

## Course descriptions

### TABLE OF CONTENTS

1. 2-AIN-127/15	Advanced Computer Graphics.....	2
2. 2-AIN-112/15	Advanced Image Processing.....	4
3. 2-AIN-205/15	Algorithmics for Hard Problems.....	6
4. 2-AIN-140/20	Architectures of Software Systems.....	8
5. 2-AINa-137/20	Artificial Intelligence.....	10
6. 2-AIN-147/19	Computer Vision.....	11
7. 2-AIN-233/00	Computer Vision Applications.....	13
8. 2-AIN-272/15	Digital Signal Processing.....	15
9. 2-AIN-991/15	Diploma Thesis ( <b>state exam</b> ).....	17
10. 2-AIN-138/16	Discrete Structures in Informatics and Computer Graphics.....	18
11. 2-MXX-130/21	Elements of AI.....	20
12. 2-MXX-130/21	Elements of AI.....	22
13. 1-MXX-233/13	English Conversation Course (1).....	24
14. 1-MXX-234/13	English Conversation Course (2).....	26
15. 1-MXX-141/00	French Language (1).....	28
16. 1-MXX-142/00	French Language (2).....	29
17. 1-MXX-241/00	French Language (3).....	30
18. 1-MXX-242/00	French Language (4).....	31
19. 2-AIN-134/14	Geometric modelling in graphics.....	32
20. 1-MXX-151/00	German Language (1).....	34
21. 1-MXX-152/00	German Language (2).....	35
22. 1-MXX-251/00	German Language (3).....	36
23. 1-MXX-252/00	German Language (4).....	37
24. 2-AIN-953/15	Methods of Applied Informatics ( <b>state exam</b> ).....	38
25. 2-AIN-132/15	Neural Networks.....	39
26. 2-AIN-204/10	Pattern Recognition.....	41
27. 2-MXX-110/00	Physical Education and Sport (1).....	43
28. 2-MXX-120/00	Physical Education and Sport (2).....	44
29. 2-MXX-210/00	Physical Education and Sport (3).....	45
30. 2-MXX-220/00	Physical Education and Sport (4).....	46
31. 2-AIN-206/15	Physical-based Animations and Mathematical Modeling.....	47
32. 2-AIN-109/15	Programming of Parallel and Distributed Systems.....	49
33. 2-AIN-923/15	Project Seminar (1).....	51
34. 2-AIN-924/15	Project Seminar (2).....	52
35. 2-AIN-128/15	Real-time Graphics and GPU Computations.....	54
36. 1-MXX-161/00	Russian Language (1).....	56
37. 1-MXX-162/00	Russian Language (2).....	57
38. 1-MXX-261/00	Russian Language (3).....	58
39. 1-MXX-262/00	Russian Language (4).....	59
40. 1-MXX-171/20	Slovak Language for Foreign Students (1).....	60
41. 1-MXX-172/20	Slovak Language for Foreign Students (2).....	61
42. 1-MXX-271/20	Slovak Language for Foreign Students (3).....	62
43. 1-MXX-272/20	Slovak Language for Foreign Students (4).....	63
44. 2-MXX-115/17	Sports in Natur (1).....	64
45. 2-MXX-116/18	Sports in Natur (2).....	66
46. 2-AINa-111/20	Web Technologies and Methodology.....	68

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022	
<b>University:</b> Comenius University Bratislava	
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics	
<b>Course ID:</b> FMFI.KAI/2-AIN-127/15	<b>Course title:</b> Advanced Computer Graphics
<b>Educational activities:</b> <b>Type of activities:</b> lecture / practicals <b>Number of hours:</b> <b>per week:</b> 2 / 2 <b>per level/semester:</b> 26 / 26 <b>Form of the course:</b> on-site learning	
<b>Number of credits:</b> 6	
<b>Recommended semester:</b> 2.	
<b>Educational level:</b> II.	
<b>Prerequisites:</b>	
<b>Antirequisites:</b> FMFI.KAG/2-MPG-101/00 and FMFI.KAG/2-MPG-102/00	
<b>Course requirements:</b> Attend lessons. One missed +0 points. 2 missed 0 points, 3 missed 0 points, 4 and more is Fx. Project and exercise (mandatory). Solve all homework problems (mandatory each one $\geq 30\%$ ) Pass final term (mandatory) You will need to solve several problems discussed during lessons. Pass oral/written exam: (mandatory) For the semester, the student can get 50% for exercises, 10% bonus, 10% for homework, the final exam consists of a test with weights of 20% and the oral exam is for 20%. The student must solve at least 30% of each homework in order to pass the final written exam. Grading: 92-100 A, 84-91 B, 76-83 C, 68-75 D, 60-67 E. Details on the subject page. Scale of assessment (preliminary/final): 60/40	
<b>Learning outcomes:</b> After completing the course students will know techniques of photorealistic computer graphics. Will be able to solve color calculation, shadow computation and render views of a scene from the input images. Students learn the basics of graphical programming in C#.	
<b>Class syllabus:</b> LECTURE01 "INTRODUCTION TO COMPUTER GRAPHICS" LECTURE02 "RAY TRACING 1." RayTracing Pipeline LECTURE03 "RAY TRACING 2." Ray Intersections LECTURE04 "RAY TRACING 3." Ray Tracing Acceleration, Data structure: grids, BVH, Kd-tree, Directional Partitioning, Dynamic Scenes, Beam and Cone Tracing, Packet Tracing LECTURE05 "LIGHT TRANSPORT." Physics behind ray tracing, Physical light quantities, Visual perception of light, Light sources, Light transport simulation: Rendering Equation	

