused on teaching mathematics in pedagogical practice. Development of the student's self-reflection within the framework of the analysis of the lessons taught by the student. Identification of the student's weaknesses in order to shift his/her knowledge. To acquaint students with the atmosphere and the organization of school. | |
| **Brief outline of the course:**<br>Visitations of classes in selected lessons<br>Analysis of lessons<br>Lesson plans preparation<br>Classes managed according to prepared lesson plan<br>Reflection on realized classes | |
| **Recommended literature:**<br>Mathematics curricula and textbooks for middle and secondary schools<br>Hejný, M.: Teória vyučovania matematiky 2. Bratislava : SPN 1989<br>M. Hejný, J. Novotná, N. Stehlíková: Dvacet pět kapitol z didaktiky matematiky 2, Univerzita Karlova v Praze - Pedagogická fakulta, Praha, 2004 | |
| **Course language:**<br>Slovak | |
| **Notes:** | |

**Course assessment**
Total number of assessed students: 120

| abs | n |
|---|---|
| 100.0 | 0.0 |

**Provides:** doc. RNDr. Ingrid Semanišinová, PhD., doc. RNDr. Dušan Šveda, CSc., RNDr. Veronika Hubeňáková, PhD.

**Date of last modification:** 24.08.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

**COURSE INFORMATION LETTER**

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚMV/ SHMa/22 | **Course name:** Seminar on history of mathematics 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:** 2.

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

**Prerequisities:**

**Conditions for course completion:**
Conditions for continuous evaluation:
1. Participation in teaching in accordance with the study rules and instructions of the teacher.
2. Activity.
3. Homework and tests.
4. Seminar work and its presentation at the seminar – poster from history of mathematics on the selected topic
Conditions for successful completion of the course:
1. Participation in teaching in accordance with the study regulations and according to the instructions of the teacher;
2. Credits will be awarded to students who score at least 50% on homework assignments and tests. Additional points can be achieved for the presentation of a seminar paper.

**Learning outcomes:**
The student knows the main stages of the development of mathematics, the history of the development of the language of mathematics, the development of selected concepts and some mathematical disciplines. The student understands the parallels between the phylogeny and ontogeny of mathematical thinking.

**Brief outline of the course:**
Prehistory, ontogeny and phylogeny.
Mathematics in ancient cultures: Egypt, Mesopotamia, China, India.
Mathematics in ancient Greece: Origins of Greek natural philosophy and mathematics. The discovery of incommensurability and its consequences (Pythagoras and his school). Classical problems of Greek mathematics. Problems with infinity (Zeno). Eudoxus' method. Plato, Aristotle, Euclid and his Foundations. Archimedes of Syracuse, Eratosthenes, Apollónios, Claudios Ptolemy, Diophantos.
Arabic mathematics and its relation to medieval European mathematics.
The origins of modern mathematics. The search for the roots of polynomial equations. The origins of analytic geometry. Probability. Infinitesimal calculus. Number theory. Non-Euclidean geometry. The origin of set theory.
Development of mathematical symbolism.

Selected topics in school mathematics from the perspective of the history of mathematics.

**Recommended literature:**

Burton, D. M.: The History of Mathematics: An Introduction. McGraw−Hill, 2007.
Devlin, K.: Jazyk matematiky. Dokořán, 2002. (in czech)
Čižmár, J . Dejiny matematiky (Od najstarších čias po takmer súčasnosť) Perfekt, 2017. (in slovak)
Mareš , M . Příběhy matematiky. Pistorius, 2011. (in czech)

**Course language:**
Slovak

**Notes:**

**Course assessment**
Total number of assessed students: 169

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 68.64 | 15.98 | 6.51 | 4.14 | 2.37 | 2.37 |

**Provides:** doc. RNDr. Ingrid Semanišinová, PhD.

**Date of last modification:** 24.08.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** ÚMV/ SHMb/22 | **Course name:** Seminar on history of mathematics 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:** 3.

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

**Prerequisities:**

**Conditions for course completion:**
Conditions for continuous evaluation:
1. Participation in teaching in accordance with the study rules and instructions of the teacher.
2. Activity.
3. Homeworks.
4. Seminar work on the selected topic and its presentation at the seminar
Conditions for successful completion of the course:
1. Participation in teaching in accordance with the study regulations and according to the instructions of the teacher;
2. Credits will be awarded to students who score at least 50% on homework assignments and tests. Additional points can be achieved for the presentation of a seminar paper.

