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## INFORMATION SHEET

<b>Name of the university:</b> J. Selye University	
<b>Name of the faculty:</b> Faculty of Education	
<b>Code:</b> KINF/ DBA/22	<b>Name:</b> Database Application Development
<b>Types, range and methods of educational activities:</b> <b>Form of study:</b> Lecture / Seminar / Practical <b>Recommended extent of course ( in hours ):</b> <b>Per week:</b> 0 / 0 / 2 <b>For the study period:</b> 0 / 0 / 26 <b>Methods of study:</b> present	
<b>Number of credits:</b> 1	
<b>Recommended semester/trimester of study:</b> 3.	
<b>Level of study:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for passing the subject:</b> During the semester, students solve practical problems for which they can get 50 points. At the end of the semester, students will complete a term project for which they may receive 50 points. To obtain grade „A“ students have to obtain minimum 90% of the total score, to obtain grade „B“ students have to obtain 80% of the total score, to obtain grade „C“ students have to obtain 70% of the total score, to obtain grade „D“ students have to obtain 60% of the total score, to obtain grade „E“ students have to obtain 50% of the total score. There is no credit for the subject if a student obtains less than 50%.	
<b>Results of education:</b> <b>Knowledge:</b> Upon successful completion of the course, students will get to know the principles and creation of dynamic websites. Students will learn to control the Visual Studio CODE development environment, .Net (core), SQLite and use these environments to create simple information systems. They also will get information about the possibilities of their use, their advantages and disadvantages, as well as about professional terminology in this field. <b>Skills:</b> Students will be able to create a web application with a connection to a database system. Students will be able to establish a connection between a client and a server using standard REST commands (GET, PUT, WebSocket). Students will learn common application patterns such as login, user management, remembering login in the browser. Students will be able to design independently web application architecture, implement the server and client parts as well as implement communication protocols between components. <b>Competencies:</b> The student is able to create interactive web applications. The student can use gained skills as a web developer, as a developer of a complete web solution (full-stack developer), as a developer of web database solutions, administrative pages or company websites. The student can also use his skills as a system developer to visualize information, to create information aggregations and to represent information.	
<b>Brief syllabus:</b> 1. Design pattern model-representation-control. Working with .NET (Core). Creating a basic web, webapi and mvc project. Creating a simple web page.	

2. Query information from the client from the server using a GET query. Query parameters and usage examples.
3. Querying information from the client from the server using a POST type query. Query parameters and usage examples.
4. Checking the client from the server. Propagation of information and events from server to client. System of communication using unfinished queries (long polling).
5. Checking the client from the server. WebSocket communication.
6. Checking the client from the server. Communication using SignalR.
7. Uploading files. Sending files to the server.
8. Storing information on the client side using cookies.
9. SQLite as a nested database.
10. Connecting the .Net (Core) system to the SQLite database.
11. Creating a web connection using control object annotation.
12. JSon container format for web communication
13. Sending objects between client and server in JSon format

**Literature:**

1. MILES, R. (2019). C# Programming. Yellow Book "Cheese" Edition 8.1
2. NAKOV, S. et al (2013). FUNDAMENTALS OF COMPUTER PROGRAMMING WITH C#. Sofia ISBN 978-954-400-773-7
4. RESCA, S. (2019). Hands-On RESTful Web Services with ASP.NET Core 3: Design production-ready, testable, and flexible RESTful APIs for web applications and microservices. ASIN: B07MXLQR34 "
5. BÁRTFAI, B. – BUDAVÁRI, O.: Adatbázis-kezelés. BBS-INFO Kft., 2002. - 138 s. - ISBN 9630034441.
6. KOLOSZÁR, L. – TÓTH, Zs.: Adatbázis-kezelés. Nyugat-magyarországi Egyetem, 2012.
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**Language, knowledge of which is necessary to complete a course:**

Hungarian or Slovak

**Notes:**

Student workload distribution:

80% - participation in classes, preparation for exercises,

20% - studying literature, practicing the acquired knowledge, working on practical assignments.

**Evaluation of subjects**

Total number of evaluated students: 0

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

**Teacher:** Dr. habil. Attila Elemér Kiss, CSc.

**Date of last update:** 02.03.2022

**Approved by:**

## INFORMATION SHEET

<b>Name of the university:</b> J. Selye University	
<b>Name of the faculty:</b> Faculty of Education	
<b>Code:</b> KINF/DI1/22	<b>Name:</b> Didactics of Informatics 1
<b>Types, range and methods of educational activities:</b> <b>Form of study:</b> Lecture / Seminar / Practical <b>Recommended extent of course ( in hours ):</b> <b>Per week:</b> 1 / 0 / 2 <b>For the study period:</b> 13 / 0 / 26 <b>Methods of study:</b> present	
<b>Number of credits:</b> 5	
<b>Recommended semester/trimester of study:</b> 1.	
<b>Level of study:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for passing the subject:</b> Students get to know the special elements of elementary and high school education in IT subjects during the semester, as well as the different educational forms and methods (problem-based, project-based and cooperative learning strategy). They continuously, independently and creatively work on their own teacher- preparation for the given lesson (with given content), study the relevant literature. Prepared teacher-preparations must be submitted and then presented as part of the exercise. Students have the opportunity to coordinate and discuss their sample teacher-preparations with the teacher during the semester. The students' activities (teacher-preparations) and performances (trial teaching) are evaluated during the semester. Students must obtain at least 50% of the total score to be eligible to take the exam. The exam is complex, consisting of a practical part - the evaluation of the work during the semester, and of a theoretical part - checking the theoretical knowledge from the topics of the lecture. In order for the students to be able to be evaluated, they must achieve at least 50% in the oral exam. Students are evaluated based on the average obtained from the results of their work during the semester (50%) and the overall evaluation of the oral exam (50%). Students must achieve an average of at least 90% to obtain an A grade, at least 80% for a B grade, at least 70% for a C grade, at least 60% for a D grade, and at least 50% for an E grade. Students who do not complete at least 50% of each part will not receive credit for the subject.	
<b>Results of education:</b> Knowledge: After completing the subject, the student: <ul style="list-style-type: none"> <li>• knows the development strategies, methods and forms of the student's digital literacy within the framework of the discipline of their subject specialization;</li> <li>• knows the structure and phases of the lesson;</li> <li>• knows the content units of the elementary and high school informatics subject, their characteristics, directions and goals;</li> <li>• knows the classification of the thematic units in the given two lines (A – IT thinking, B – digital literacy);</li> <li>• knows the basic principles of teacher-preparing for the lesson;</li> <li>• is able and knows apply of acquired knowledge in the field of IT education effectively;</li> <li>• is aware of the possibilities of the computer as a didactic tool in certain forms and phases of teaching.</li> </ul>	

**Skills:**

After completing the subject, the student:

- is able to analyze and solve IT problems;
- has basic practical experience in selecting tasks related to the topic of the given class;
- can make suggestions for preparing for the lesson;
- uses different educational forms and methods;
- can apply his own teacher-preparation in the IT subject;
- knows the technical and legal aspects of teaching process and its organization.

**Competencies:**

After completing the subject, the student:

- demonstrates a high degree of independence in developing his own teacher-preparation for the given class;
- knows how to work effectively independently;
- characterized by creative thinking and independence;
- applies a creative IT way of thinking in his work;
- is characterized by a good pedagogical approach in the lessons;
- has an overview of the possibilities of IT education in different school types and school levels with the effective use of IT tools;
- has an active and responsible attitude towards the completion of subject tasks.

**Brief syllabus:**

1. Introduction to the methodology of IT, organizational forms of teaching process.
2. Preparation of informatics teacher for teaching, type and structure of the teaching lesson.
3. Special elements of Informatics in elementary school education. The content units of the Informatics subject in elementary schools, their characteristics, directions and goals.
4. Special elements of Informatics in high school education. The content units of the Informatics subject in high school education, their characteristics, directions and goals.
5. Assignment of thematic units to line A – IT thinking.
6. Assignment of thematic units to line B – digital literacy.
7. The computer in the teaching-learning process, the computer as a universal didactic aid.
8. Informatization in the educational process, IT in the school and in managerial and organizational activities and its message in the modern society of the 21st century.
9. Internet and communication (cooperative learning), netiquette, data protection and security.
10. Possibilities of e-learning. Internet education and use of digital teaching materials.
11. Supporting creativity in learning - constructivism and constructionism.
12. Teaching methods and strategies. Problem- and project-based learning.
13. Talent and talent management in Informatics.

**Literature:**

1. ALBERT, S.: Didaktika. 1. vyd. Komárom : Selye János Egyetem, 2008. 274 s. ISBN 978-80-89234-63-9.
2. ALBERT, S.: Általános didaktika. Albert Sándor. Komárno : Selye János Egyetem, 2006. 226 s. ISBN 80-89234-07-0.
3. ALBERT, S.: Didaktika. Dunaszerdahely : Lilium Aurum, 2005. 250 s. ISBN 8080622523.
5. BRESTENSKÁ, B.: Premena školy s využitím informačných a komunikačných technológií : Využitie IKT v danom predmete : spoločná časť. 1. vyd. Košice : elfa, s.r.o. 162 s. ISBN 978-80-8086-143-8.
6. ČAPEK, R.: Moderní didaktika : Lexikon výukových a hodnoticích metod. 1. vyd. Praha : Grada, 2015. 604 s. ISBN 978-80-247-3450-7.

7. FALUSI, I.: Didaktika : Elméleti alapok a tanítás tanulásához. 1. vyd. Budapest : Nemzeti Tankönyvkiadó, 2003. 550 s. ISBN 963 19 5296 7.
8. KALÁŠ, I.: Premeny školy v digitálnom veku. 1. vyd. Bratislava : Slovenské pedagogické nakladateľstvo - Mladé letá, s.r.o., 2013. 256 s. ISBN 978-80-10-02409-4.
9. KALHOUS, Z. – OBST, O. a kol.: Školní didaktika. 2. vyd. Praha : Portál, 2009. 448 s. ISBN 978-80-7367-571-4.
10. KOMENSKÝ, J. A.: Výber myšlienok z diela Veľká didaktika. Prešov : Metodické centrum Prešov, 1992. 23 s. ISBN 8085410273.
12. NÉMETH, G.: Informatika. Budapest : Műegyetemi Kiadó, 2002. 215 s. ISBN 0108228.
13. NIKL, J.: Metody projektování učebních úloh. Gaudeamus, 1997. 71 s. ISBN 8070412305
14. OBDRŽÁLEK, Z.: Didaktika pre študentov učiteľstva základnej školy. 1. vyd. Bratislava : Univerzita Komenského, 2003. 180 s. ISBN 80-223-1772-1.
15. PETLÁK, E.: Všeobecná didaktika. 1. vyd. : IRIS, 2004. 316 s. ISBN 80-89018-64-5.
16. RYBÁR, J.: Kognitívne vedy. Bratislava : Kalligram, 2002. 360 s. ISBN 80-7149-515-8.
17. STOFFA, V.: Az informatika alapjai I. Komárno : Apáczai közalapítvány, 2007. 268 s. ISBN 978-80-89234-29-5.
18. STOFFOVÁ, V. - MASTALERZ, E. – NOGA, H. XXIV DIDMATTECH 2011 : Problems in teachers education . 1. vyd. Krakow : Institute of Technology, 2011. 270 s. ISBN 978-83-7271-679-8.
19. STOFFOVA, V.: Az informatika alapjai II.: A számítógépes hálózatok . 1. vyd. Komárno : UJS, 2010. 140 s. ISBN 978-80-89234-65-3.
20. STOFFOVÁ, V.: Počítač univerzálny didaktický prostriedok. 1. vyd. Nitra : PF UKF, 2004. 173 s. ISBN 80 8050 765 1.
21. SZABÓ, L.T.: Didaktika szöveggyűjtemény. Debrecen : Kossuth Egyetemi Kiadó, 2004. 310 s. ISBN 9634728073.
23. TUREK, I.: Didaktika. 3.prepracované a doplnené vyd. Bratislava : Wolters Kluwer, s.r.o., 2014. 618 s. ISBN 978-80-8168-004-5.
24. Štátny vzdelávací program pre predmet Informatika. [online]. Dostupné: <<https://www.statpedu.sk/sk/svp/inovovany-statny-vzdelavaci-program/>>
25. Upravené ciele a obsah vyučovacieho predmetu Informatika. [online]. Dostupné: [https://www.statpedu.sk/files/sk/svp/pilotne-overovanie/upravene-ciele-obsah/aktualizovane-vs/vo\\_mai.pdf](https://www.statpedu.sk/files/sk/svp/pilotne-overovanie/upravene-ciele-obsah/aktualizovane-vs/vo_mai.pdf)

**Language, knowledge of which is necessary to complete a course:**

Hungarian or Slovak

**Notes:**

Student workload:

40% - participation in classes, own preparation for exams,

60% - study of literature, work on own teacher-preparation for the given lesson.