<p>LECTURE06 "RADIOSITY."          Diffuse reflectance function, Radiative equilibrium between emission and absorption, escape, System of linear equations, Iterative solution Neuman series</p> <p>LECTURE07 "BRDF."          Bidirectional Reflectance Distribution Function (BRDF), Reflection models, Projection onto spherical basis functions, Shading Phong model, Blin-Phong model          Physical BRDF, Ward Reflection Model, Cook-Torrance model</p> <p>LECTURE08 "SHADOWS."          LECTURE09 "TEXTURING 1, 2."          Texture parameterization, Procedural methods, Procedural textures, Fractal landscapes, Surface reality techniques</p> <p>LECTURE10 "IMAGE BASED RENDERING 1."          Plenopticfunction, Panoramas, Concentric Mosaics, Light Field Rendering, The Lumigraph</p> <p>LECTURE11 "IMAGE BASED RENDERING 2."          Layered Depth Images, View-dependent Texture Mapping, Surface Light Fields, View Morphing</p> <p>LECTURE12 "ASK ME ANYTHING."          Test problem introduction</p>																	
<p><b>Recommended literature:</b>          Moderní počítačová grafika / Jiří Žára ... [et al.]. Brno : Computer Press, 2010          Realistic image synthesis using photon mapping / Henrik Wann Jensen ; Foreword by Pat Hanrahan. Natick : A K Peters, 2001  <a href="http://www.sccg.sk/~durikovic/classes/CG2/cg2_syllabus.html">http://www.sccg.sk/~durikovic/classes/CG2/cg2_syllabus.html</a></p>																	
<p><b>Languages necessary to complete the course:</b>          Slovak, English</p>																	
<p><b>Notes:</b></p>																	
<p><b>Past grade distribution</b>          Total number of evaluated students: 16</p> <table> <tr> <th>A</th><th>B</th><th>C</th><th>D</th><th>E</th><th>FX</th></tr> <tr> <td>18,75</td><td>18,75</td><td>31,25</td><td>6,25</td><td>12,5</td><td>12,5</td></tr> </table>						A	B	C	D	E	FX	18,75	18,75	31,25	6,25	12,5	12,5
A	B	C	D	E	FX												
18,75	18,75	31,25	6,25	12,5	12,5												
<p><b>Lecturers:</b> prof. RNDr. Roman Ďurikovič, PhD.</p>																	
<p><b>Last change:</b> 20.06.2022</p>																	
<p><b>Approved by:</b></p>																	

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022	
<b>University:</b> Comenius University Bratislava	
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics	
<b>Course ID:</b> FMFI.KAI/2-AIN-112/15	<b>Course title:</b> Advanced Image Processing
<b>Educational activities:</b> <b>Type of activities:</b> lecture / practicals <b>Number of hours:</b> <b>per week:</b> 2 / 2 <b>per level/semester:</b> 26 / 26 <b>Form of the course:</b> on-site learning	
<b>Number of credits:</b> 6	
<b>Recommended semester:</b> 1.	
<b>Educational level:</b> II.	
<b>Prerequisites:</b>	
<b>Course requirements:</b> It is necessary to obtain at least 90% of the points to obtain A grade, at least 80% of points to grade B, at least 70% of points to grade C, at least 60% to grade D and at least 50% to grade E. The course assessment consists of three parts: exercises (30%), project (20%) and final exam (50%). Students should get at least 30 points (out of 50) from exercises and project to meet the minimum condition for admission to the final written exam. Scale of assessment (preliminary/final): 50/50	
<b>Learning outcomes:</b> Graduates will know the advanced image processing techniques, such as image transformation, filtering, image improvement, advanced segmentation techniques (using active contours - snakes, flood segmentation) etc.	
<b>Class syllabus:</b> Image capture. Features digital image. Picture transformation Methods of image preprocessing, Hough transform Fourier Transform - DFT, FFT, filters detail noise Reduction Mathematical Morphology BW and grayscale Segmentation. Snake watershed, clustering improving the image processing textures	
<b>Recommended literature:</b> Computer Vision: Algorithms and Applications, Richard Szeliski, The University of Washington, 2nd ed. 2021 Image processing, analysis, and machine vision / Milan Sonka, Vaclav Hlavac, Roger Boyle. [Stamford] : Cengage Learning, 2008	