**Learning outcomes:**
Students will demonstrate an understanding of the history of the development of some mathematical disciplines and selected concepts. They will demonstrate this understanding by scoring at least 50% on previous topics and homework assignments.

**Brief outline of the course:**
1. Algebra and geometry of 16th and 17th century - Tartaglia, Vieta, Descartes
2. Beginning of modern number theory - Mersenne, Fermat
3. Development of infinitesimals -- Newton, Leibniz, Bernoulliovci
4. Complex and hypercomplex numbers -- Hamilton, Cayley, Clifford
5. Combinatory and probability - Pascal, Fermat
6. Algebra in the 18th and 19th century - Gauss, Abel, Galois
7. Non-Euclidean geometries - Gauss, Lobačevskij, Bolyai
8. Mathematical analysis in the 19th century - Cauchy, Bolzano, Weierstrass
9. Set theory - Bolzano, Cantor, Zermelo, Franklin
10. Mathematics in the beginning of 20th century - Peano, Hilbert, Gödel

**Recommended literature:**
Berlinghoff, W.P., Gouvea, F.Q.: Math through the Ages, MAA Press, 2015.
Čižmár, J . Dejiny matematiky (Od najstarších čias po takmer súčasnosť) Perfekt, 2017.
Hairer, E., Wanner, G.: Analysis by its History, Springer, 2008.

Mareš , M . Příběhy matematiky. Pistorius, 2011.

**Course language:**
Slovak

**Notes:**

**Course assessment**
Total number of assessed students: 10

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 40.0 | 40.0 | 20.0 | 0.0 | 0.0 | 0.0 |

**Provides:** prof. RNDr. Ondrej Hutník, PhD.

**Date of last modification:** 21.09.2023

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

**COURSE INFORMATION LETTER**

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚINF/ DSU1a/15 | **Course name:** Seminar to diploma theses in informatics XI |

**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:** II.

**Prerequisities:** ÚINF/PDSI1/15 or ÚINF/PDSI2/22

**Conditions for course completion:**
Conditions for ongoing evaluation:
1. Creation of a glossary of terms and a concept map for teaching a selected topic.
2. Creation of a collection of solved tasks for teaching the selected topic.
3. Creation of learning objectives and a graded system of tasks for teaching a selected topic.
Conditions for the final evaluation:
1. Update and presentation of the thesis website.
Conditions for successful completion of the course:
Fulfillment of all ongoing and final assignments.

**Learning outcomes:**
The student will gain an overview of the issues of pedagogical research in the field of teaching informatics.
The student continuously works on his / her thesis (analyzes the content of teaching a selected topic, creates a glossary of terms and a concept map, creates a collection of tasks and then a system of graded tasks) and presents the ongoing results of his / her thesis.

**Brief outline of the course:**
1. Pedagogical research in the field of teaching informatics (analysis of selected scientific studies with discussion).
2. Pedagogical research in the field of teaching informatics (analysis of selected scientific studies with discussion).
3. Pedagogical research in the field of teaching informatics (design of own pedagogical action research).
4. Analysis of the content of teaching of the selected topic (creation of a glossary of terms and a concept map).
5. Analysis of the content of teaching of the selected topic (creation of a glossary of terms and a concept map).
6. Creation of a collection of solved problems for teaching the selected topic.
7. Creation of a collection of solved problems for teaching the selected topic.
8. Creation of a collection of solved problems for teaching the selected topic.
9. Creation of learning objectives and a graded system of tasks for teaching the selected topic.

10. Creation of learning objectives and a graded system of tasks for teaching the selected topic.
11. Presentations of ongoing results of students' theses, updating of thesis websites.
12. Presentations of ongoing results of students' theses, updating of thesis websites.