**Evaluation of subjects**

Total number of evaluated students: 0

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

**Teacher:** Dr. habil. Dr. Gábor Kiss, PhD., PaedDr. Krisztina Czákóová, PhD.

**Date of last update:** 02.03.2022

**Approved by:**

## INFORMATION SHEET

<b>Name of the university:</b> J. Selye University	
<b>Name of the faculty:</b> Faculty of Education	
<b>Code:</b> KINF/DI2/22	<b>Name:</b> Didactics of Informatics 1
<b>Types, range and methods of educational activities:</b> <b>Form of study:</b> Lecture / Seminar / Practical <b>Recommended extent of course ( in hours ):</b> <b>Per week:</b> 1 / 0 / 2 <b>For the study period:</b> 13 / 0 / 26 <b>Methods of study:</b> present	
<b>Number of credits:</b> 5	
<b>Recommended semester/trimester of study:</b> 2.	
<b>Level of study:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for passing the subject:</b> Students get to know the special elements of the teaching of the IT subject in elementary and high schools during the semester - with particular attention to programming, as well as different teaching forms and methods (problem-based, project-based and cooperative learning). They continuously familiarize themselves with the possibilities of programming in child-oriented programming languages and programming robot toys, work independently and creatively on their own preparations for the given lesson (with the given content, concentrating on individual phases of programming), and study the relevant literature. They must submit the teacher-preparations and then present them as part of the exercise (trial teaching). Students develop and submit 5 preparations for evaluation during the semester, which they must present. Students have the opportunity to consult the teacher-preparations. The students' activities (development of teacher-preparations) and presentations (presentation of teacher-preparations - trial teaching) are evaluated during the semester. Students must obtain at least 50% of the total score to be eligible to take the exam. The exam is complex, consisting of a practical part - the evaluation of the work during the semester, and of a theoretical part - checking the theoretical knowledge of the topics of the lecture. In order to recognize the subject, the oral exam must be completed with at least 50%. Students are evaluated based on the average obtained from the cumulative evaluation of the continuous semester work (50%) and the oral exam (50%). Students must achieve an average of at least 90% to obtain an A grade, at least 80% for a B grade, at least 70% for a C grade, at least 60% for a D grade, and at least 50% for an E grade. Students who do not complete the individual parts with at least 50% will not receive credit for the subject.	
<b>Results of education:</b> <b>Knowledge:</b> After completing the subject, the student: <ul style="list-style-type: none"> <li>• knows the development strategies, methods and forms of students' digital and programming skills within the subject area;</li> <li>• knows the structure and phases of the lesson;</li> <li>• knows the content units of the informatics at elementary and high school education, their characteristics, directions and goals;</li> </ul>	

- knows the classification of the thematic units in the 2 orientations lines (A – IT thinking, B – digital literacy);
- knows the basic principles of analyzing problems from the point of view of digital technologies;
- knows the basic principles of teacher-preparation for the lesson;
- knows and can effectively apply the acquired knowledge to the development of algorithmic thinking and the teaching of programming in elementary and high schools education;
- is aware of the possibilities of the computer as a didactic aid in some forms and phases of teaching programming.

Skills:

After completing the subject, the student:

- can analyze and solve IT and algorithmic problems;
- has basic practical experience in selecting tasks related to the topic of the given lesson;
- has experience in creating computer programs that support problem solving;
- can make suggestions for the teacher's preparation for the lesson;
- can apply various educational forms and methods, with particular regard to the teaching of programming in elementary and high schools;
- is able to apply his own teacher preparation to teaching programming in elementary and high school Informatics education;
- knows the technical and legal aspects of teaching and its organization.

Competencies:

After completing the subject, the student:

- demonstrates a high degree of independence in developing his own teacher-preparation for the given lesson;
- knows how to work effectively independently;
- is characterized by creative and algorithmic thinking and independence;
- applies a creative IT way of thinking in his work;
- is characterized by a good pedagogical approach in the lessons;
- has an overview of the possibilities of teaching programming in different types and levels of schools, through the effective selection of programming tools;
- has an active and responsible attitude towards the completion of subject tasks.

### **Brief syllabus:**

1. The place of programming in the teaching of Informatics, developing algorithmic thinking of pupils in elementary school, introduction to programming, children's programming languages and microworlds, their application in elementary and high schools (ImagineLogo, Scratch, KoduGameLab, and others), visualization, interactivity and openness of programming environment. Creation of animations.
2. Teaching programming at elementary school. Written and graphical expression of the algorithm. Analysis of the problem. Interactive expression of the algorithm. Robot control - programmable robotic toys and their simulators available online (Bee-bot emulator, Ozobot). Instructions entered sequentially, conditional branching, loops.
3. Gradual improvements of the algorithm (program). Algorithm structure, fundamental errors. Characteristics of parametric tasks. Basic properties of a good algorithm.
4. Computer Aided Learning (CAL), e-learning, tutor, interactive teaching text (curriculum), Internet Teaching System - frameworks (ITS).
5. Model, modeling and simulation - to support learning. Virtual reality and artificial intelligence, and its elements in the educational process.
6. Expert and pedagogical information systems for the benefit of education and its organization.
7. The role of computers in the assessment of knowledge, presentation of the curriculum, didactic computer games and applications.



8. Computer-based knowledge testing, online questionnaires and tests, types of questions and their programmatic evaluation.
9. Teaching programming at high schools. Expressing the algorithm using a higher-level programming language (C, C++, C #, Java, etc.).
10. Robotics - programmable robots at a higher level, blockly program environments (Dash, Edison, Ozobot, and others).
11. Target requirements for matriculation exams. Requirements for knowledge and skills of graduates from the subject Informatics. Caring for talents and gifted people in the subject of informatics within the framework of programming.
12. Information processing tools - computer generations.
13. Environments for solving algorithms - development and classification of programming languages.

#### **Literature:**

1. ALBERT, S.: Didaktika. 1. vyd. Komárom : Selye János Egyetem, 2008. 274 s. ISBN 978-80-89234-63-9.
2. ČAPEK, R.: Moderní didaktika : Lexikon výukových a hodnoticích metod. 1. vyd. Praha : Grada, 2015. 604 s. ISBN 978-80-247-3450-7.
3. CSÓKE, L. - GARAMHEGYI, G.: A számítógép - programozás logikai alapjai. Algoritmusok és elemi adatszerkesztés. Budapest : Nemzeti Tankönyvkiadó, 2002. 144 s. ISBN 9631883310.
4. CZAKÓOVÁ, K. – STOFFOVÁ, V. Kreativitas és az aktív tanulást támogató programkörnyezetek. In: Mikrovilág alkalmazások : Egyetemi tankönyv. 1. kiadás. Komárno : Univerzita J. Selyeho, 2016. s. 12-31. ISBN 978-80-8122-191-0.
5. CZAKÓOVÁ, K. Saját alkalmazás fejlesztése Imagine programkörnyezetben. In: Mikrovilág alkalmazások : Egyetemi tankönyv. 1. kiadás. Komárno : Univerzita J. Selyeho, 2016. s. 35-107. ISBN 978-80-8122-191-0.
6. FALUSI, I.: Didaktika : Elméleti alapok a tanítás tanuláshoz. 1. vyd. Budapest : Nemzeti Tankönyvkiadó, 2003. 550 s. ISBN 963 19 5296 7.
7. KALAŠ, I.: Informatika pre stredné školy. 1. vyd. Bratislava : Slovenské pedagogické nakladateľstvo, 2001. 112 s. ISBN 80-08-01518-7.
8. KALHOUS, Z. – OBST, O. a kol.: Školní didaktika. 2. vyd. Praha : Portál, 2009. 448 s. ISBN 978-80-7367-571-4.
9. OBDRŽÁLEK, Z.: Didaktika pre študentov učiteľstva základnej školy. 1. vyd. Bratislava : Univerzita Komenského, 2003. 180 s. ISBN 80-223-1772-1.
10. PENTELENYI, P.: Az algoritmikus szemléletmód kialakítása és fejlesztése a tanítási - tanulási folyamatban. Budapest : Ligatura, 1999. 128 s. ISBN 963 85138 8 8.
11. STOFFA, V.: Algoritmizáció és programozás I. Komárno : Selye János Egyetem, 2005. 174 s. ISBN 80-969251-7-2.
12. STOFFOVÁ, V. – CZAKÓOVÁ, K.: Prostredie na učenie sa bádáním. In: Úvod do programovania v prostredí mikrosvetov : Vysokoškolská učebnica. Komárno : Univerzita J. Selyeho, 2016. 115 s. ISBN 978-80-8122-170-5.
13. STOFFOVÁ, V. – CZAKÓOVÁ, K.: Tvorba vlastných aplikácií v Imagine. In: Úvod do programovania v prostredí mikrosvetov : Vysokoškolská učebnica. Komárno : Univerzita J. Selyeho, 2016. 115 s. ISBN 978-80-8122-170-5.
14. TÓTH, P.: Gondolkodásfejlesztés az informatika oktatásban. Budapest : Ligatura, 2004. 60 s. ISBN 9638611324xy.
15. TUREK, I.: Didaktika. 3. prepracované a doplnené vyd. Bratislava : Wolters Kluwer, s.r.o., 2014. 618 s. ISBN 978-80-8168-004-5.
16. Štátny vzdelávací program pre predmet Informatika. [online]. Dostupné: <https://www.statpedu.sk/sk/svp/inovovany-statny-vzdelavaci-program/>

17. Upravené ciele a obsah vyučovacieho predmetu Informatika. [online]. Dostupné: <[https://www.statpedu.sk/files/sk/svp/pilotne-overovanie/upravene-ciele-obsah/aktualizovane-vs/vo\\_mai.pdf](https://www.statpedu.sk/files/sk/svp/pilotne-overovanie/upravene-ciele-obsah/aktualizovane-vs/vo_mai.pdf)>

**Language, knowledge of which is necessary to complete a course:**

Hungarian or Slovak

**Notes:**

Student workload:

40% - participation in classes, preparation for exam,

60% - study of literature, work on own teacher-preparations for the given lesson.

**Evaluation of subjects**

Total number of evaluated students: 0

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

**Teacher:** Dr. habil. Dr. Gábor Kiss, PhD., PaedDr. Krisztina Czakóová, PhD.

**Date of last update:** 02.03.2022

**Approved by:**

## INFORMATION SHEET

<b>Name of the university:</b> J. Selye University	
<b>Name of the faculty:</b> Faculty of Education	
<b>Code:</b> KINF/DS/22	<b>Name:</b> Diploma Seminar
<b>Types, range and methods of educational activities:</b> <b>Form of study:</b> Lecture / Seminar / Practical <b>Recommended extent of course ( in hours ):</b> <b>Per week:</b> 0 / 1 / 0 <b>For the study period:</b> 0 / 13 / 0 <b>Methods of study:</b> present	
<b>Number of credits:</b> 4	
<b>Recommended semester/trimester of study:</b> 3.	
<b>Level of study:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for passing the subject:</b> During the semester, the student is responsible for formulating his/her specific research questions, if relevant, market research on the topic, and writing an outline for the thesis, for which 20 points may be earned. An additional 10 points may be earned for searching the available literature and identifying the 15 most relevant sources for the Literature Used section of the thesis. At the end of the course, a first draft of the thesis must be written and a project (program, didactic application, pedagogical software, website, etc.) created and handed in for 70%, if it is part of the thesis, for 70 points. A minimum of 90 points is required for an A grade, a minimum of 80 points for a B grade, a minimum of 70 points for a C grade, a minimum of 60 points for a D grade and a minimum of 50 points for an E grade.	
<b>Results of education:</b> <b>Knowledge:</b> Upon completion of the course, the student will: <ul style="list-style-type: none"> <li>- can characterize the individual parts of the thesis;</li> <li>- knows the data collection tools and can explain the objectives;</li> <li>- knows the most important methods for processing the outputs of a scientific thesis;</li> <li>- is aware of scientific ethics in writing a scientific thesis;</li> <li>- is familiar with the principles of preparation and implementation of own project;</li> <li>- knows the tools for project and research design.</li> </ul> <b>Skills:</b> Upon completion of the course, the student will: <ul style="list-style-type: none"> <li>- Is able to plan and conduct research independently;</li> <li>- is able to present the results of own research activities in the professional community;</li> <li>- can work with professional literature;</li> <li>- can formulate research questions;</li> <li>- can write an abstract, outline a thesis and cite;</li> <li>- can conduct own research and analyse data;</li> <li>- knows how to prepare and successfully conduct a thesis defence.</li> </ul> <b>Competencies:</b> Upon completion of the course, the student will: <ul style="list-style-type: none"> <li>- knows how to write a thesis on a chosen topic;</li> </ul>	

- applies a critical approach;
- applies the principles of copyright, scientific ethics and relevant ISO and STN standards in the research.

### **Brief syllabus:**

The main aim of the course is to help students in writing their thesis. The topic and title of the thesis is decided at the beginning of the fifth semester. During the semester, the thesis advisor provides general literary sources for writing the thesis as well as for the topic chosen by the student. The student must read thoroughly in order to augment the sources with a variety of additional sources gathered from the library and the Internet. Based on the materials and research proposal, the student will provide the main structure of the thesis by the end of the examination period, write and produce approximately 70% of the thesis (includes: Contents, Introduction, Theoretical part divided into chapters and subchapters, Bibliography list, own project on the topic - practical part of the thesis).

1. Exploration of the thesis topic and identification of the research problem. Research methods and methodology. Writing up the findings.
2. Preparation of own project. Determination of the objectives of the thesis.
3. Preparation of the project work plan. Organisation and implementation of the work. Preparation and implementation of independent research activities in practice. Implementation of sub-tasks.
4. What should the thesis contain? (Front page, Abstract, Table of Contents, Foreword, Introduction/ Problem, Literature Review, Method, Design, Sample, Data Collection, Data Analysis, Custom Project, Implementation and Results, Discussion, Conclusion, Resume, Bibliography, Appendices).
5. Writing the abstract.
6. Planning, writing the thesis outline (setting the objective, specifying the problem, market research on the topic, literature search, preparing the skeleton, constructing the research proposal, conducting the research and writing the thesis, timetable).
7. Presentation of research background / literature review / software development environment for creating own project.
8. Research methods. Qualitative, quantitative and mixed methods research, quality criteria, data collection, data analysis, reporting research findings. Processing of experimental results.
9. Research ethics, plagiarism.
10. Use of graphs, tables and diagrams.
11. Processing, interpreting and presenting the results of independent scientific work.
12. Citation styles (use of in-text references to reference lists, creating a reference list).
13. Presentation of a research proposal. Preparing, presenting and defending a thesis. The course of the defence and the opinion on the referee's report.