Digital image processing / Rafael C. Gonzalez, Richard E. Woods. Beijing : PEARSON; 4th edition, 2018  
Image processing : The fundamentals / Maria Petrou, Costas Petrou. Chichester : John Wiley, 2010

**Languages necessary to complete the course:**

Slovak, English

**Notes:**

**Past grade distribution**

Total number of evaluated students: 74

A	B	C	D	E	FX
12,16	22,97	29,73	13,51	5,41	16,22

**Lecturers:** RNDr. Zuzana Černeková, PhD., Mgr. Dana Škorvánková

**Last change:** 23.06.2022

**Approved by:**

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022	
<b>University:</b> Comenius University Bratislava	
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics	
<b>Course ID:</b> FMFI.KAI+KI/2-AIN-205/15	<b>Course title:</b> Algorithmics for Hard Problems
<b>Educational activities:</b> <b>Type of activities:</b> lecture / practicals <b>Number of hours:</b> <b>per week:</b> 2 / 2 <b>per level/semester:</b> 26 / 26 <b>Form of the course:</b> on-site learning	
<b>Number of credits:</b> 6	
<b>Recommended semester:</b> 2.	
<b>Educational level:</b> II.	
<b>Prerequisites:</b>	
<b>Recommended prerequisites:</b> 1-AIN-105 Efficient algorithms and compexity OR 1-INF-310 Design of efficient algorithms	
<b>Course requirements:</b> homeworks (28%), midterm (22%), written exam and oral consultation (50%) To pass the exam, student has to achieve at least 50% on the exam. Scale: A 90%, B 80%, C 70%, D 60%, E 50% Scale of assessment (preliminary/final): 50/50	
<b>Learning outcomes:</b> After completing the course students will be able to use methods for solving hard algorithmic tasks, particularly approximation algorithms, probabilistic algorithms, and integer linear programming. Students will be able to work with advanced methods for analysis of algorithms.	
<b>Class syllabus:</b> Introduction to approximation algorithms. Inapproximability. Probabilistic algorithms and their complexity. Las Vegas and Monte Carlo. Integer linear programming. Hierarchy of complexity classes. Examples.	
<b>Recommended literature:</b> Introduction to algorithms / Thomas H. Cormen ... [et al.]. Cambridge, Mass. : MIT Press, 2001 Approximation algorithms / Vijay V. Vazirani. Berlin : Springer, 2001 Randomized algorithms / Rajeev Motwani, Prabhakar Raghavan. New York : Cambridge University Press, 1995	
<b>Languages necessary to complete the course:</b> Slovak, English	
<b>Notes:</b>	

<b>Past grade distribution</b>					
Total number of evaluated students: 36					
A	B	C	D	E	FX
27,78	13,89	8,33	22,22	13,89	13,89
<b>Lecturers:</b> doc. Mgr. Tomáš Vinař, PhD., RNDr. Jozef Šiška, PhD., Mgr. Vladimír Boža, PhD.					
<b>Last change:</b> 24.06.2022					
<b>Approved by:</b>					

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022	
<b>University:</b> Comenius University Bratislava	
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics	
<b>Course ID:</b> FMFI.KAI/2-AIN-140/20	<b>Course title:</b> Architectures of Software Systems
<b>Educational activities:</b> <b>Type of activities:</b> lecture / practicals <b>Number of hours:</b> <b>per week:</b> 2 / 2 <b>per level/semester:</b> 26 / 26 <b>Form of the course:</b> on-site learning	
<b>Number of credits:</b> 6	
<b>Recommended semester:</b> 2., 4.	
<b>Educational level:</b> II.	
<b>Prerequisites:</b>	
<b>Course requirements:</b> Continuous assessment: midterm Examination: oral or written examination Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50% Scale of assessment (preliminary/final): 40/60	
<b>Learning outcomes:</b> Deeper knowledge of software engineering, architectural styles and patterns, design patterns, creating models and modeling the architectures. After this course students will be able to study and implement styles and patterns, use prefactoring and refactoring to optimize software design.	
<b>Class syllabus:</b> Stručná osnova predmetu: 1. Architectural styles I. (Garlan & Shaw: Abstract Machine, Pipes and Filters, Client-Server, Object Model, Repository, Blackboard) 2. Architectural styles II. (Interpreter, Modern Canonical Compiler, Rule-Based System, Aspect Oriented Architectures, MVC, Mikrokernel) 3. Distributed architectures, CORBA, Service Oriented Architectures. 4. Architectural patterns I (Buschmann: POSA IV: Pattern Oriented Software Architecture for Distributed Computing). 5. Architectural patterns II. (Reactor, Proactor, Requestor, Invoker, Acceptor, Connector, ACT, Facade, Master-Slave, ...) 6. Architectural patterns III (Memento, Context Object, DTO, Adapter, Iterator, Interceptor, ...) 7. Design patterns I (model and source code level, Gamma et al.). Creational Patterns (Builder, Abstract Factory, Factory method, ...). 8. Design patterns II. Structural Patterns (Bridge, Decorator, Composite, Proxy, ...) 9. Design patterns III. Behavioral Patterns. (Command, Mediator, State, Strategy, Visitor, Observer, ...) 10. From Refactoring to Patterns (Kerievsky). 11. Refactoring and Prefactoring (Fowler, Pugh).	