**Recommended literature:**

MEŠKO, Dušan, Dušan KATUŠČÁK and Ján FINDRA, 2013. Akademická príručka: Chcete byť úspešní na vysokej škole? 3. vydanie. Osveta, 495 pp. ISBN 9788080633929.
KATUŠČÁK, Dušan, 2013. Ako písať záverečné a kvalifikačné práce. Enigma, 162 pp. ISBN 8089132454.
COMPUTER SCIENCE TEACHERS ASSOCIATION. Home Page
Computer Science Teachers Association [online]. [cited 2021-7-30]. Available from: https://www.csteachers.org/
ASSOCIATION FOR COMPUTING MACHINERY. The ACM Digital Library [online]. [cited 2021-7-30]. Available from: https://dl.acm.org/
SPRINGER NATURE SWITZERLAND AG. Home - Springer [online]. [cited 2021-7-30]. Available from: https://link.springer.com/
BAČÍKOVÁ, Mária, Anna JANOVSKÁ and Oľga OROSOVÁ, 2019. Základy metodológie pedagogicko-psychologického výskumu: Sprievodca pre študentov učiteľstva [online]. 2. doplnené vydanie. Košice: Univerzita Pavla Jozefa Šafárika v Košiciach, 195 pp. [cited 2021-7-29]. ISBN 978-80-8152-805-7. Available from: https://unibook.upjs.sk/sk/filozoficka-fakulta/1266-zaklady-metodologie-pedagogicko-psychologickeho-vyskumu-sprievodca-pre-studentov-ucitelstva
Informatics in Education. Vilnius University Institute of Data Science and Digital Technologies. ISSN 2335-8971 (online). Also available from: https://infedu.vu.lt/journal/INFEDU
Matematika–fyzika–informatika. Praha: PROMETHEUS. ISSN 1805-7705. Also available from: http://www.mfi.upol.cz/index.php/mfi/index
UNIVERZITA MATEJA BELA V BANSKEJ BYSTRICI, TECHNICKÁ UNIVERZITA V LIBERCI, 2021. Zborníky medzinárodnej konferencie DidInfo (od roku 2011) [online]. [cited 2021-7-30]. Available from: http://www.didinfo.net/minule-rocniky
CENTRUM VEDECKO-TECHNICKÝCH INFORMÁCIÍ SR. Centrálny register záverečných a kvalifikačných prác [online]. [cited 2021-7-30]. Available from: https://cms.crzp.sk/

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

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

**Course assessment**
Total number of assessed students: 12

| abs | n |
|---|---|
| 100.0 | 0.0 |

**Provides:** doc. RNDr. Ľubomír Šnajder, PhD.

**Date of last modification:** 01.08.2021

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

**COURSE INFORMATION LETTER**

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚINF/ DSU1b/22 | **Course name:** Seminar to diploma theses in informatics XI |

**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:** 3.

**Course level:** II.

**Prerequisities:** ÚINF/DSU1a/15

**Conditions for course completion:**
Conditions for ongoing evaluation:
1. Creation of diagnostic tools for teaching selected topics.
2. Creation of teaching aids for teaching selected topics.
3. Creating preparation for teaching selected topics.
4. Evaluation of pilot teaching.
Conditions for the final evaluation:
1. Update and presentation of the thesis website.
Conditions for successful completion of the course:
Fulfillment of all ongoing and final assignments.

**Learning outcomes:**
The student continuously works on his / her thesis (creates diagnostic tools, teaching aids, thematic plan, preparation for teaching, implements and evaluates pilot teaching) and presents the ongoing results of his /her thesis.

**Brief outline of the course:**
1. Creation of diagnostic tools for teaching the selected topic (didactic test, evaluation section of the project).
2. Creation of diagnostic tools for teaching the selected topic (didactic test, evaluation section of the project).
3. Creation of teaching aids (reference materials, work files, tutorials, instructional videos).
4. Creation of teaching aids (reference materials, work files, tutorials, instructional videos).
5. Creation of teaching aids (reference materials, work files, tutorials, instructional videos).
6. Creating a thematic plan. Creation of preparations and implementation of pilot teaching.
7. Creation of preparations and implementation of pilot teaching.
8. Creation of preparations and implementation of pilot teaching.
9. Evaluation of pilot teaching (results of teaching, identified misconceptions of students, interesting student solutions, other observations from teaching).
10. Evaluation of pilot teaching (results of teaching, identified misconceptions of students, interesting student solutions, other observations from teaching).
11. Presentations of ongoing results of students' theses, updates of diploma websites.