### **Literature:**

1. ISO STN 690: Dokumentácia - Bibliografické odkazy – Obsah, forma a štruktúra. 1998.
2. KATUŠČÁK, D.: Ako písať záverečné a kvalifikačné práce. Nitra : Enigma, 2008, s. 164. ISBN 978 80 89132 45 4.
3. KIMLIČKA, Š.: Ako citovať a vytvárať zoznamy bibliografických odkazov : podľa noriem ISO 690 pre „klasické“ aj elektronické zdroje. Bratislava : Stimul, 2002, s. 82. ISBN 80-889-82-57-X.
4. Vnútné predpisy UJS o záverečných prácach (zásady obsahovej náplne, štruktúra a formálna úprava záverečných prác). Dostupné v akademickom informačnom systéme univerzity: <https://ais2.ujs.sk> .

### **Language, knowledge of which is necessary to complete a course:**

Hungarian or Slovak

### **Notes:**

Student workload distribution: 10% - participation in tutorials, 50% - study of literature, preparation of thesis proposal, 40% - preparation of the project (software, website, etc.).					
<b>Evaluation of subjects</b> Total number of evaluated students: 0					
A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0
<b>Teacher:</b> prof. RNDr. Tibor Kmet', CSc.					
<b>Date of last update:</b> 02.03.2022					
<b>Approved by:</b>					

## INFORMATION SHEET

<b>Name of the university:</b> J. Selye University	
<b>Name of the faculty:</b> Faculty of Education	
<b>Code:</b> KINF/ MIT/22	<b>Name:</b> Materials in ICT
<b>Types, range and methods of educational activities:</b> <b>Form of study:</b> Lecture / Seminar / Practical <b>Recommended extent of course ( in hours ):</b> <b>Per week:</b> 1 / 1 / 0 <b>For the study period:</b> 13 / 13 / 0 <b>Methods of study:</b> present	
<b>Number of credits:</b> 3	
<b>Recommended semester/trimester of study:</b> 1.	
<b>Level of study:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for passing the subject:</b> Students learn about mobile technologies in teaching of Informatics at elementary and high school subjects during the semester, as well as child-oriented programming languages (microworlds), the possibilities and applications of programmable educational (toy) robots. They actively use online learning environments and platforms, interfaces for sharing learning materials (interfaces for conference calls), and constantly study the relevant literature. They continuously and creatively work on their own projects for the given lesson (with given content), which they hand in and then present as part of the exercise. Students are evaluated based on their activities (own projects) and performances (presentation of projects) during the semester. Students must develop and submit 5 projects for evaluation, which they must also present during the semester. Students have the opportunity to consult with the teacher about their projects - samples of their preparation. The students' activities (development of projects) and their performances (presentation of their teacher-preparation for the project - trial teaching) are evaluated during the semester, from which they must obtain at least 50% of the total score in order to pass the exam. The exam is complex, consisting of a practical part - the assessment of continuous teacher-preparation for projects during the semester, and a theoretical part - checking theoretical knowledge related to modern technologies and their application in education (questions from the topics of the lectures). For the assessment, students must also pass the oral exam with at least 50%. Students receive the final classification based on the average of their practical results (50%) and the results of the theoretical part of the oral exam (50%) during the semester. They must achieve an average of at least 90% to obtain an A rating, at least 80% for a B rating, at least 70% for a C rating, at least 60% for a D rating, and at least 50% for an E rating. Students who do not complete at least 50% of the each parts will not receive credit for the subject.	
<b>Results of education:</b> Knowledge: After completing the subject, the student: <ul style="list-style-type: none"> <li>• knows the strategies, methods and forms necessary for the development of the student's digital and programming skills within the subject area;</li> <li>• knows the structure and phases of the lesson;</li> <li>• knows the educational technical and methodological requirements of modern technologies;</li> </ul>	

- knows the basic principles of analyzing problems from the point of view of digital and mobile technologies;
- knows the basic principles of preparing for the lesson;
- is aware of the application possibilities of modern (mobile) technologies in certain forms and phases of teaching.

Skills:

After completing the subject, the student:

- can analyze and solve IT and algorithmic problems using mobile technologies and devices;
- has basic practical experience in selecting tasks related to the topic of the given lesson;
- can make suggestions for teacher-preparing for the lesson;
- can apply different educational forms and methods, focusing on teaching programming in elementary and high schools, using mobile technologies;
- can work with various modern technologies;
- can apply his own teacher-preparation in elementary and high school Informatics lessons;
- is able to use modern mobile technologies in the teaching of the Informatics;
- knows and applies the technical and legal aspects of teaching and its organization.

Competencies:

After completing the subject, the student:

- demonstrates a high degree of independence in project creation and independent teacher-preparation for the given lesson;
- knows how to work effectively independently;
- is characterized by creative and algorithmic thinking and independence;
- applies a creative IT way of thinking in his work;
- is characterized by a good pedagogical approach in the lessons;
- has an overview of the possibilities of teaching Informatics in different school types and levels, through the effective supply of mobile and online didactic tools;
- has an active and responsible attitude towards the completion of subject tasks.

### **Brief syllabus:**

1. Areas of use of modern technologies in subject of Informatics.
2. Tablets in Informatics lesson (as a universal teaching tool). Creating 3D images (MakeIt3D).
3. Geolocation games (Geocaching, Wherigo, drawing with GPS).
4. Educational programming - programming of mobile applications.
5. Programming environments for creating mobile applications - MIT App Inventor, Urwigo. Mobile applications for teaching programming and developing algorithmic thinking (Run Marco, Lightbot, Tnyker, Bit by Bit, Scratch Jr., The Foos, Fic the Factory, Pocket Code).
6. Educational robotics and its application in programming. Online simulators for controlling robots (Bee-bot emulator, Ozobot).
7. Robotics in elementary school - programming of robots Bee-bot, Dash, Ozobot.
8. Robotics in high school - Lego Mindstorms EV3, Edison, Ozobot.
9. Possibilities of child-oriented programming languages and microworlds (Imagine Logo).
10. Icon-based programming - Scratch, KoduGameLab, Baltik.
11. Creating quizzes or tests, automatically processing and publishing the answers (Socrative, Hot Potatoes, Khoot, Menti).
12. E-books, e-learning and electronic course materials, online learning environments and platforms, online interfaces for sharing course materials (conference call platforms) - Zoom, Google Meet, Google Classroom, Google Drive.
13. The latest generation of microcomputers and their possibilities in education (Raspberry Pi models, hardware components, OS capabilities, software capabilities, reactive programming and implementation of smart projects).

**Literature:**

1. RAAB, M.: Materiály a člověk : (Netradiční úvod do současné materiálové vědy). 1. vyd. Praha : Encyklopedický dům, 1999. ISBN 80-86044-13-0
2. KUČEROVÁ, E.: Elektrotechnické materiály. 2. vyd. Plzeň : Západočeská univerzita, 2004.
3. ŠAVEL, J.: Materiály a technologie v elektronice a elektrotechnice. 1. vyd. Praha : BEN, 1999. ISBN 80-86056-75-9
4. PTÁČEK, L. et al.: Nauka o materiálu II. Brno : Cerm, 1999. ISBN 80-7204-130-4
5. SEMÁK, D. – BIRČÁK, J.: Chalkogénne polovodiče na záznam informácie. Prešov : FHPV PU, 1998. ISBN 80-88885-37-X
6. ANDERSON, J. C. et al.: Materials Science. London : Chapman and Hall, 1992.
7. MATH, I.: Tomorrow's Technology. New York, Charles Scribner's Sons, 1992. ISBN 0-684-19294-2
8. ROUS, B.: Materiály pro elektroniku a mikroelektroniku. 1. vyd. Praha : SNTL, 1991. ISBN 80-03-00617-1
9. ASHBY, M. F. – JONES, D. R. H.: Engineering Materials : An Introduction to their Properties and Applications. I - 1980. II – 1986.
10. BARABASZOVÁ, K.: Nanotechnologie a nanomateriály. 1. vyd. Ostrava : VŠB – TU, 2006. 158 s. ISBN 80-248-1210-X

**Language, knowledge of which is necessary to complete a course:**

Hungarian or Slovak

**Notes:**

Student workload:

40% - participation in lessons, preparation for the exam,

60% - study of literature, practice of acquired knowledge, preparation on semestral work.

**Evaluation of subjects**

Total number of evaluated students: 0

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

**Teacher:** Dr. habil. András Molnár, PhD., RNDr. József Udvaros, PhD.**Date of last update:** 02.03.2022**Approved by:**



## INFORMATION SHEET

<b>Name of the university:</b> J. Selye University	
<b>Name of the faculty:</b> Faculty of Education	
<b>Code:</b> KINF/ MS1/22	<b>Name:</b> Introduction to the Modeling and Simulation
<b>Types, range and methods of educational activities:</b> <b>Form of study:</b> Lecture / Seminar / Practical <b>Recommended extent of course ( in hours ):</b> <b>Per week:</b> 2 / 0 / 1 <b>For the study period:</b> 26 / 0 / 13 <b>Methods of study:</b> present	
<b>Number of credits:</b> 4	
<b>Recommended semester/trimester of study:</b> 1.	
<b>Level of study:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for passing the subject:</b> The course ends with a combined exam. The student can obtain a total of 100 points, of which 60 points are obtained in the written examination and 40 points for the individual project. A minimum of 90 points is required for grade A, 80 points for grade B, 70 points for grade C, 60 points for grade D and 50 points for grade E. Student who achieves less than 50 points will fail the course.	
<b>Results of education:</b> Knowledge: After completing the course, the student will have a general knowledge of different types of basic models in computer science, such as continuous systems, discrete systems, Markov chains, crowd-serving systems. Skills: After completing the course, the student will be able to independently apply the models mentioned above. Competences: After completing the course, the student will show autonomy in creating IT models for different application areas.	
<b>Brief syllabus:</b> 1. Introduction to systems modelling and simulation, basic concepts, classification of systems and their basic characteristics; 2. Continuous systems: description of continuous systems, mathematical models of continuous systems and their development, Simulation tools for continuous systems (Simulink), computer simulation of continuous systems; 3. Discrete systems: description of discrete systems, mathematical models of discrete systems and their creation, simulation tools for discrete systems (Simulink), computer simulation of discrete systems; 4. Random number generation methods, Monte Carlo method and its applications; 5. Markov random discrete and continuous processes and their properties, applications and simulations, 6. Poisson process; 7. SHOs and their classification, analytical solution of Kolmogorov differential equations, description and analytical solution of different types of SHOs, computer simulation (Simevents)	
<b>Literature:</b>	

1. GIORDANO, F.R.: A First Course in Mathematical Modelling, Thomson, 2004.
2. KMEŤ, T.: Mathematical Modelling and Simulation of Biological Systems, AM Nitra, 2005.
3. NEUSCHL, Š. a kol.: Modelovanie a simulácia. Alfa - SNTL. Praha 1988.
4. Simulink Simulation and Model-Based Design, The MathWorks Inc., 2004.
5. DABNEY, J. B.: Mastering Simulink, Prentice Hall, 2004
6. BRUNOVSKÝ, P. Stochastické modely operačnej analýzy, učebný text FMFI UK, 2005
7. TAKÁČ, O.: Modellezés és szimuláció. 1. vyd. Komárno: UJS, 2017, 234 s. ISBN 978-80-8122-203-0.
8. BRAUER, F., CHAVEZ, C., C.: Mathematical Models in Population Biology and Epidemiology. 2012
9. GEDA, G.: Modellezés és szimuláció az oktatásban. Educatio kht. 2011.

**Language, knowledge of which is necessary to complete a course:**

Hungarian or Slovak

**Notes:**

Distribution of students' workload:

40% - participation in tutorials, preparation for exams,

60% - studying literature, practising acquired knowledge, working on own projects.

**Evaluation of subjects**

Total number of evaluated students: 0

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

**Teacher:** prof. RNDr. Tibor Kmeť, CSc.

**Date of last update:** 02.03.2022

**Approved by:**

## INFORMATION SHEET

<b>Name of the university:</b> J. Selye University	
<b>Name of the faculty:</b> Faculty of Education	
<b>Code:</b> KINF/MT/22	<b>Name:</b> Modern technologies in education
<b>Types, range and methods of educational activities:</b> <b>Form of study:</b> Lecture / Seminar / Practical <b>Recommended extent of course ( in hours ):</b> <b>Per week:</b> 1 / 0 / 2 <b>For the study period:</b> 13 / 0 / 26 <b>Methods of study:</b> present	
<b>Number of credits:</b> 5	
<b>Recommended semester/trimester of study:</b> 3.	
<b>Level of study:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for passing the subject:</b> Students learn about mobile technologies in teaching of Informatics at elementary and high school subjects during the semester, as well as child-oriented programming languages (microworlds), the possibilities and applications of programmable educational (toy) robots. They actively use online learning environments and platforms, interfaces for sharing learning materials (interfaces for conference calls), and constantly study the relevant literature. They continuously and creatively work on their own projects for the given lesson (with given content), which they hand in and then present as part of the exercise. Students are evaluated based on their activities (own projects) and performances (presentation of projects) during the semester. Students must develop and submit 5 projects for evaluation, which they must also present during the semester. Students have the opportunity to consult with the teacher about their projects - samples of their preparation. The students' activities (development of projects) and their performances (presentation of their teacher-preparation for the project - trial teaching) are evaluated during the semester, from which they must obtain at least 50% of the total score in order to pass the exam. The exam is complex, consisting of a practical part - the assessment of continuous teacher-preparation for projects during the semester, and a theoretical part - checking theoretical knowledge related to modern technologies and their application in education (questions from the topics of the lectures). For the assessment, students must also pass the oral exam with at least 50%. Students receive the final classification based on the average of their practical results (50%) and the results of the theoretical part of the oral exam (50%) during the semester. They must achieve an average of at least 90% to obtain an A rating, at least 80% for a B rating, at least 70% for a C rating, at least 60% for a D rating, and at least 50% for an E rating. Students who do not complete at least 50% of the each parts will not receive credit for the subject.	
<b>Results of education:</b> <b>Knowledge:</b> After completing the subject, the student: <ul style="list-style-type: none"> <li>• knows the strategies, methods and forms necessary for the development of the student's digital and programming skills within the subject area;</li> <li>• knows the structure and phases of the lesson;</li> <li>• knows the educational technical and methodological requirements of modern technologies;</li> <li>• knows the basic principles of analyzing problems from the point of view of digital and mobile technologies;</li> </ul>	

- knows the basic principles of preparing for the lesson;
- is aware of the application possibilities of modern (mobile) technologies in certain forms and phases of teaching.