12. UML and its new features. Superstructure, Infrastructure, meta-models, and Object Constraint Language. Consistency and interconnection of models. XML, HUTN and PlantUML. 3DUMML and xDUMML. 13. Agile Modeling and development process. Lean Architecture (Coplien).					
<b>Recommended literature:</b> 1. Buschmann F. et al.: Pattern-oriented software architecture: a pattern language for distributed computing, Vol. 4. New York : John Wiley & Sons, 2007. BUSCHMANN, F. -- HENNEY, K. -- SCHMIDT, D. Pattern-oriented software architecture: a pattern language for distributed computing, vol. 4. New York : John Wiley & Sons, 2007. 2. Shaw M L., Garlan D.: Software architecture: Perspectives on an emerging discipline. Prentice Hall, 1996. SHAW, M L. -- GARLAN, D. Software architecture: Perspectives on an emerging discipline. Upper Saddle River : Prentice Hall, 1996. 3. Arlow J., Neustadt I. UML 2 and the Unified Process: Practical Object-Oriented Analysis and Design. Addison-Wesley, 2006. 4. Kerievsky J.: Refactoring to Patterns. Addison Wesley, 2008. 5. Gamma E. et al.: Design Patterns. Elements of Reusable Object-Oriented Software. Addison Wesley, 1994. 6. Fowler M.: Refactoring. Improving the Design of Existing Code. Wesley Longmann, 2000. 7. Pugh K.: Prefactoring, O'Reilly, 2005 8. Coplien O. J., Bjornvig G.: Lean Architecture for Agile Software Development. J. Wiley, 2014. 9. SOMMERVILLE, I. Software engineering. Harlow : Pearson Education Limited, 2004. ARLOW, J. -- NEUSTADT, I. UML 2 and the Unified Process: Practical Object-Oriented Analysis and Design. New Jersey : Addison-Wesley, 2006. 592 p. ISBN 0-321-32127-8. KERIEVSKY, J. Refactoring to Patterns. Boston: Addison Wesley, 2008. GAMMA, E. -- HELM, R. -- JOHNSON, R. -- VLISSIDES, J. Design Patterns. Elements of Reusable Object-Oriented Software. Boston : Addison Wesley, 1994. 395 p. ISBN 0-201-63361-2. FOWLER, M. Refactoring. Improving the Design of Existing Code. Boston: Wesley Longmann, 2000. Pugh K.:Prefactoring, O'Reilly, 2005					
<b>Languages necessary to complete the course:</b> Slovak, English					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 21					
A	B	C	D	E	FX
14,29	42,86	14,29	4,76	0,0	23,81
<b>Lecturers:</b> doc. Ing. Ivan Polášek, PhD.					
<b>Last change:</b> 18.11.2021					
<b>Approved by:</b>					

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022					
<b>University:</b> Comenius University Bratislava					
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics					
<b>Course ID:</b> FMFI.KAI/2-AINa-137/20		<b>Course title:</b> Artificial Intelligence			
<b>Educational activities:</b> <b>Type of activities:</b> lecture / practicals <b>Number of hours:</b> <b>per week:</b> 2 / 2 <b>per level/semester:</b> 26 / 26 <b>Form of the course:</b> on-site learning					
<b>Number of credits:</b> 6					
<b>Recommended semester:</b> 2.					
<b>Educational level:</b> II.					
<b>Prerequisites:</b>					
<b>Antirequisites:</b> FMFI.KAI/2-AIN-137/15					
<b>Course requirements:</b>					
<b>Learning outcomes:</b>					
<b>Class syllabus:</b>					
<b>Recommended literature:</b>					
<b>Languages necessary to complete the course:</b>					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 3					
A	B	C	D	E	FX
66,67	0,0	0,0	33,33	0,0	0,0
<b>Lecturers:</b> doc. RNDr. Mária Markošová, PhD.					
<b>Last change:</b> 16.11.2021					
<b>Approved by:</b>					