12. Presentations of ongoing results of students' theses, updates of diploma websites.

**Recommended literature:**

MEŠKO, Dušan, Dušan KATUŠČÁK and Ján FINDRA, 2013. Akademická príručka: Chcete byť úspešní na vysokej škole? 3. vydanie. Osveta, 495 pp. ISBN 9788080633929.
KATUŠČÁK, Dušan, 2013. Ako písať záverečné a kvalifikačné práce. Enigma, 162 pp. ISBN 8089132454.
COMPUTER SCIENCE TEACHERS ASSOCIATION. Home Page
Computer Science Teachers Association [online]. [cited 2021-7-30]. Available from: https://www.csteachers.org/
ASSOCIATION FOR COMPUTING MACHINERY. The ACM Digital Library [online]. [cited 2021-7-30]. Available from: https://dl.acm.org/
SPRINGER NATURE SWITZERLAND AG. Home - Springer [online]. [cited 2021-7-30]. Available from: https://link.springer.com/
BAČÍKOVÁ, Mária, Anna JANOVSKÁ and Oľga OROSOVÁ, 2019. Základy metodológie pedagogicko-psychologického výskumu: Sprievodca pre študentov učiteľstva [online]. 2. doplnené vydanie. Košice: Univerzita Pavla Jozefa Šafárika v Košiciach, 195 pp. [cited 2021-7-29]. ISBN 978-80-8152-805-7. Available from: https://unibook.upjs.sk/sk/filozoficka-fakulta/1266-zaklady-metodologie-pedagogicko-psychologickeho-vyskumu-sprievodca-pre-studentov-ucitelstva
Informatics in Education. Vilnius University Institute of Data Science and Digital Technologies. ISSN 2335-8971 (online). Also available from: https://infedu.vu.lt/journal/INFEDU
Matematika–fyzika–informatika. Praha: PROMETHEUS. ISSN 1805-7705. Also available from: http://www.mfi.upol.cz/index.php/mfi/index
UNIVERZITA MATEJA BELA V BANSKEJ BYSTRICI, TECHNICKÁ UNIVERZITA V LIBERCI, 2021. Zborníky medzinárodnej konferencie DidInfo (od roku 2011) [online]. [cited 2021-7-30]. Available from: http://www.didinfo.net/minule-rocniky
CENTRUM VEDECKO-TECHNICKÝCH INFORMÁCIÍ SR. Centrálny register záverečných a kvalifikačných prác [online]. [cited 2021-7-30]. Available from: https://cms.crzp.sk/

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

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

**Course assessment**
Total number of assessed students: 14

| abs | n |
|---|---|
| 100.0 | 0.0 |

**Provides:** doc. RNDr. Ľubomír Šnajder, PhD.

**Date of last modification:** 08.02.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** KSSFaK/VSJU/15 | **Course name:** Slovak Language for Teachers |
|---|---|

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

**Number of ECTS credits:** 2

**Recommended semester/trimester of the course:** 1., 3.

**Course level:** II.

**Prerequisities:**

**Conditions for course completion:**
Conditions for successful completion of the course:
a) regular active participation in seminars,
b) preparation of basic literature and content of lectures,
c) elaboration of seminar work / creative task,
d) successful completion of the final test.
Conditions for obtaining the final evaluation: a) seminar work / creative task b) final test (min. 56%) Final evaluation: 100,00 - 92,00% A 91,99 - 83,00% B 82,99 - 74,00 % C 73.99 - 65.00% D 64.99 - 56.00% E 55.99% and less FX
Prerequisites for successful completion of the course are annually updated on the electronic bulletin board in AIS2.

**Learning outcomes:**
During the final evaluation, the student demonstrates adequate mastery of the content standard of the course, which is defined by the required literature and seminar content, and demonstrates mastery of the performance standard, within which the student is able to practically apply the standard of standard Slovak in oral and written communications. manuals, gain skill in the bibliographic and citation standard. The graduate of the course normatively masters written communication on the basis of current orthographic rules and knows the basic characteristics of the means of expression of the text and functional language style.