Skills:

After completing the subject, the student:

- can analyze and solve IT and algorithmic problems using mobile technologies and devices;
- has basic practical experience in selecting tasks related to the topic of the given lesson;
- can make suggestions for teacher-preparing for the lesson;
- can apply different educational forms and methods, focusing on teaching programming in elementary and high schools, using mobile technologies;
- can work with various modern technologies;
- can apply his own teacher-preparation in elementary and high school Informatics lessons;
- is able to use modern mobile technologies in the teaching of the Informatics;
- knows and applies the technical and legal aspects of teaching and its organization.

Competencies:

After completing the subject, the student:

- demonstrates a high degree of independence in project creation and independent teacher-preparation for the given lesson;
- knows how to work effectively independently;
- is characterized by creative and algorithmic thinking and independence;
- applies a creative IT way of thinking in his work;
- is characterized by a good pedagogical approach in the lessons;
- has an overview of the possibilities of teaching Informatics in different school types and levels, through the effective supply of mobile and online didactic tools;
- has an active and responsible attitude towards the completion of subject tasks.

### **Brief syllabus:**

1. Areas of use of modern technologies in subject of Informatics.
2. Tablets in Informatics lesson (as a universal teaching tool). Creating 3D images (MakeIt3D).
3. Geolocation games (Geocaching, Wherigo, drawing with GPS).
4. Educational programming - programming of mobile applications.
5. Programming environments for creating mobile applications - MIT App Inventor, Urwigo. Mobile applications for teaching programming and developing algorithmic thinking (Run Marco, Lightbot, Tnyker, Bit by Bit, Scratch Jr., The Foos, Fic the Factory, Pocket Code).
6. Educational robotics and its application in programming. Online simulators for controlling robots (Bee-bot emulator, Ozobot).
7. Robotics in elementary school - programming of robots Bee-bot, Dash, Ozobot.
8. Robotics in high school - Lego Mindstorms EV3, Edison, Ozobot.
9. Possibilities of child-oriented programming languages and microworlds (Imagine Logo).
10. Icon-based programming - Scratch, KoduGameLab, Baltík.
11. Creating quizzes or tests, automatically processing and publishing the answers (Socrative, Hot Potatoes, Khoot, Menti).
12. E-books, e-learning and electronic course materials, online learning environments and platforms, online interfaces for sharing course materials (conference call platforms) - Zoom, Google Meet, Google Classroom, Google Drive.
13. The latest generation of microcomputers and their possibilities in education (Raspberry Pi models, hardware components, OS capabilities, software capabilities, reactive programming and implementation of smart projects).

### **Literature:**

1. CZAKÓOVÁ, K. - STOFFOVÁ, V. Kreativitást és az aktív tanulást támogató programkörnyezetek. In: Mikrovilág alkalmazások : Egyetemi tankönyv. 1. kiadás. Komárno :Univerzita J. Selyeho, 2016. s. 12-31. ISBN 978-80-8122-191-0.
  2. CZAKÓOVÁ, K. Saját alkalmazás fejlesztése Imagine programkörnyezetben. In: Mikrovilág alkalmazások : Egyetemi tankönyv. 1. kiadás. Komárno : Univerzita J. Selyeho, 2016. s. 35-107. ISBN 978-80-8122-191-0.
  3. EARLE Castledine, E. - EFTOS, M. - WHEELER, M.: Vytváříme mobilní web a aplikace : pro chytré telefony a tablety. 1. vyd. Brno : Computer Press, 2013. 288 s. ISBN 978-80-251-3763-5.
  4. ILLÉS, Z. a kol.: Mobil világ és fejlesztése WP7 környezetben. [Online]. Dostupná na internete:<<http://dtk.tankonyvtar.hu/xmlui/handle/123456789/3825>>
  5. KALÁŠ, I.: Premeny školy v digitálnom veku. 1. vyd. Bratislava : Slovenské pedagogické nakladateľstvo - Mladé letá, s.r.o., 2013. 256 s. ISBN 978-80-10-02409-4.
  6. LOVÁSZOVÁ, G. a kol.: Mobilné technológie vo vyučovaní informatiky. 1. vyd. Nitra : UKF, Fakulta prírodných vied, 2016. 90 s. ISBN 978-80-558-1104-8.
  7. MACHAJ, J.: Kniha trendov vo vzdelávaní 2013/2014 : Vzdelanie v digitálnom svete. Ako držať krok s dobou? 1. vyd. Bratislava : EDULAB, n.o., 2014. 82 s.
  8. McMANUS, S.: Scratch Programming : Covers Scratch 2.0 and Scratch 1.4. 1. vyd. Leamington : In Easy Steps Limited, 2013. 216 s. ISBN 978-1-84078-612-5.
  9. MOLNÁR, P.: Hálózatosodás és tanulás hálózati környezetben. [Online]. Budapest : ELTE, 2013. 82 s. ISBN 978-963-284-325-4. Dostupná na internete: <<http://dtk.tankonyvtar.hu/xmlui/handle/123456789/12007>>
  10. PENTELENYI, P.: Az algoritmikus szemléletmód kialakítása és fejlesztése a tanítási - tanulási folyamatban. Budapest : Ligatura, 1999. 128 s. ISBN 963 85138 8 8.
  11. STOFFOVÁ, V. - CZAKÓOVÁ, K.: Úvod do programovania v prostredí mikrosvetov : Vysokoškolská učebnica. Komárno : Univerzita J. Selyeho, 2016. 115 s. ISBN 978-80-8122-170-5.
  12. VALK, L.: The Lego Mindstroms EV3 Discovery Book : A beginner's guide to building and programming robots. 1. vyd. San Francisco : No Starch Press, 2014. 371 s. ISBN 978-1-59327-532-7.
  13. Upravené ciele a obsah vyučovacieho predmetu Informatika. [online]. Dostupné: [https://www.statpedu.sk/files/sk/svp/pilotne-overovanie/upravene-ciele-obsah/aktualizovane-vs/vo\\_mai.pdf](https://www.statpedu.sk/files/sk/svp/pilotne-overovanie/upravene-ciele-obsah/aktualizovane-vs/vo_mai.pdf)
- Odborné články v téme a záverečné práce študentov UJS:
- CSÓKA, M.: Raspberry Pi alkalmazása az informatikaoktatásban. DOI 10.36007/3778.2020.213. In: 12th International Conference of J. Selye University : Sections of Pedagogy and Informatics : Sections of Pedagogy and Informatics / Szököl István, Horváth Kinga, Tóth Péter, Gubo Štefan. 1. vyd. Komárno : Univerzita J. Selyeho, 2020. ISBN 978-80-8122-377-8, online, s. 213-221.
- CSÓKA, M.: Raspberry Pi alkalmazása az informatika oktatásban. [Rigorózna práca]. Komárno : Univerzita J. Selyeho, 2019. - 113 s.
- CSÓKA, M. – CZAKÓOVÁ, K.: Innovations in education through the application of raspberry pi devices and modern teaching strategies. In. INTED 2021 : Proceedings of the 15th International Technology, Education and Development Conference. DOI: 10.21125/inted.2021.1327, p. 6653-6658, Valencia : IATED Academy, 2021. ISBN 978-84-09-27666-0. ISSN 2340-1079.
- CZAKÓOVÁ, K. – UDVAROS, J.: Deep Learning In Informatics By Applying Activities Of The Dash Robot. In. ICERI2021 Proceedings : 14th International Conference of Education, Research and Innovation. DOI: 10.21125/iceri.2021.0649, p. 2573-2577, Valencia : IATED Academy, 2021. ISBN 978-84-09-34549-6. ISSN 2340-1095.
- CZÉKUS, B.: Dash programozható robotjáték az alapiskolai informatika oktatásban. [Dipl. pr., Dash]. Komárno: J. Selye University, 2021. 73 s

GAJDOŠ, P.: Programozható robotjátékok a középiskolai informatika oktatásban. [Dipl. pr., robot Edison]. Komárno : Univerzita J. Selyeho, 2019. 58 s. MURÁR, J.: Programozás bevezetése az alapiskolán Kodu Game Lab programozási környezetben. [Dipl. pr.]. Komárno : Univerzita J. Selyeho, 2018. . 56 s.					
<b>Language, knowledge of which is necessary to complete a course:</b> Hungarian or Slovak					
<b>Notes:</b> Student workload distribution: 40% - attendance at tutorials, exam preparation, 60% - studying literature, practicing acquired knowledge, preparing term papers.					
<b>Evaluation of subjects</b> Total number of evaluated students: 0					
A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0
<b>Teacher:</b> doc. RNDr. József Bukor, PhD., PaedDr. Krisztina Czakóová, PhD.					
<b>Date of last update:</b> 02.03.2022					
<b>Approved by:</b>					

## INFORMATION SHEET

<b>Name of the university:</b> J. Selye University	
<b>Name of the faculty:</b> Faculty of Education	
<b>Code:</b> KINF/ NSU/22	<b>Name:</b> Neural networks
<b>Types, range and methods of educational activities:</b> <b>Form of study:</b> Lecture / Seminar / Practical <b>Recommended extent of course ( in hours ):</b> <b>Per week:</b> 2 / 0 / 1 <b>For the study period:</b> 26 / 0 / 13 <b>Methods of study:</b> present	
<b>Number of credits:</b> 4	
<b>Recommended semester/trimester of study:</b> 2.	
<b>Level of study:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for passing the subject:</b> During the semester, students create their own application - a computer simulation model of a given system. They will also solve system identification problems analytically, create mathematical models and carry out computer implementation of the models. Students will be graded on the basis of the average of the semester's continuous preparation, the project and the overall grade point average obtained in the exam. A grade of at least 90% is required for grade A, at least 80% for grade B, at least 70% for grade C, at least 60% for grade D, and at least 50% for grade E.	
<b>Results of education:</b> <b>Knowledge:</b> After completing the course, the student will be familiar with different types of neural network models such as feed-forward neural networks, recurrent neural networks, Hopfield neural networks, RBF networks, self-organizing maps. <b>Skills:</b> After completing the course, students will be able to analyse and solve complex problems using neural networks, such as processing numerical data, text, images and sound. <b>Competences:</b> After completing the course, the student will show a high degree of autonomy in creating models. The student will develop a high level of skills in modelling neural networks in different application domains.	
<b>Brief syllabus:</b> <ol style="list-style-type: none"> <li>1. Defining and building neural networks.</li> <li>2. Elements and topology of neural networks.</li> <li>3. History and applications of neural networks.</li> <li>4. Binary perceptron - learning rule of perceptron, pattern classification.</li> <li>5. Backpropagation 1 - multilayer feedforward networks, derivation of learning rules.</li> <li>6. Backpropagation 2 - teaching and testing sample set, relearning, modifications to the default learning rule.</li> <li>7. The approximation capabilities of neural networks.</li> <li>8. Linear neural networks.</li> <li>9. Radial basis function (RBF) networks.</li> <li>10. Hopfield discrete and continuous networks.</li> </ol>	

11. Recurrent neural networks - temporal structure in data, feed forward neural time delay (TDNN), echo - echo state neural networks.
12. Learning and application of recurrent neural networks.
13. Self-organising maps, Kohonen model, LVQ, Max-net, Oja and Sanger learning rule, extract principal components from data, data dimension reduction, clustering.

**Literature:**

1. KVASNIČKA, V. - BEŇUŠKOVÁ, L. - POSPÍCHAL, J. - FARKAŠ, I. - TIŇO, P. – KRÁLĚ, A.: Úvod do teórie neurónových sietí . IRIS, Bratislava, 1997.
2. SIVANANDAM, S. N. - SUMATHI, S. – DEEPA, S.N. : Introduction to Neural Networks Using Matlab 6.0. Tata McGraw-Hill New Delhi 2006
3. HAYKIN, S.: Neural Networks: A Comprehensive Foundation (2nd ed.). Prentice Hall, NJ 1999.
4. TAYLOR, J. G.: Neural networks and their applications. New York : Wiley, 1996, 302 s. ISBN 0471962821.
5. KMEŤ, T. - KMEŤOVÁ, M. - ANNUŠ, N.: Neurális hálózatok programi megvalósítása MATLAB-ban, UJS, 2021, 225 s. ISBN 9788081224041
6. FAZEKAS, I.: Neurális Hálózatok, Debreceni Egyetem, 2013, 201 s. Forrás: [https://gyires.inf.unideb.hu/GyBITT/19/Neurális\\_halozatok\\_v8.pdf](https://gyires.inf.unideb.hu/GyBITT/19/Neurális_halozatok_v8.pdf)
7. ALTRICHTER, M. - HORVÁTH, G. - PATAKI, B. - STRAUSZ, Gy. - TAKÁCS, G. - VALYON, J.: Neurális hálózatok, Panem Könyvkiadó, 2006, 413 s. Forrás: <https://docplayer.hu/10994735-Neurális-halozatok-altrichter-marta-horvath-gabor-pataki-bela-strausz-gyorgy-takacs-gabor-valyon-jozsef.html>

**Language, knowledge of which is necessary to complete a course:**

Hungarian or Slovak

**Notes:**

Distribution of students' workload:

50% - participation in tutorials, preparation for exams,

50% - study of literature, practice of acquired knowledge, development of practical exercises.