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022	
<b>University:</b> Comenius University Bratislava	
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics	
<b>Course ID:</b> FMFI.KAI/2-AIN-147/19	<b>Course title:</b> Computer Vision
<b>Educational activities:</b> <b>Type of activities:</b> lecture / practicals <b>Number of hours:</b> <b>per week:</b> 2 / 2 <b>per level/semester:</b> 26 / 26 <b>Form of the course:</b> on-site learning	
<b>Number of credits:</b> 6	
<b>Recommended semester:</b> 2.	
<b>Educational level:</b> II.	
<b>Prerequisites:</b>	
<b>Antirequisites:</b> FMFI.KAI+KAG/2-MPG-125/15	
<b>Course requirements:</b> Assessment: evaluation Preliminary assessment: Continuous assessment projects Final assessment: assessment examination A 90%; B 80%; C 70%; D 60%; E 50% Scale of assessment (preliminary/final): 40/60	
<b>Learning outcomes:</b> Graduates will know the advance techniques of machine vision, image recognition and processing, such as feature extraction from images, face detection and tracking, identification of significant areas in the image, etc.	
<b>Class syllabus:</b> Image Features extraction (Low, Medium and High level features) Feature categories and application(Shape, Color, Texture...) Object detection (Template matching, histogram of oriented gradients, Face detection and classification) Local features (detectors, descriptors, matching, Ransac, Bag of visual words) Dynamic Range of images, Tone Mapping a Gamut mapping Image Quality metrics (SSIM and modifications) Eye tracking (methods and applications) Machine Vision and industry applications of computer vision (Laser line triangulation sensors, multispectral imaging) Object Tracking (Tracking by detection, Optical flow)	
<b>Recommended literature:</b> Feature extraction : Foundations and applications / Isabelle Guyon ... [et al.] (eds.). Berlin : Springer, 2006 Algorithms for image processing and computer vision / J. R. Parker. New York : Wiley, 1997 Shape classification and analysis : Theory and practice / Luciano da Fontoura Costa, Roberto Marcondes Cesar, Jr.. Boca Raton, Fla. : CRC Press, 2009 Elena Šikudová, Zuzana Černeková, Vanda Benešová, Zuzana Haladová, Júlia Kučerová: Počítačové videnie. Detekcia a rozpoznávanie objektov, vydavateľstvo Wikina, Praha, ISBN: 978-80-87925-06-5	

<b>Languages necessary to complete the course:</b> Slovak and English					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 30					
A	B	C	D	E	FX
26,67	13,33	16,67	10,0	30,0	3,33
<b>Lecturers:</b> RNDr. Zuzana Berger Haladová, PhD.					
<b>Last change:</b> 27.11.2021					
<b>Approved by:</b>					

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022	
<b>University:</b> Comenius University Bratislava	
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics	
<b>Course ID:</b> FMFI.KAI/2-AIN-233/00	<b>Course title:</b> Computer Vision Applications
<b>Educational activities:</b> <b>Type of activities:</b> seminar <b>Number of hours:</b> <b>per week: 2 per level/semester: 26</b> <b>Form of the course:</b> on-site learning	
<b>Number of credits:</b> 3	
<b>Recommended semester:</b> 3.	
<b>Educational level:</b> II.	
<b>Prerequisites:</b>	
<b>Recommended prerequisites:</b> 2-AIN-112/15 or 2-MPG-125/15	
<b>Course requirements:</b> Presentations and activity on lectures A 90%, B 80%, C 70%, D 60%, E 50% Scale of assessment (preliminary/final): 100/0	
<b>Learning outcomes:</b> After completing the course students will be able to discover, develop and analyze the latest practices of successful projects in the field of computer vision and apply new trends in computer vision to create their own applications.	
<b>Class syllabus:</b> 1. Case studies of successful applications. 2. Industrial applications. 3. Medical applications. 3. Other applications. 4. Results of departmental research projects. 5. New trends in application of computer vision methods and techniques.	
<b>Recommended literature:</b> Computer Vision and Image Understanding, Elsevier Inc., <a href="http://www.sciencedirect.com/science/journal/10773142">http://www.sciencedirect.com/science/journal/10773142</a> International Journal of Computer Vision Springer <a href="http://www.springerlink.com/content/0920-5691">http://www.springerlink.com/content/0920-5691</a> IET Computer Vision <a href="http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=4159597">http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=4159597</a> CVPR - Computer Vision and Pattern Recognition Workshops <a href="http://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=5521877">http://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=5521877</a>	

<b>Languages necessary to complete the course:</b> Slovak, English					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 265					
A	B	C	D	E	FX
49,43	23,4	10,94	1,51	5,28	9,43
<b>Lecturers:</b> RNDr. Zuzana Černeková, PhD.					
<b>Last change:</b> 23.06.2022					
<b>Approved by:</b>					