**Brief outline of the course:**
Characteristics of basic terms of general linguistics (language – speech, language functions, the sign character of language, language levels, content and form in language, individual and general aspect of language units) on interdisciplinary background and with the application to Slovak as a national language. Language standard, codification, usus. Basic codification manuals. Application of orthographic rules in practical documents. Sound culture, pronunciation styles. Orthoepic phenomena in vowels and consonants. Application of rhythmic law and its exceptions. Assimilation and its specific features in Slovak. Style, stylization – methods and demonstration of structure of text components.

**Recommended literature:**
BÓNOVÁ, I. - JASINSKÁ, L.: Jazyková kultúra nielen pre lingvistov. Košice: UPJŠ 2019. 100 s.

FINDRA, J.: Štylistika slovenčiny. Martin : Osveta, 2004.
FINDRA, J.: Štylistika slovenčiny v cvičeniach. Martin : Osveta, 2005.
KRÁĽ, Á.: Pravidlá slovenskej výslovnosti. Martin: Matica slovenská 2006. 423 s.
Krátky slovník slovenského jazyka. Martin: Matica slovenská 2020.
SABOL, J.- SLANČOVÁ, D. - SOKOLOVÁ, M.: Kultúra hovoreného slova. Prešov, FF UPJŠ 1989.
Pravidlá slovenského pravopisu. Bratislava: Veda 2000 (2013).
SABOL, J. – BÓNOVÁ, I. – SOKOLOVÁ, M.: Kultúra hovoreného prejavu. Prešov: FF PU 2006.
SLANČOVÁ, D.: Praktická štylistika. 2., upravené a doplnené vydanie. Prešov: Slovacontact 1996. 178 s. ISBN 80-901417-9-X.
Slovník súčasného slovenského jazyka. Bratislava: Veda 2006.
Slovník súčasného slovenského jazyka. Bratislava: Veda 2011.
Slovník súčasného slovenského jazyka. Bratislava: Veda 2015.

**Course language:**
Slovak language

**Notes:**

**Course assessment**
Total number of assessed students: 151

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 13.91 | 23.18 | 32.45 | 14.57 | 13.91 | 1.99 |

**Provides:** PhDr. Iveta Bónová, PhD., univerzitná docentka, PhDr. Lucia Jasinská, PhD.

**Date of last modification:** 24.06.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

**COURSE INFORMATION LETTER**

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** ÚINF/ SVK1/15 | **Course name:** Student scientific conference |

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

**Number of ECTS credits:** 4

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

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

**Prerequisities:**

**Conditions for course completion:**
It is required to be registered for the participation on the Student Scientific Conference (ŠVK) in accordance to the Statute of the Student Scientific Conference at PF UPJŠ and the specific conditions for participation in a given year, which are announced by the dean of the faculty. Within one year of the ŠVK, a student or a research team can register in one track only. It is also possible to apply with a written work that is an integral part of a bachelor's or master's thesis or a result of a student support program. The written work at ŠVK is the result of the student's own work or the work of the research team. It must not show elements of academic fraud and must meet the criteria of good research practice defined in the Rector's Decision no. 21/2021, which lays down the rules for assessing plagiarism at Pavol Jozef Šafárik University in Košice and its components. Fulfillment of the criteria is verified mainly in the process of supervision and in the process of work presentation. Failure to do so is reason for disciplinary action. The condition for the evaluation is a successful presentation and defense of the work in the relevant track headed by a commission appointed by the dean of the faculty. The commission decides on the eligibility of credits and states its decision in the memorandum of the ŠVK.

**Learning outcomes:**
The student demonstrates mastery of extended theory and professional terminology of the field of study, acquisition of knowledge, skills and competences, the ability to apply them creatively in solving selected field problems, ability to present the results using appropriate presentation methods and tools and ability to actively participate in a professional discussion.

**Brief outline of the course:**
1. Analysis of the state of the art in the field.
2. Design and implementation of a solution to the researched problem.
3. Evaluation of achieved results.
4. Preparation of work annotation.
5. Processing the written work.
6. Preparation of results presentation.
7. Presentation and defense of the obtained results.

**Recommended literature:**

The recommended literature is specified individually by the student or research team in agreement with the consultant or the supervisor.