**Evaluation of subjects**

Total number of evaluated students: 0

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

**Teacher:** prof. RNDr. Tibor Kmet', CSc.

**Date of last update:** 02.03.2022

**Approved by:**



## INFORMATION SHEET

<b>Name of the university:</b> J. Selye University	
<b>Name of the faculty:</b> Faculty of Education	
<b>Code:</b> KINF/ OBm/22	<b>Name:</b> Master's thesis and its defence
<b>Types, range and methods of educational activities:</b> <b>Form of study:</b> <b>Recommended extent of course ( in hours ):</b> <b>Per week: For the study period:</b> <b>Methods of study:</b> present	
<b>Number of credits:</b> 8	
<b>Recommended semester/trimester of study:</b> 3., 4..	
<b>Level of study:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for passing the subject:</b> <p>In preparing the final thesis, the student follows the instructions of his/her supervisor and the Rector's Directive regarding editing, registration, access and archiving of theses at J. Selye University. The recommended length of the master's thesis is 50 to 70 pages (90 000 to 126 000 characters including spaces). The deadline for the academic year is set in the academic calendar of the academic year. The originality of the thesis is evaluated in the central thesis register. The result of the originality check, a report on the originality of the thesis assessed. The originality check is a prerequisite for the defence. The submission of the thesis includes the conclusion of a licence agreement for the use of the digital reproduction of the thesis between the author and the Slovak Republic represented by the university. The final thesis shall be assessed by the thesis supervisor and an opponent, who shall draw up opinions according based on the established criteria. The thesis supervisor assesses in particular the fulfilment of the aim of the thesis, the degree of independence and initiative of the student in the elaboration of the topic, cooperation with the thesis supervisor, logical structure of the thesis, the adequacy of the methods used, the methodology, the professional level of the thesis, the depth and quality of processing of the topic, the contribution of the work, the possibility of using the results, the work with literature, the relevance of the sources used in relation to the topic and the aim of the thesis, the formal aspect of the thesis, spelling, stylistics and originality. The opponent assesses in particular the topicality and appropriateness of the topic of the thesis, the statement of the thesis and the content, the logical structure of the thesis, the continuity of the chapters, their proportionality, the appropriateness and suitability of the methods used, the methodology, the professional level of the thesis, the depth and quality of the treatment of the topic, the contribution of the thesis, the work with professional literature, the formal aspect, the spelling, the stylistics and originality. The State Examination Board will assess the originality of the thesis, the contribution of the student's work to the solution of the research problem, the student's independence, his/her ability to solve the research problem - from the search of literature sources, the determination of objectives, the choice of research methodology, the choice of the source of materials, through the implementation of the research, his ability to evaluate the results, discuss the results, summarize the results, present their significance for the educational process, etc. The ability to present the results is also evaluated, including answering questions related to the research process and the topic of the thesis, compliance with time limits, etc. The State Examination Board in a closed</p>	

session will evaluate the course of the defence and decide on the award of the classification. In the classification, it comprehensively assesses the quality of the final thesis and its defence, taking into account the assessments and the course of the defence, and shall give the defence a single overall mark.

The final grade may be the same as in the evaluations, but it may also be better or worse, in depending on the conduct of the defence.

Final grade: A - 100 - 91%, B - 90 - 81%, C - 80 - 71%, D - 70 - 61%, E - 60 - 50%.

Credit will not be awarded to a student who fails to achieve 50%.

The decision on the result of the defence will be announced publicly by the chairman of the committee together with the result of the theoretical the theoretical part of the oral part of the state examination.

### **Results of education:**

Knowledge:

- the student knows the structure of a scientific publication,
- the student can independently and creatively use professional sources,
- the student is able to analyse and evaluate the current state of the problem in his/her field,
- the student can synthesize and apply the acquired theoretical knowledge in practical educational activities,
- the student can adequately select research procedures and apply them functionally.

Skills:

- by processing the diploma thesis the student should demonstrate the ability to independently acquire theoretical and practical knowledge and creatively apply and use them in solving specific problems,
- the student is able to present and defend his/her professional position on the problems of educational work and find ways to their solution,
- the student has developed the skills of independent learning, which enables him/her to continue further study,
- the student can understand the complexity of phenomena and formulate decisions even when incomplete or limited information, embracing social and ethical responsibility in the application of their knowledge and in making decisions,
- the student will be able to justify the ideas presented, as well as to articulate in a sophisticated manner practical conclusions and recommendations,
- the student will be able to prepare a presentation of the results of his/her own research activities,
- the student will be able to apply the principles of scientific integrity and ethics.

Competences:

- the student can demonstrate his/her linguistic and professional culture and his/her own attitude towards professional problems.
- the student will be able to demonstrate his/her professional and scientific knowledge and skills in his/her field of study,
- the student is able to argue and methodically apply knowledge in theoretical, didactic and methodological contexts,
- the student is able to implement and synthesize the acquired knowledge in practice,
- the student is able to creatively apply knowledge in solving the assigned tasks, analyse the problem and synthesize a new solution,
- the student is able to answer the questions of the supervisor and the opponent at the required level, to successfully defend the final thesis.

### **Brief syllabus:**

The thesis defense has a course of:

1. The student's presentation of the thesis.  
 2. Presentation of the main points from the written opinions of the thesis supervisor and the opponent.  
 3. Student's answers to the thesis supervisor's and opponent's questions.  
 4. A professional discussion of the thesis with questions for the student.

The student's presentation of the thesis should include, in particular, the following points:

1. A brief justification of the choice of the topic, its topicality, practical contribution.
2. Clarification of the objectives and methods used in the elaboration of the thesis.
3. The main content problems of the thesis.
4. Conclusions and practical recommendations reached by the author of the thesis.

During the presentation, the student has at his/her disposal his/her own copy of the thesis, or an electronic presentation. The speech is to be delivered independently, in the scope of 10 min. The student may use computer technology. The thesis is available to the committee before and during the defence.

**Literature:**

KATUŠČÁK, D. Ako písať vysokoškolské a kvalifikačné práce. Bratislava: Enigma, 2004. Aktuálna Smernica rektora o úprave, registrácii, sprístupnení a archivácii záverečných prác na Univerzite J. Selyeho – dostupné na [https://www.ujs.sk/documents/Smernica\\_c.2-2021o\\_zaverecnych\\_pracach\\_.pdf](https://www.ujs.sk/documents/Smernica_c.2-2021o_zaverecnych_pracach_.pdf)

**Language, knowledge of which is necessary to complete a course:**

Hungarian or Slovak

**Notes:**

Undergraduate theses are supervised by the staff of the Department of Informatics. The defence of the bachelor's thesis takes place in front of an examination committee, whose members are appointed by the dean.

**Evaluation of subjects**

Total number of evaluated students: 0

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

**Teacher:**

**Date of last update:** 04.03.2022

**Approved by:**

## INFORMATION SHEET

<b>Name of the university:</b> J. Selye University	
<b>Name of the faculty:</b> Faculty of Education	
<b>Code:</b> KINF/ PGR/22	<b>Name:</b> Computer graphics algorithms
<b>Types, range and methods of educational activities:</b> <b>Form of study:</b> Lecture / Seminar / Practical <b>Recommended extent of course ( in hours ):</b> <b>Per week:</b> 1 / 0 / 2 <b>For the study period:</b> 13 / 0 / 26 <b>Methods of study:</b> present	
<b>Number of credits:</b> 4	
<b>Recommended semester/trimester of study:</b> 3.	
<b>Level of study:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for passing the subject:</b> The course ends with a written exam, for which students can get 50% of the total number of points. During the semester, students pass two written tests, for which they can receive 30% points from the total number of points, and also 20% for the semester project. In addition to contact teaching, students prepare for laboratory exercises, prepare for written tests, and prepare for the exam. To receive grade A in the course, student must obtain at least 90 points, for grade B at least 80 points, for grade C at least 70 points, for grade D at least 60 points and for grade E at least 50 points. Credits will not be given to a student who obtain less than 50 points.	
<b>Results of education:</b> <b>Knowledge:</b> After completing the subject, the student: <ul style="list-style-type: none"> <li>• knows the terminology, algorithms, principles and procedures used in computer graphics,</li> <li>• has deeper theoretical knowledge in the field of design and use of computer graphics algorithms,</li> <li>• knows the raster graphics and vector graphics algorithms used in computer graphics,</li> <li>• knows basic graphics formats, their structure and practical use,</li> <li>• knows basic surface modeling algorithms and visibility solutions.</li> </ul> <b>Skills:</b> After completing the subject, the student: <ul style="list-style-type: none"> <li>• can analyze and solve more complex problems,</li> <li>• is able to implement computer graphics algorithms in practice,</li> <li>• is able to solve basic problems of raster and vector graphics at the program level,</li> <li>• is able to choose suitable algorithms with respect to hardware parameters,</li> <li>• is able to choose and use modern procedures.</li> </ul> <b>Competencies:</b> After completing the subject, the student: <ul style="list-style-type: none"> <li>• knows how to work efficiently and implement acquired theoretical knowledge,</li> <li>• has an active and responsible approach to completing tasks,</li> <li>• shows independence in solving more complex problems.</li> </ul>	

**Brief syllabus:**

1. Introduction to image processing and computer graphics.
2. Characterization of raster images, their acquisition and visualisation.
3. Color models and the human visual system.
4. Raster graphics formats.
5. Methods of raster image compression.
6. Image processing – highlighting, noise reduction, etc.
7. Stereograms, optical illusions.
8. Characterization of vector images.
9. Curves and surfaces.
10. Geometric transformations.
11. Visibility of objects.
12. Lighting and shading.
13. Fractals in computer graphics.

**Literature:**

1. GAMBETTA, G. (2021). Computer Graphics from Scratch. No Starch Press. ISBN: 9781718500761
2. SOBOTA, B. – MILIÁN, J.: Grafické formáty. České Budejovice : Kopp, 1996, s. 157. ISBN 80-85828-58-8.
3. CHAPMAN, N. - CHAPMAN, J.: Digital multimedia. John Wiley & Sons, Second Edition, 2003, s. 700. ISBN 0470858907.
4. SZIRMAY - KALOS, L.: Háromdimenziós grafika, animáció és játékfejlesztés. Budapest : ComputerBooks, 2004, s. 486. ISBN 9636183031.
5. SZIRMAY - KALOS, L.: Számítógépes grafika. Budapest : ComputerBooks, 2003, s. 334. ISBN 963 618 208 6.
6. TAKÁČ, O.: A számítógépes grafika. Komárno. Selye János Egyetem, 370 s. ISBN 978-80-8122-182-8.
7. BUDAI, A.: A számítógépes grafika. Budapest, 2003, 390 s. LSI Oktatóközpont, ISBN 9635772432.
8. SZIRMAY, L.: Számítógépes grafika. Budapest 2003, 334 s. ComputerBooks, ISBN 963 618 208 6.
9. ŽÁRA, J. a kol: Moderní počítačová grafika, Brno 2010, 608 s., Computer Press a.s., ISBN 80-251-0454-0.
10. HIDEKGUTI, G.: Vinnay, P. Digitálisképzőkötés. Budapest, 2001, 196 s., ViviCom Kiadói és Kommunikációs Kft., ISBN 9789630088533.
11. FÜZI, J.: Grafikai alkalmazások Delphi nyelven. Budapest, 2000, 322 s., ComputerBooks, ISBN 963 618 236 1.

**Language, knowledge of which is necessary to complete a course:**

Hungarian or Slovak

**Notes:**

Distribution of the student's workload:

40% of the workload - direct teaching, preparation for the tests and the exam.

60% of the workload - studying the literature, practicing the acquired knowledge, work on practical assignments, work on the semester project.

**Evaluation of subjects**

Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0
<b>Teacher:</b> prof. József Zoltán Kató, DSc., Ing. Ondrej Takáč, PhD.					
<b>Date of last update:</b> 02.03.2022					
<b>Approved by:</b>					

## INFORMATION SHEET

<b>Name of the university:</b> J. Selye University	
<b>Name of the faculty:</b> Faculty of Education	
<b>Code:</b> KINF/ PPX4/22	<b>Name:</b> Pedagogical practice V.
<b>Types, range and methods of educational activities:</b> <b>Form of study:</b> Lecture / Seminar / Practical <b>Recommended extent of course ( in hours ):</b> <b>Per week:</b> 0 / 0 <b>For the study period:</b> 0 / 0 / 20s <b>Methods of study:</b> present	
<b>Number of credits:</b> 2	
<b>Recommended semester/trimester of study:</b> 2.	
<b>Level of study:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for passing the subject:</b> The final assessment is portfolio-based, i.e. based on work produced during the teaching practice. The conditions and criteria for passing the course are set and regulated by the Directive of the Dean of the Faculty of Education UJS: Principles of pedagogical practice at the Faculty of Education UJS. The student is obliged to follow the relevant part of this document related to the pedagogical practice (PPX4). Mandatory components of the portfolio: - Completed protocol on completion of the pedagogical practice - Professional analysis of observed lessons and completed observation sheets - Preparation, implementation and subsequent evaluation and analysis of the lesson implemented - Documentation of the teaching practice including annexes. Final course grade: A 100-90%, B 89-80%, C 79-70%, D 69-60%, E 59-50%. A grade of FX is awarded if the student achieves less than 50% of the total number of points. Total student workload: 2 credits = 50 hours (20 hours of teaching practice: 5 hours of observation, 5 hours of analysis of observed lessons, 5 hours of teaching, 5 hours of analysis of taught lessons; 30 hours of preparation: preparation for teaching practice - consultation with the trainee teacher, preparation for tutorials, preparation for lessons, preparation of portfolio and documentation)	
<b>Results of education:</b> <b>Knowledge:</b> - The student of the course is able to observe, analyze activities at the 2nd grade elementary and middle school levels. - The student is able to professionally evaluate observed activities and activities at the Elementary and Middle School Level 2. - The student is able to document observed activities and activities at grade 2 elementary and middle school. - The student is able to navigate school documents. - The student knows and is oriented to the structure of personnel and material support for school functioning. - The student knows the specific activities of the teacher during the day, in the classroom and in the course of teaching the subjects of his/her specialisation in primary and secondary school.	