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022	
<b>University:</b> Comenius University Bratislava	
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics	
<b>Course ID:</b> FMFI.KAI/2-AIN-272/15	<b>Course title:</b> Digital Signal Processing
<b>Educational activities:</b> <b>Type of activities:</b> lecture / practicals <b>Number of hours:</b> <b>per week:</b> 2 / 2 <b>per level/semester:</b> 26 / 26 <b>Form of the course:</b> on-site learning	
<b>Number of credits:</b> 6	
<b>Recommended semester:</b> 1.	
<b>Educational level:</b> II.	
<b>Prerequisites:</b>	
<b>Course requirements:</b> Continuous assessment: problem solving Exam: practical, written, oral Indicative assessment scale: A 92%, B 84%, C 76%, D 68%, E 60%	
<b>Learning outcomes:</b> Students acquire theoretical and practical knowledge with the processing of discrete (sampling analog) one dimensional signals using a computer. The acquired knowledge can be used in real-world applications such as audio processing, measurement sensors, signal transmission ... In the exercises students gain the appropriate skills to work in an environment Octave (freely distributable compatible alternative to Matlab).	
<b>Class syllabus:</b> Discrete signal Discrete random signal Discrete Fourier Transform (DFT) Window functions and their influence on DFT properties Z-transformation Discrete linear time-invariant (LTI) systems Digital IIR filters Digital FIR filters Detection and estimation Power Spectral Density (PSD) Parametric PSD Wavelet transform	
<b>Recommended literature:</b> Springer handbook of speech processing / Jacob Benesty, M. Mohan Sondhi, Yiteng Huang (Eds.). Berlin : Springer, 2008	
<b>Languages necessary to complete the course:</b> Slovak, English	

<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 126					
A	B	C	D	E	FX
33,33	16,67	15,08	9,52	16,67	8,73
<b>Lecturers:</b> RNDr. Marek Nagy, PhD.					
<b>Last change:</b> 20.06.2022					
<b>Approved by:</b>					



## STATE EXAM DESCRIPTION

<b>Academic year:</b> 2021/2022	
<b>University:</b> Comenius University Bratislava	
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics	
<b>Course ID:</b> FMFI.KAI/2-AIN-991/15	<b>Course title:</b> Diploma Thesis
<b>Number of credits:</b> 16	
<b>Educational level:</b> II.	
<b>Prerequisites:</b> FMFI.KAI/2-AIN-923/15 - Project Seminar (1) and FMFI.KAI/2-AIN-924/15 - Project Seminar (2)	
<b>State exam syllabus:</b>	
<b>Last change:</b> 29.05.2020	
<b>Approved by:</b>	

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022	
<b>University:</b> Comenius University Bratislava	
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics	
<b>Course ID:</b> FMFI.KAI/2-AIN-138/16	<b>Course title:</b> Discrete Structures in Informatics and Computer Graphics
<b>Educational activities:</b> <b>Type of activities:</b> lecture / practicals <b>Number of hours:</b> <b>per week:</b> 2 / 2 <b>per level/semester:</b> 26 / 26 <b>Form of the course:</b> on-site learning	
<b>Number of credits:</b> 6	
<b>Recommended semester:</b> 2.	
<b>Educational level:</b> II.	
<b>Prerequisites:</b>	
<b>Course requirements:</b> Examination: an examination consisting of a written and an oral part Continuous assessment: project, test The student must obtain at least 55% of points from the semester in order to take the final exam. Indicative rating scale: A 90%, B 80%, C 70%, D 60%, E 50% Weight of the mid-term / final evaluation: 50/50 Scale of assessment (preliminary/final): 50/50	
<b>Learning outcomes:</b> Theoretical foundations, methods and tools from Algebra and Discrete structures used in Informatics and Computer Graphics with examples and practical applications.	
<b>Class syllabus:</b> 1) Selected chapters from elementary number theory, primality tests. 2) Modular arithmetic, congruences, Fermat's Little Theorem, Euler's Theorem 3) Algebraic structures: groups, rings, finite fields - practical examples 4) Orders of an element and of a group, primitive roots 6) Number systems: congruences, fast modular exponentiation, 7) Chinese Remainder Theorem, solving systems of linear congruences, application: error detecting and error-correcting codes 8) Pseudo-random numbers: the linear congruential generator 9) Matrix algebra, linear transformations 5) Quaternions 10) Modular matrices, application: Hill's cryptosystem 11) Determinants, application: Vandermonde's determinant – secret sharing 12) One-way functions, discrete logarithm, one-way functions in algebraic structures 13) Applications of groups, finite fields, congruences: RSA cryptosystem, Knapsack cryptosystem, 14) Mathematical concept of symmetry: groups of automorphisms, isomorphisms, permutations	
<b>Recommended literature:</b> [1] Stanoyevitch, A. (2011) Discrete Structures with Contemporary Applications, CRC Press.	