**Course language:**
Slovak or english

**Notes:**

**Course assessment**
Total number of assessed students: 29

| abs | n |
|---|---|
| 100.0 | 0.0 |

**Provides:**

**Date of last modification:** 25.01.2022

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## 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:**<br>**Course type:**<br>**Recommended course-load (hours):**<br>**Per week: Per study period:**<br>**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:**<br>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:**<br>With respect to the research problematics (article in journals, books). | |
| **Course language:**<br>Slovak or English | |
| **Notes:** | |
| **Course assessment**<br>Total number of assessed students: 24 | |

| abs | n |
|---|---|
| 100.0 | 0.0 |

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| **Provides:** |
| **Date of last modification:** 01.12.2021 |
| **Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD. |

## COURSE INFORMATION LETTER

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** KPE/ MPPa/15 | **Course name:** Supervised Teaching Practice |
| **Course type, scope and the method:**<br>**Course type:** Practice<br>**Recommended course-load (hours):**<br>**Per week: Per study period:** 36s<br>**Course method:** present | |
| **Number of ECTS credits:** 2 | |
| **Recommended semester/trimester of the course:** 1. | |
| **Course level:** 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: 785

| abs | n |
|---|---|
| 100.0 | 0.0 |

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|---|
| **Provides:** doc. PhDr. Beata Gajdošová, PhD., doc. PaedDr. Renáta Orosová, PhD. |
| **Date of last modification:** 14.09.2024 |
| **Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD. |

## COURSE INFORMATION LETTER

**University:** P. J. Šafárik University in Košice

**Faculty:** Faculty of Science

| **Course ID:** KPE/ PDU/15 | **Course name:** Teaching Methodology and Pedagogy |
|---|---|

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

**Number of ECTS credits:** 5

**Recommended semester/trimester of the course:** 1.

**Course level:** 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: 856

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 24.77 | 28.27 | 26.4 | 14.37 | 5.72 | 0.47 |

**Provides:** doc. PaedDr. Renáta Orosová, PhD., Mgr. Zuzana Vagaská, PhD.

**Date of last modification:** 18.09.2024

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.

## COURSE INFORMATION LETTER

| | |
|---|---|
| **University:** P. J. Šafárik University in Košice | |
| **Faculty:** Faculty of Science | |
| **Course ID:** KPPaPZ/UPR/15 | **Course name:** The Art of Aiding by Verbal Exchange |

**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:** II.

**Prerequisities:**

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

**Learning outcomes:**
Provide students with basic information about a systemic approach to helping. Train interviewing, clarify orders. Reflect on help options.
The student is able to demonstrate an understanding of the theoretical principles of conducting a helping conversation.
The student is able to describe, explain and evaluate in what context to use which of the selected techniques to help the interview with the individual.
The student is able to use basic selected techniques when working with an individual in the interview process.
The method of teaching the subject will be oriented to the student. Lecturers will be interested in students' needs, expectations and opinions so as to encourage them to think critically by expressing respect and feedback on their opinions and needs.
The content of the curriculum will be based on primary and high-quality sources that will reflect the topicality of the topics so as to ensure the connection of the curriculum with other subjects and also the connection of the curriculum with practice. Students will be expected to take an active approach in lectures and seminars with an emphasis on their independence and responsibility.

**Brief outline of the course:**

Psychological preparation for conducting an interview. Self-reflection of one's own possibilities, abilities to lead a conversation, to help. Possibilities of helping with conversations from the point of view of selected psychological approaches. Systematic approach to helping. Interview and professional ways to help and control. Objectivist and constructivist framework of conversation in theory and practice. Is it possible to help with control? Opening the interview, negotiating the course, course, ending the interview. Constructivist questions in the interview. Analysis of individual phases of conducting the interview. Reflex team possibilities of help in conversation. Models of reflective teams. Model situations of conducting an interview with an individual. Model situations of conducting an interview with a group. Professional possibilities, advantages and pitfalls of solving problems with an individual, with a group.

**Recommended literature:**

**Course language:**

**Notes:**

**Course assessment**
Total number of assessed students: 181

| A | B | C | D | E | FX |
|---|---|---|---|---|---|
| 90.06 | 3.31 | 4.97 | 1.1 | 0.55 | 0.0 |

**Provides:** Mgr. Ondrej Kalina, PhD.

**Date of last modification:** 12.09.2024

**Approved:** prof. PhDr. Oľga Orosová, CSc., prof. RNDr. Jozef Doboš, CSc., prof. RNDr. Stanislav Krajči, PhD.