- The student understands the environment, culture and organisation of primary and secondary school activities.

#### Skills:

- Can identify diverse manifestations of structural elements of personality, psychological processes of the pupil in the process of teaching and in social interactions.

- Knows the specific activities of the teacher implemented during the day, in the context of teaching and in the course of teaching the subjects of his/her specialisation in primary and secondary school.

- Identifies the teaching objectives formulated by the teacher, the processes used to achieve them and the extent to which they are met.

- Can identify the teaching methods applied during the lesson.

- Describes the didactic aids, communication technologies and resources used in the teaching process and the possibilities of applying computers, interactive whiteboards, the Internet, specific teaching programmes and software, dynamic systems and interactive teaching materials and portals in the teaching of the subjects of his/her specialisation.

- Describes the processes of student assessment in the teaching process.

- Identifies teachers' teaching and communication styles and professional skills.

- Can process, evaluate, and reflect on observation results in the context of educational theory.

- The student can recognize his/her own level of competence.

- The student can identify common professional problems, investigate and formulate the theoretical and practical background necessary to solve them and address them (using practical procedures in practice).

- The student is able to recognise talented pupils, pupils with difficulties or special educational needs, disadvantaged pupils, multiply disadvantaged pupils and pupils requiring special treatment, to provide them with adequate advice regarding their entry into the labour market.

- The graduate of the course is capable of didactically correct written preparation (with all its components) for the purpose of conducting a lesson with elements of creativity, independence, individualization and alternativeness.

- He/she is able to consult his/her own written preparation with the trainee teacher in a professional manner.

- Is able to adequately prepare the conditions for, implement and evaluate a designated lesson.

- Is able to document results, professionally describe reflection and self-reflection in relation to the planned, prepared, implemented and evaluated lesson.

#### Competencies:

- Takes a position on observed phenomena based on prior theoretical knowledge.

- Undertakes self-reflection and receives feedback on own output from pupils, peers and trainee teacher.

- Presents responsibly own personal characteristics, communication style, values and professional skills.

- Provides feedback and assesses pupils' learning outcomes in accordance with the assessment principles at the appropriate level of education.

- Promotes interaction between pupils.

- Accepts the manifestations of pupil individuality in the context of the formal social group within the school classroom, the particularities of pupils' learning, specific educational needs and applies elements of differentiation in teaching.

- It implements classroom teaching, applying teaching methods, strategies, resources and aids and information and communication technologies optimised by the disciplinary-didactic theory of its specialisation.



- Understands the relationship between the principles of teaching and the consequences - the effectiveness of learning.
- Reflects on own pedagogical skills.
- The student will be able to undertake targeted development of self-knowledge related to the teaching profession
- The student will be able to independently plan activities that extend knowledge related to the teaching profession.
- The student will be able to create an atmosphere of trustworthiness, helpful, encouraging, attentive, accepting behavior, openness to recognize and manage the work style of others.
- The student will optimize the atmosphere in the learning group (school classroom) and create a stimulating and non-threatening environment for teaching and student learning, by applying techniques of rule following and safe working conditions and methods of motivating and activating students.

### **Brief syllabus:**

1. Observation and evaluation of the interior and exterior of the training primary and secondary school.
2. Getting to know and working with pedagogical documentation of the classroom and school.
3. Observation of the creation of conditions, implementation and evaluation of lessons at the 2nd level of the Primary School and the Secondary School.
4. Professional analysis of the observed lessons together with the trainee teacher.
5. Documentation of the process and results of the individual lessons observed.
6. Didactic procedures in the preparation of written preparations (with all its components), consultation with the trainee teacher.
7. Preparation of the conditions for the implementation of the lesson.
8. Implementation of the planned and prepared lesson with the application of innovative strategies, using adequate teaching resources of primary and secondary schools.
9. Evaluating the lesson with planned and selected methods and means of evaluation from own perspective, from the perspective of the pupils (and with elements of self-evaluation).
10. Professional analysis with the trainee teacher: documenting, evaluating preparation and its use and other components of the lesson.
11. Preparation of a portfolio of the hospitalization activity with all its components based on predetermined criteria by the head of the teaching practice, with the application of autonomy and alternativeness based on current trends in didactics.

### **Literature:**

1. Štátny vzdelávací program pre 2. stupeň základnej školy v Slovenskej republike ISCED 2 – nižšie sekundárne vzdelávanie. [https://www.statpedu.sk/files/articles/dokumenty/statny-vzdelavaci-program/isced2\\_spu\\_uprava.pdf](https://www.statpedu.sk/files/articles/dokumenty/statny-vzdelavaci-program/isced2_spu_uprava.pdf)
- Štátny vzdelávací program pre gymnázia v Slovenskej republike ISCED 3A – Vyššie sekundárne vzdelávanie. [https://www.statpedu.sk/files/articles/dokumenty/statny-vzdelavaci-program/isced3\\_spu\\_uprava.pdf](https://www.statpedu.sk/files/articles/dokumenty/statny-vzdelavaci-program/isced3_spu_uprava.pdf)
3. spu\_uprava.pdf
4. Zákon č. 245/2008 Z. z. – Zákon o výchove a vzdelávaní (školský zákon) a o zmene a doplnení niektorých zákonov. Bratislava : MŠ SR, 2008 (respektíve aktuálny školský zákon).
5. Aktuálny vnútorný predpis UJS: Zásady realizácie pedagogickej praxe na Pedagogickej fakulte UJS
6. Gadušová, Z. a kol.: Mentor Training : Ostrava : Ostravská univerzita, 2021. - online, 268 s. - ISBN 978-80-7599-294-9.

### **Language, knowledge of which is necessary to complete a course:**

Hungarian or Slovak					
<b>Notes:</b> Student workload distribution: 40% - teaching practice, 60% - preparation for teaching practice, preparation of documentation.					
<b>Evaluation of subjects</b> Total number of evaluated students: 0					
A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0
<b>Teacher:</b> prof. RNDr. Tibor Kmeť, CSc., PaedDr. Krisztina Czakóová, PhD.					
<b>Date of last update:</b> 02.03.2022					
<b>Approved by:</b>					

## INFORMATION SHEET

<b>Name of the university:</b> J. Selye University	
<b>Name of the faculty:</b> Faculty of Education	
<b>Code:</b> KINF/ PPX5/22	<b>Name:</b> Pedagogical practice V.
<b>Types, range and methods of educational activities:</b> <b>Form of study:</b> Lecture / Seminar / Practical <b>Recommended extent of course ( in hours ):</b> <b>Per week:</b> 0 / 0 <b>For the study period:</b> 0 / 0 / 20s <b>Methods of study:</b> present	
<b>Number of credits:</b> 2	
<b>Recommended semester/trimester of study:</b> 3.	
<b>Level of study:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for passing the subject:</b> The final assessment is portfolio-based, i.e. based on work produced during the teaching practice. The conditions and criteria for passing the course are set and regulated by the Directive of the Dean of the Faculty of Education UJS: Principles of pedagogical practice at the Faculty of Education UJS. The student is obliged to follow the relevant part of this document related to the pedagogical practice (PPX5). Mandatory components of the portfolio: - Completed protocol on completion of the pedagogical practice - Professional analysis of observed lessons and completed observation sheets - Preparation, implementation and subsequent evaluation and analysis of the lesson implemented - Documentation of the teaching practice including annexes. Final course grade: A 100-90%, B 89-80%, C 79-70%, D 69-60%, E 59-50%. A grade of FX is awarded if the student achieves less than 50% of the total number of points. Total student workload: 2 credits = 50 hours (20 hours of teaching practice: 5 hours of observation, 5 hours of analysis of observed lessons, 5 hours of teaching, 5 hours of analysis of taught lessons; 30 hours of preparation: preparation for teaching practice - consultation with the trainee teacher, preparation for tutorials, preparation for lessons, preparation of portfolio and documentation)	
<b>Results of education:</b> Knowledge: - The student of the course is able to observe, analyze activities at the 2nd grade elementary and middle school levels. - The student is able to professionally evaluate observed activities and activities at the Elementary and Middle School Level 2. - The student is able to document observed activities and activities at grade 2 elementary and middle school. - The student is able to navigate school documents. - The student knows and is oriented to the structure of personnel and material support for school functioning. - The student knows the specific activities of the teacher during the day, in the classroom and in the course of teaching the subjects of his/her specialisation in primary and secondary school.	

- The student understands the environment, culture and organisation of primary and secondary school activities.

#### Skills:

- Can identify diverse manifestations of structural elements of personality, psychological processes of the pupil in the process of teaching and in social interactions.

- Knows the specific activities of the teacher implemented during the day, in the context of teaching and in the course of teaching the subjects of his/her specialisation in primary and secondary school.

- Identifies the teaching objectives formulated by the teacher, the processes used to achieve them and the extent to which they are met.

- Can identify the teaching methods applied during the lesson.

- Describes the didactic aids, communication technologies and resources used in the teaching process and the possibilities of applying computers, interactive whiteboards, the Internet, specific teaching programmes and software, dynamic systems and interactive teaching materials and portals in the teaching of the subjects of his/her specialisation.

- Describes the processes of student assessment in the teaching process.

- Identifies teachers' teaching and communication styles and professional skills.

- Can process, evaluate, and reflect on observation results in the context of educational theory.

- The student can recognize his/her own level of competence.

- The student can identify common professional problems, investigate and formulate the theoretical and practical background necessary to solve them and address them (using practical procedures in practice).

- The student is able to recognise talented pupils, pupils with difficulties or special educational needs, disadvantaged pupils, multiply disadvantaged pupils and pupils requiring special treatment, to provide them with adequate advice regarding their entry into the labour market.

- The graduate of the course is capable of didactically correct written preparation (with all its components) for the purpose of conducting a lesson with elements of creativity, independence, individualization and alternativeness.

- He/she is able to consult his/her own written preparation with the trainee teacher in a professional manner.

- Is able to adequately prepare the conditions for, implement and evaluate a designated lesson.

- Is able to document results, professionally describe reflection and self-reflection in relation to the planned, prepared, implemented and evaluated lesson.

#### Competencies:

- Takes a position on observed phenomena based on prior theoretical knowledge.

- Undertakes self-reflection and receives feedback on own output from pupils, peers and trainee teacher.

- Presents responsibly own personal characteristics, communication style, values and professional skills.

- Provides feedback and assesses pupils' learning outcomes in accordance with the assessment principles at the appropriate level of education.

- Promotes interaction between pupils.

- Accepts the manifestations of pupil individuality in the context of the formal social group within the school classroom, the particularities of pupils' learning, specific educational needs and applies elements of differentiation in teaching.

- It implements classroom teaching, applying teaching methods, strategies, resources and aids and information and communication technologies optimised by the disciplinary-didactic theory of its specialisation.

- Understands the relationship between the principles of teaching and the consequences - the effectiveness of learning.
- Reflects on own pedagogical skills.
- The student will be able to undertake targeted development of self-knowledge related to the teaching profession
- The student will be able to independently plan activities that extend knowledge related to the teaching profession.
- The student will be able to create an atmosphere of trustworthiness, helpful, encouraging, attentive, accepting behavior, openness to recognize and manage the work style of others.
- The student will optimize the atmosphere in the learning group (school classroom) and create a stimulating and non-threatening environment for teaching and student learning, by applying techniques of rule following and safe working conditions and methods of motivating and activating students.

### **Brief syllabus:**

1. Observation and evaluation of the interior and exterior of the training primary and secondary school.
2. Getting to know and working with pedagogical documentation of the classroom and school.
3. Observation of the creation of conditions, implementation and evaluation of lessons at the 2nd level of the Primary School and the Secondary School.
4. Professional analysis of the observed lessons together with the trainee teacher.
5. Documentation of the process and results of the individual lessons observed.
6. Didactic procedures in the preparation of written preparations (with all its components), consultation with the trainee teacher.
7. Preparation of the conditions for the implementation of the lesson.
8. Implementation of the planned and prepared lesson with the application of innovative strategies, using adequate teaching resources of primary and secondary schools.
9. Evaluating the lesson with planned and selected methods and means of evaluation from own perspective, from the perspective of the pupils (and with elements of self-evaluation).
10. Professional analysis with the trainee teacher: documenting, evaluating preparation and its use and other components of the lesson.
11. Preparation of a portfolio of the hospitalization activity with all its components based on predetermined criteria by the head of the teaching practice, with the application of autonomy and alternativeness based on current trends in didactics.

### **Literature:**

1. Štátny vzdelávací program pre 2. stupeň základnej školy v Slovenskej republike ISCED 2 – nižšie sekundárne vzdelávanie. [https://www.statpedu.sk/files/articles/dokumenty/statny-vzdelavaci-program/isced2\\_spu\\_uprava.pdf](https://www.statpedu.sk/files/articles/dokumenty/statny-vzdelavaci-program/isced2_spu_uprava.pdf)
- Štátny vzdelávací program pre gymnázia v Slovenskej republike ISCED 3A – Vyššie sekundárne vzdelávanie. [https://www.statpedu.sk/files/articles/dokumenty/statny-vzdelavaci-program/isced3\\_spu\\_uprava.pdf](https://www.statpedu.sk/files/articles/dokumenty/statny-vzdelavaci-program/isced3_spu_uprava.pdf)
3. spu\_uprava.pdf
4. Zákon č. 245/2008 Z. z. – Zákon o výchove a vzdelávaní (školský zákon) a o zmene a doplnení niektorých zákonov. Bratislava : MŠ SR, 2008 (respektíve aktuálny školský zákon).
5. Aktuálny vnútorný predpis UJS: Zásady realizácie pedagogickej praxe na Pedagogickej fakulte UJS
6. Gadušová, Z. a kol.: Mentor Training : Ostrava : Ostravská univerzita, 2021. - online, 268 s. - ISBN 978-80-7599-294-9.