[2] Gersting, J.L. (2007) Mathematical Structures for Computer Science, 6th edition, W.H.Freeman and Company, NY.

[3] Gallian, J.A. (2012) Contemporary Abstract Algebra, 8th edition, Brooks/Cole, Boston

[4] Cormen, T.H. - Leiserson, C.E. - Rivest, R.L.- Stein, C. (2009) Introduction to Algorithms, 3rd edition, The MIT Press.

[5] Yamamura, A. - Jajcayová, T. - Kurokawa, T. (2005) Oblivious transfer and private information retrieval using homomorphic encryption functions, In: Proceedings of the 2005 Symposium on Cryptography and Information Security, Vol. 1. - Tokyo

[6] Jajcayová, T. (2019): Representations of permutation groups and semigroups on combinatorial structures  
In: Fifth Russian Finnish Symposium on Discrete Mathematics. S. 137-145. - ISBN 978-5-89896-704-8

**Languages necessary to complete the course:**

Slovak, English

**Notes:**

**Past grade distribution**

Total number of evaluated students: 34

A	B	C	D	E	FX
38,24	17,65	14,71	8,82	14,71	5,88

**Lecturers:** doc. RNDr. Tatiana Jajcayová, PhD.

**Last change:** 26.06.2022

**Approved by:**

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022					
<b>University:</b> Comenius University Bratislava					
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics					
<b>Course ID:</b> FMFI.KAI/2-MXX-130/21		<b>Course title:</b> Elements of AI			
<b>Educational activities:</b> <b>Type of activities:</b> independent work <b>Number of hours:</b> <b>per week:</b> 25 <b>per level/semester:</b> 325 <b>Form of the course:</b> on-site learning					
<b>Number of credits:</b> 2					
<b>Recommended semester:</b> 2.					
<b>Educational level:</b> II.					
<b>Prerequisites:</b>					
<b>Course requirements:</b> Passing the online course <a href="https://course.elementsofai.com/">https://course.elementsofai.com/</a> (in English or Slovak version).					
<b>Learning outcomes:</b> The student will get acquainted with selected basic concepts of artificial intelligence and their use in solving various practical tasks.					
<b>Class syllabus:</b> 1. What is artificial intelligence: related areas, AI philosophy. 2. Troubleshooting and UI: Browsing and troubleshooting, browsing and games 3. Probability and chance, Bayes' theorem, naive Bayesian classification. 4. Machine learning: nearest neighbor classifier, regression. 5. Neural networks: basics, creation, modern techniques. 6. Consequences: on predicting the future, the effects of AI on society, summary.					
<b>Recommended literature:</b> Russell S., Norwig P. (2010). Artificial Intelligence: A Modern Approach, (3rd ed.), Prentice Hall. Available in faculty library. Marsland S. (2015). Machine Learning: An Algorithmic Perspective, (2nd ed.), CRC Press.					
<b>Languages necessary to complete the course:</b> Slovak or English					
<b>Notes:</b> The course consists of 20 numerical and 5 text-based tasks. Numerical tasks are checked automatically, text-based tasks are evaluated anonymously by students.					
<b>Past grade distribution</b> Total number of evaluated students: 37					
A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0
<b>Lecturers:</b> doc. RNDr. Mária Markošová, PhD.					

<b>Last change:</b> 22.08.2021
<b>Approved by:</b>

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022					
<b>University:</b> Comenius University Bratislava					
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics					
<b>Course ID:</b> FMFI.KAI/2-MXX-130/21		<b>Course title:</b> Elements of AI			
<b>Educational activities:</b> <b>Type of activities:</b> independent work <b>Number of hours:</b> <b>per week:</b> 25 <b>per level/semester:</b> 325 <b>Form of the course:</b> on-site learning					
<b>Number of credits:</b> 2					
<b>Recommended semester:</b> 1.					
<b>Educational level:</b> II.					
<b>Prerequisites:</b>					
<b>Course requirements:</b> Passing the online course <a href="https://course.elementsofai.com/">https://course.elementsofai.com/</a> (in English or Slovak version).					
<b>Learning outcomes:</b> The student will get acquainted with selected basic concepts of artificial intelligence and their use in solving various practical tasks.					
<b>Class syllabus:</b> 1. What is artificial intelligence: related areas, AI philosophy. 2. Troubleshooting and UI: Browsing and troubleshooting, browsing and games 3. Probability and chance, Bayes' theorem, naive Bayesian classification. 4. Machine learning: nearest neighbor classifier, regression. 5. Neural networks: basics, creation, modern techniques. 6. Consequences: on predicting the future, the effects of AI on society, summary.					
<b>Recommended literature:</b> Russell S., Norwig P. (2010). Artificial Intelligence: A Modern Approach, (3rd ed.), Prentice Hall. Available in faculty library. Marsland S. (2015). Machine Learning: An Algorithmic Perspective, (2nd ed.), CRC Press.					
<b>Languages necessary to complete the course:</b> Slovak or English					
<b>Notes:</b> The course consists of 20 numerical and 5 text-based tasks. Numerical tasks are checked automatically, text-based tasks are evaluated anonymously by students.					
<b>Past grade distribution</b> Total number of evaluated students: 37					
A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0
<b>Lecturers:</b> doc. RNDr. Mária Markošová, PhD.					