### **Language, knowledge of which is necessary to complete a course:**

Hungarian or Slovak					
<b>Notes:</b> Student workload distribution: 40% - teaching practice, 60% - preparation for teaching practice, preparation of documentation.					
<b>Evaluation of subjects</b> Total number of evaluated students: 0					
A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0
<b>Teacher:</b> PaedDr. Krisztina Czakóová, PhD., prof. RNDr. Tibor Kmet', CSc.					
<b>Date of last update:</b> 02.03.2022					
<b>Approved by:</b>					

## INFORMATION SHEET

<b>Name of the university:</b> J. Selye University	
<b>Name of the faculty:</b> Faculty of Education	
<b>Code:</b> KINF/ PPX6/22	<b>Name:</b> Pedagogical practice VI.
<b>Types, range and methods of educational activities:</b> <b>Form of study:</b> Lecture / Seminar / Practical <b>Recommended extent of course ( in hours ):</b> <b>Per week:</b> 0 / 0 <b>For the study period:</b> 0 / 0 / 40s <b>Methods of study:</b> present	
<b>Number of credits:</b> 4	
<b>Recommended semester/trimester of study:</b> 4.	
<b>Level of study:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for passing the subject:</b> The final assessment is portfolio-based, i.e. based on work produced during the teaching practice. The conditions and criteria for passing the course are set and regulated by the Directive of the Dean of the Faculty of Education UJS: Principles of pedagogical practice at the Faculty of Education UJS. The student is obliged to follow the relevant part of this document, related to the exit continuous pedagogical practice (PPX6). Mandatory components of the portfolio: - Completed protocol on completion of the teaching practice - Professional analysis of observed lessons and completed observation sheets - Preparation, implementation and subsequent evaluation and analysis of the lesson - Documentation of the teaching practice including annexes. Final course grade: A 100-90%, B 89-80%, C 79-70%, D 69-60%, E 59-50%. A grade of FX is awarded if the student achieves less than 50% of the total number of points. Total student load: 4 credits = 100 hours (40 hours of teaching practice: 10 hours of observation, 10 hours of analysis of observed lessons, 10 hours of teaching, 10 hours of analysis of taught lessons; 60 hours of preparation: preparation for teaching practice - consultation with the trainee teacher, preparation for tutorials, preparation for lessons, preparation of portfolio and documentation)	
<b>Results of education:</b> Knowledge: - The student of the course is able to observe, analyze activities at the 2nd grade elementary and middle school levels. - The student is able to professionally evaluate observed activities and activities at the Elementary and Middle School Level 2. - The student is able to document observed activities and activities at grade 2 elementary and middle school. - The student is able to navigate school documents. - The student knows and is oriented to the structure of personnel and material support for school functioning. - The student knows the specific activities of the teacher during the day, in the classroom and in the course of teaching the subjects of his/her specialisation in primary and secondary school.	

- The student understands the environment, culture and organisation of primary and secondary school activities.

#### Skills:

- Can identify diverse manifestations of structural elements of personality, psychological processes of the pupil in the process of teaching and in social interactions.

- Knows the specific activities of the teacher implemented during the day, in the context of teaching and in the course of teaching the subjects of his/her specialisation in primary and secondary school.

- Identifies the teaching objectives formulated by the teacher, the processes used to achieve them and the extent to which they are met.

- Can identify the teaching methods applied during the lesson.

- Describes the didactic aids, communication technologies and resources used in the teaching process and the possibilities of applying computers, interactive whiteboards, the Internet, specific teaching programmes and software, dynamic systems and interactive teaching materials and portals in the teaching of the subjects of his/her specialisation.

- Describes the processes of student assessment in the teaching process.

- Identifies teachers' teaching and communication styles and professional skills.

- Can process, evaluate, and reflect on observation results in the context of educational theory.

- The student can recognize his/her own level of competence.

- The student can identify common professional problems, investigate and formulate the theoretical and practical background necessary to solve them and address them (using practical procedures in practice).

- The student is able to recognise talented pupils, pupils with difficulties or special educational needs, disadvantaged pupils, multiply disadvantaged pupils and pupils requiring special treatment, to provide them with adequate advice regarding their entry into the labour market.

- The graduate of the course is capable of didactically correct written preparation (with all its components) for the purpose of conducting a lesson with elements of creativity, independence, individualization and alternativeness.

- He/she is able to consult his/her own written preparation with the trainee teacher in a professional manner.

- Is able to adequately prepare the conditions for, implement and evaluate a designated lesson.

- Is able to document results, professionally describe reflection and self-reflection in relation to the planned, prepared, implemented and evaluated lesson.

#### Competencies:

- Takes a position on observed phenomena based on prior theoretical knowledge.

- Undertakes self-reflection and receives feedback on own output from pupils, peers and trainee teacher.

- Presents responsibly own personal characteristics, communication style, values and professional skills.

- Provides feedback and assesses pupils' learning outcomes in accordance with the assessment principles at the appropriate level of education.

- Promotes interaction between pupils.

- Accepts the manifestations of pupil individuality in the context of the formal social group within the school classroom, the particularities of pupils' learning, specific educational needs and applies elements of differentiation in teaching.

- It implements classroom teaching, applying teaching methods, strategies, resources and aids and information and communication technologies optimised by the disciplinary-didactic theory of its specialisation.



- Understands the relationship between the principles of teaching and the consequences - the effectiveness of learning.
- Reflects on own pedagogical skills.
- The student will be able to undertake targeted development of self-knowledge related to the teaching profession
- The student will be able to independently plan activities that extend knowledge related to the teaching profession.
- The student will be able to create an atmosphere of trustworthiness, helpful, encouraging, attentive, accepting behavior, openness to recognize and manage the work style of others.
- The student will optimize the atmosphere in the learning group (school classroom) and create a stimulating and non-threatening environment for teaching and student learning, by applying techniques of rule following and safe working conditions and methods of motivating and activating students.

### **Brief syllabus:**

1. Observation and evaluation of the interior and exterior of the training primary and secondary school.
2. Getting to know and working with pedagogical documentation of the classroom and school.
3. Observation of the creation of conditions, implementation and evaluation of lessons at the 2nd level of the Primary School and the Secondary School.
4. Professional analysis of the observed lessons together with the trainee teacher.
5. Documentation of the process and results of the individual lessons observed.
6. Didactic procedures in the preparation of written preparations (with all its components), consultation with the trainee teacher.
7. Preparation of the conditions for the implementation of the lesson.
8. Implementation of the planned and prepared lesson with the application of innovative strategies, using adequate teaching resources of primary and secondary schools.
9. Evaluating the lesson with planned and selected methods and means of evaluation from own perspective, from the perspective of the pupils (and with elements of self-evaluation).
10. Professional analysis with the trainee teacher: documenting, evaluating preparation and its use and other components of the lesson.
11. Preparation of a portfolio of the hospitalization activity with all its components based on predetermined criteria by the head of the teaching practice, with the application of autonomy and alternativeness based on current trends in didactics.

### **Literature:**

1. Štátny vzdelávací program pre 2. stupeň základnej školy v Slovenskej republike ISCED 2 – nižšie sekundárne vzdelávanie. [https://www.statpedu.sk/files/articles/dokumenty/statny-vzdelavaci-program/isced2\\_spu\\_uprava.pdf](https://www.statpedu.sk/files/articles/dokumenty/statny-vzdelavaci-program/isced2_spu_uprava.pdf)
- Štátny vzdelávací program pre gymnázia v Slovenskej republike ISCED 3A – Vyššie sekundárne vzdelávanie. [https://www.statpedu.sk/files/articles/dokumenty/statny-vzdelavaci-program/isced3\\_spu\\_uprava.pdf](https://www.statpedu.sk/files/articles/dokumenty/statny-vzdelavaci-program/isced3_spu_uprava.pdf)
3. spu\_uprava.pdf
4. Zákon č. 245/2008 Z. z. – Zákon o výchove a vzdelávaní (školský zákon) a o zmene a doplnení niektorých zákonov. Bratislava : MŠ SR, 2008 (respektíve aktuálny školský zákon).
5. Aktuálny vnútorný predpis UJS: Zásady realizácie pedagogickej praxe na Pedagogickej fakulte UJS
6. Gadušová, Z. a kol.: Mentor Training : Ostrava : Ostravská univerzita, 2021. - online, 268 s. - ISBN 978-80-7599-294-9.

### **Language, knowledge of which is necessary to complete a course:**

Hungarian or Slovak					
<b>Notes:</b> Student workload distribution: 40% - teaching practice, 60% - preparation for teaching practice, preparation of documentation.					
<b>Evaluation of subjects</b> Total number of evaluated students: 0					
A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0
<b>Teacher:</b> prof. RNDr. Tibor Kmeť, CSc., PaedDr. Krisztina Czakóová, PhD.					
<b>Date of last update:</b> 02.03.2022					
<b>Approved by:</b>					

## INFORMATION SHEET

<b>Name of the university:</b> J. Selye University	
<b>Name of the faculty:</b> Faculty of Education	
<b>Code:</b> KINF/ TWS/22	<b>Name:</b> Creation of web pages
<b>Types, range and methods of educational activities:</b> <b>Form of study:</b> Lecture / Seminar / Practical <b>Recommended extent of course ( in hours ):</b> <b>Per week:</b> 0 / 0 / 2 <b>For the study period:</b> 0 / 0 / 26 <b>Methods of study:</b> present	
<b>Number of credits:</b> 1	
<b>Recommended semester/trimester of study:</b> 3.	
<b>Level of study:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for passing the subject:</b> Students are required to actively participate in classes and study the relevant literature. During the exercises, they have to solve predetermined tasks. During the semester, three credit papers are written on the main topics of the subject (HTML 5/ CSS, web graphics). All three papers are mandatory and must be evaluated separately, all three for at least 50% of the point evaluation. In the last week, it is possible to replace insufficient and missing transcripts. The course ends with an exam. The student is classified according to the obtained average from the tests. To obtain an A grade, it is necessary to obtain an average of at least 90%, for B at least 80%, for C at least 70%, for D at least 60% and for E evaluation at least 50%. Credits will not be awarded for a course if the student does not pass at least 50%.	
<b>Results of education:</b> <b>Knowledge:</b> After completing the subject, the student has knowledge of HTML 5 markup languages and the use of web graphics. <b>Skills:</b> After completing the subject, the student can create a basic static website (using text formatting, using tables, images, styles). He/she is capable of creating multimedia programs (variables, cycles, content generation, animations, graphics) and using simpler graphic elements. <b>Competencies:</b> After completing the course, the student is characterized by independence in the design of static and dynamic user interfaces in the development of websites.	
<b>Brief syllabus:</b> 1. Basics of HTML (history, use, structure). 2. HTML options. 3. Basics of CSS. 4. More advanced use of CSS. 5. HTML5 – basic document structure, language syntax, standards, declarations, lines, metatags. 6. HTML5 – tools for creating a valid website, coding. 7. HTML5 – text formatting, font definition, links, lists. 8. HTML5 – lists, tables.	

9. HTML5 – multimedia, forms. Basics of graphics (options, canvas).
10. Drawing options (outline drawing, filling).
11. Creation of animations (timing, animation).
12. Applicability of animations.
13. Final testing and debugging of the website.

**Literature:**

1. MONCUR, M.: Tanuljuk meg a JavaScript használatát 24 óra alatt. 1. vyd. Budapest : Kiskapu, 2006. 455s. ISBN 963 9637 16 5.
2. WENZ, Ch.: JavaScript zsebkönyv. 1. vyd. Budapest : Kiskapu Kft., 2006. 275 s. ISBN 978 963 9637 22 1.
3. KOTSIS, D. - LÉGRÁDI, G. - NAGY, G. - SZÉNÁSI, S.: "Többnyelvű programozástechnika", Budapest, Magyarország, Panem Kiadó, 2007, ISBN: 9789635454723
4. SZÉNÁSI, S.: "Java programozási nyelv oktatása C# alapokon", Informatika a felsőoktatásban, Debrecen, Magyarország, 2008, pp. 1-7.
5. SZÉNÁSI, S. - JANKÓ, D.: "Orbit - Internetes, közúti közlekedésbiztonsági döntéstámogató rendszer", 6th European Transport, Budapest, Magyarország, 2007, pp. 131-136.
6. LAWSON, B.: Bemutatkozik a HTML 5. - 1. vyd. - Budapest : Perfact Kiadó, 2013. - 226 s. - ISBN 978-963-9929-28-9.
7. Duckett, J.: HTML & CSS : Desing and Build Websites. 1. vyd. Indianapolis : John Wiley & Sons, 2011. 490 s. ISBN 978-1-118-00818-8.

**Language, knowledge of which is necessary to complete a course:**

Hungarian or Slovak

**Notes:**

Students' load distribution:

80% - participation in lessons, preparation for examinations,

20% - study of professional literature, practice of acquired knowledge, work on programming tasks.

**Evaluation of subjects**

Total number of evaluated students: 0

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

**Teacher:** Dr. habil. Sándor Szénási, PhD., RNDr. József Udvaros, PhD.

**Date of last update:** 02.03.2022

**Approved by:**

## INFORMATION SHEET

<b>Name of the university:</b> J. Selye University	
<b>Name of the faculty:</b> Faculty of Education	
<b>Code:</b> KINF/ UUI/22	<b>Name:</b> Introduction to artificial intelligence
<b>Types, range and methods of educational activities:</b> <b>Form of study:</b> Lecture / Seminar / Practical <b>Recommended extent of course ( in hours ):</b> <b>Per week:</b> 2 / 0 / 0 <b>For the study period:</b> 26 / 0 / 0 <b>Methods of study:</b> present	
<b>Number of credits:</b> 3	
<b>Recommended semester/trimester of study:</b> 1.	
<b>Level of study:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for passing the subject:</b> During the semester, students study relevant professional literature, participate in lectures. They take two midterm written tests, which they must score at least 50-50% on in order to be allowed to take the exam. The course ends with an oral examination. Classification is determined by the average of the 2 graded written tests (50%) and the oral exam (50%). An average of at least 90% is required for a grade of A, at least 80% for a grade of B, at least 70% for a grade of C, at least 60% for a grade of D, and at least 50% for a grade of E.	
<b>Results of education:</b> Knowledge: Upon completion of the course, students will gain a comprehensive understanding of the development and applications of artificial intelligence. Skills: After completing the course, students are able to use artificial intelligence using the Python programming language. Competences: After completing the course, students are able to identify the usefulness of AI in a given field and decide whether it is really worth using in that field.	
<b>Brief syllabus:</b> 1. The idea of artificial intelligence. 2. The development of artificial intelligence up to the 90s. 3. Breakthroughs in the field of artificial intelligence (multi-layer networks). 4. Artificial intelligence today (application, learning methods). 5. Artificial intelligence as a human defeater (deep learning). 6. Limitations of artificial intelligence, limits of its applicability. 7. Artificial intelligence and the python programming language. 8. Possibilities of development of artificial intelligence in python I. 9. Possibilities of development of artificial intelligence in python II. 10. Possibilities of artificial intelligence development in python III. 11. Development potential of artificial intelligence in python IV. 12. Development potential of artificial intelligence in python V. (data mining) 13. Artificial intelligence in python VI. (text mining)	
<b>Literature:</b>	

1. NORVIG, P. – RUSSELL, S.J. : Mesterséges intelligencia: modern megközelítés. Panem, Budapest, 2000. 1094 s. ISBN: 9635452411
2. PÜSPÖK, Ch. M. : Mintafelismerés és gépi tanulás
3. Shai Shalev-Shwartz és Shai Ben-David : Understanding Machine Learning: From Theory to Algorithms. Cambridge University Press. 2014. 449 s.

**Language, knowledge of which is necessary to complete a course:**

Hungarian or Slovak

**Notes:**

Distribution of students' workload:

40% - participation in classes, preparation for examinations and exams, 60% - study of literature, preparation of term papers.

**Evaluation of subjects**

Total number of evaluated students: 0

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

**Teacher:** Dr. habil. Dr. Gábor Kiss, PhD.

**Date of last update:** 02.03.2022

**Approved by:**

## INFORMATION SHEET

<b>Name of the university:</b> J. Selye University	
<b>Name of the faculty:</b> Faculty of Education	
<b>Code:</b> KINF/ VSP/22	<b>Name:</b> Embedded systems and programming of real-time applications
<b>Types, range and methods of educational activities:</b> <b>Form of study:</b> Lecture / Seminar / Practical <b>Recommended extent of course ( in hours ):</b> <b>Per week:</b> 0 / 0 / 2 <b>For the study period:</b> 0 / 0 / 26 <b>Methods of study:</b> present	
<b>Number of credits:</b> 2	
<b>Recommended semester/trimester of study:</b> 2.	
<b>Level of study:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for passing the subject:</b> During the semester, a student may receive 50 points for his/her own project that he/she is working on individually. A grade of A requires at least 90% of the points, a grade of B requires at least 80% of the points, a grade of C requires at least 70% of the points, a grade of D requires at least 60% of the points and a grade of E requires at least 50% of the points. Credit will not be awarded to a student who has not earned 50% of the points at the end of the semester.	
<b>Results of education:</b> <b>Knowledge:</b> Upon completion of the course, the student will be familiar with Embedded Linux. The student knows the basics of Linux, working with command line (shell), Bash scripts, remote setup via ssh and serial port. Can configure the system, install applications and analyze errors. <b>Skills:</b> After completing the course, the student is able to use Linux using the command line, working with basic command line commands. The student will be able to configure a Linux computer. The student will be able to configure a web server on a nested computer, create a private network, and set up a computer remotely. <b>Competencies:</b> Upon completion of the course, the student can utilize his/her skills as an administrator or Linux user. The student can use his/her skills in automation, configurations of IOT devices, information monitors and kiosks.	
<b>Brief syllabus:</b> 1. Linux operating system. Operating system architecture. Linux Kernel, GNU Userland, Busybox and GNU Compiler Suite. 2. Embedded Linux: Buildroot, Yocto and OpenWRT 3. Configure hardware using Device Tree. Configuration format. Using documentation to find out the address of the registry. GPIO, Heartbeat, UART, SPI, I2C and USB peripherals setup. Register status verification. 4. Working with a nested operating system. Command line via ssh. Command line via UART. Setting up the operating system using the command line.	

5. Configuring the operating system. Network configuration. Setting up programs to run automatically.
6. Programs in GNU Userland: vi editor, emacs editor, less, cat, candump, iptools
7. Processes and filters: processes in Linux, signals, programs for handling processes: ps, kill, wait, sleep.
8. Shell Scripting: variables, loops, functions, working with text
9. Cross-compilation of applications. GNU Compiler Suite. CMake configuration system. Creating multiple configurations.
10. Install applications. Copying information between desktop and embedded operating systems. RSYNC, SCP.
11. Web server installation and configuration.
12. Installing a private network using OpenVPN and sending emails.
13. Cross compiler, crossing

**Literature:**

1. SIMMONDS, Ch.: Mastering Embedded Linux Programming. Second Edition. Packt Publishing, 2017. 478 s. ISBN 9781787283282.
2. VIZUETE, D. M.: Instant Buildroot. Packt Publishing, 2013. 60 s. ISBN 9781783289455.

**Language, knowledge of which is necessary to complete a course:**

Hungarian or Slovak

**Notes:**

Student workload distribution:

60% - attendance at tutorials, exam preparation,

40% - studying literature, practicing acquired knowledge, working on own project.

**Evaluation of subjects**

Total number of evaluated students: 0

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

**Teacher:** Dr. habil. András Molnár, PhD., László Marák, PhD.

**Date of last update:** 02.03.2022

**Approved by:**



## INFORMATION SHEET

<b>Name of the university:</b> J. Selye University	
<b>Name of the faculty:</b> Faculty of Education	
<b>Code:</b> KINF/ŠIS/22	<b>Name:</b> School information systems
<b>Types, range and methods of educational activities:</b> <b>Form of study:</b> Lecture / Seminar / Practical <b>Recommended extent of course ( in hours ):</b> <b>Per week:</b> 0 / 2 / 0 <b>For the study period:</b> 0 / 26 / 0 <b>Methods of study:</b> present	
<b>Number of credits:</b> 2	
<b>Recommended semester/trimester of study:</b> 2.	
<b>Level of study:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for passing the subject:</b> The course is completed by a written examination, for which students can obtain 40% of the total number of points. During the semester, students will take a written examination for which they can earn 30% of the total points and 30% of the semester project. In addition to contact teaching, students prepare for practicals, prepare for the written examination, work on their semester project, and prepare for the examination. A grade of A requires a minimum of 90 points, a grade of B requires a minimum of 80 points, a grade of C requires a minimum of 70 points, a grade of D requires a minimum of 60 points, and a grade of E requires a minimum of 50 points. Credit will not be awarded to a student who scores less than 50 points.	
<b>Results of education:</b> <b>Knowledge:</b> Upon completion of the course, the student will: <ul style="list-style-type: none"> <li>- knows the basics of creating school information systems,</li> <li>- has a deeper knowledge of programming,</li> <li>- knows the implementation procedures.</li> </ul> <b>Skills:</b> Upon completion of the course, the student will: <ul style="list-style-type: none"> <li>- can design school information systems and implement them programmatically,</li> <li>- can use his/her theoretical knowledge to solve practical problems of application nature.</li> </ul> <b>Competences:</b> After completing the course the student can work effectively and independently in the process of design and implementation of an information system or its part.	
<b>Brief syllabus:</b> <ol style="list-style-type: none"> <li>1. Basics of Information Systems, peculiarities of school information systems.</li> <li>2. Design and programming of school information systems with regard to the application character.</li> <li>3. The validity of the C++ language in relation to other programming languages, possibilities of use.</li> <li>4. C++ syntax basics, variables, basic types, structures, references and pointers, operators, expressions and statements.</li> <li>5. Functions and procedures, compiling source code and creating an application.</li> </ol>	

6. Working with source code, version control system - GIT, creating versions, branches and revisions.
7. Objects and classes, variables, methods, constructors, copy constructors, destructors.
8. Encapsulation, public, protected and private. Friend functions and friend classes.
9. Structures in STL (Standard Template Library), List, Queue, Vector, Map, Set, Stack.
10. Algorithms in STL. Sort, for\_each, copy, fill.
11. User interaction, input processing and response to signals.
12. Organization of the graphical interface and creation of Layouts.
13. Implementing a school information system in practice.

**Literature:**

1. BAKA, B.: Getting Started with Qt 5. Birmingham : Packt Publishing, 2019. 136 s. ISBN 9781789956030.
2. BENEDEK, Z.: Szoftverfejlesztés C++ nyelven. Bicske : Szak Kiadó, 2007. 510 s. ISBN 9789639131941.
3. STROUSTRUP, B.: A C++ programozási nyelv : I.kötet. Budapest : Kiskapu Kft., 2002. 560 s. ISBN 963 9301 18 3.
4. STROUSTRUP, B.: A C++ programozási nyelv - II. kötet. Budapest : Kiskapu Kft., 2002. 1328 s. ISBN 963 9301 19 1.
5. BASL, J. Podnikové informační systémy: Podnik v informační společnosti 1. vyd. Praha: Grada Publishing, 2002. 142 s. ISBN 80- 247-0214-2
6. BASL, J. – BLAŽÍČEK, R. Podnikové informační systémy: Podnik v informační společnosti 3. vyd. Praha: Grada Publishing, 2013. 323 s. ISBN 978 80 247 4307 3

**Language, knowledge of which is necessary to complete a course:**

Hungarian or Slovak

**Notes:**

Student workload distribution:

50% - attendance at tutorials, exam preparation,

50% - studying literature, practicing the acquired knowledge, preparing the term paper.

**Evaluation of subjects**

Total number of evaluated students: 0

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

**Teacher:** Ing. Ondrej Takáč, PhD.

**Date of last update:** 02.03.2022

**Approved by:**

## INFORMATION SHEET

<b>Name of the university:</b> J. Selye University	
<b>Name of the faculty:</b> Faculty of Education	
<b>Code:</b> KINF/ ŠSm/22	<b>Name:</b> State Examination
<b>Types, range and methods of educational activities:</b> <b>Form of study:</b> <b>Recommended extent of course ( in hours ):</b> <b>Per week: For the study period:</b> <b>Methods of study:</b> present	
<b>Number of credits:</b> 3	
<b>Recommended semester/trimester of study:</b> 3., 4..	
<b>Level of study:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for passing the subject:</b> The final exam can be taken by a student who has fulfilled the obligations set out in the study program during the examination of the study carried out in the last year of study. At the oral state exam, the student demonstrates knowledge and skills from his field, including interdisciplinary links and reflection on the development of the relevant scientific fields. Demonstrates the ability to select the content of education in accordance with the required and expected educational goals and to enrich it with school and regional specifics. The final exam is carried out in the form of a colloquium and the student will be evaluated with a classification grade of A to FX. The grade will be included in the overall evaluation of the state exam. The evaluation based on the oral examination will be carried out according to the classification scale: A – 100 - 91%, B – 90 - 81%, C – 80 - 71%, D – 70 - 61%, E – 60 - 50%. Credits will not be granted to a student who does not achieve 50%. The decision on the result will be announced publicly by the chairman of the commission together with the result of the defense of the final thesis.	
<b>Results of education:</b> <b>Knowledge:</b> <ul style="list-style-type: none"> <li>• the student acquired knowledge from the areas presented within the compulsory and profile subjects of the study program,</li> <li>• the student can define and interpret basic concepts in his own words, explain and describe basic processes, describe and apply basic scientific research methods from the areas listed in the brief outline of the subject,</li> <li>• the student can analyze and evaluate the current state of scientific knowledge in his field,</li> <li>• the student can characterize the concept of teaching, give examples of different types of concepts of teaching and describe the framework for teaching and learning for age groups 11 to 19 years.</li> </ul> <b>Skills:</b> <ul style="list-style-type: none"> <li>• the student can present his professional knowledge,</li> <li>• the student can transfer knowledge,</li> <li>• the student can synthesize and apply acquired theoretical knowledge in practical educational activities,</li> <li>• the student can adequately choose educational procedures and apply them functionally,</li> </ul>	

- the student is able to guide the student on the path of acquiring knowledge, taking into account his individual needs,
- the student has developed skills to learn independently, which allows him to continue further studies.

**Competencies:**

- the student can demonstrate his language and professional culture during the oral exam,
- the student can use the acquired knowledge in wider contexts,
- the student can implement and synthesize the acquired knowledge in practice,
- the student can creatively use knowledge in solving assigned tasks, analyze a problem and synthesize a new solution,
- the student is able to answer the committee's questions at the required level.

**Brief syllabus:**

- I. Didactics of computer science
- II. Mathematical informatics

**Literature:**

Literature listed in the information sheets of the study programme

**Language, knowledge of which is necessary to complete a course:**

Hungarian or Slovak

**Notes:**

The state examination takes place before an examination committee whose members are appointed by the dean.

**Evaluation of subjects**

Total number of evaluated students: 0

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

**Teacher:**

**Date of last update:** 04.03.2022

**Approved by:**