<b>Last change:</b> 22.08.2021
<b>Approved by:</b>

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022					
<b>University:</b> Comenius University Bratislava					
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics					
<b>Course ID:</b> FMFI.KJP/1-MXX-233/13		<b>Course title:</b> English Conversation Course (1)			
<b>Educational activities:</b> <b>Type of activities:</b> practicals <b>Number of hours:</b> <b>per week: 2 per level/semester: 26</b> <b>Form of the course:</b> on-site learning					
<b>Number of credits:</b> 2					
<b>Recommended semester:</b> 1., 3.					
<b>Educational level:</b> I., II.					
<b>Prerequisites:</b>					
<b>Course requirements:</b> tests, presentations, essays Course prerequisites: <a href="https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebezhneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/">https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebezhneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/</a> Scale of assessment (preliminary/final): 100/0					
<b>Learning outcomes:</b> Continual improvement of all language skills focused on communication/speaking, listening comprehension and writing. The emphasis is on discourse, lexicology and morphology, word-bank broadening of communicational English as well as English for specific purposes appropriate for university students. This course is a follow up of the previously taught ESP course.					
<b>Class syllabus:</b> This course's focus is to broaden spoken/communicational English for students with B2/C1 level of English knowledge.					
<b>Recommended literature:</b> Appropriate study material is supplied based on the participants' level of English by the lecturer. (Sources- The Guardian, The Herald Morning Sun. The Nine News, The West Australian, BBC News and podcasts, CNN podcasts).					
<b>Languages necessary to complete the course:</b>					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 215					
A	B	C	D	E	FX
67,44	13,02	6,51	1,86	1,4	9,77
<b>Lecturers:</b> Mgr. Aneta Barnes					



<b>Last change:</b> 21.06.2022
<b>Approved by:</b>

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022					
<b>University:</b> Comenius University Bratislava					
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics					
<b>Course ID:</b> FMFI.KJP/1-MXX-234/13		<b>Course title:</b> English Conversation Course (2)			
<b>Educational activities:</b> <b>Type of activities:</b> practicals <b>Number of hours:</b> <b>per week: 2 per level/semester: 26</b> <b>Form of the course:</b> on-site learning					
<b>Number of credits:</b> 2					
<b>Recommended semester:</b> 2., 4.					
<b>Educational level:</b> I., II.					
<b>Prerequisites:</b>					
<b>Course requirements:</b> tests, oral presentations, essays Course prerequisites: <a href="https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebezhneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/">https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebezhneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/</a> Scale of assessment (preliminary/final): 100/0					
<b>Learning outcomes:</b> Continual improvement of all language skills focused on communication/speaking, listening comprehension and writing. The emphasis is on discourse, lexicology and morphology, word-bank broadening of communicational/spoken English as well as English for specific purpose appropriate for university students. This course is a follow up of the Conversational English course 1.					
<b>Class syllabus:</b> This course's focus is to broaden spoken/communicational English for students with B2/C1 level of English knowledge( Upper-Intermediate/Lower Advanced).					
<b>Recommended literature:</b> Appropriate study material is supplied based on the participants'level of English by the lecturer. (Sources- The Guardian, The Herald Morning Sun. The Nine News, The West Australian, BBC News and podcasts, CNN podcasts).					
<b>Languages necessary to complete the course:</b>					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 146					
A	B	C	D	E	FX
77,4	12,33	3,42	1,37	0,0	5,48
<b>Lecturers:</b> Mgr. Aneta Barnes					

<b>Last change:</b> 21.06.2022
<b>Approved by:</b>

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022					
<b>University:</b> Comenius University Bratislava					
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics					
<b>Course ID:</b> FMFI.KJP/1-MXX-141/00		<b>Course title:</b> French Language (1)			
<b>Educational activities:</b> <b>Type of activities:</b> practicals <b>Number of hours:</b> <b>per week: 2 per level/semester: 26</b> <b>Form of the course:</b> on-site learning					
<b>Number of credits:</b> 2					
<b>Recommended semester:</b> 1.					
<b>Educational level:</b> I., II.					
<b>Prerequisites:</b>					
<b>Course requirements:</b> Scale of assessment (preliminary/final): 100/0					
<b>Learning outcomes:</b>					
<b>Class syllabus:</b> French language is taught at two levels: beginner and intermediate. Students opt for one of them depending on whether they wish to obtain the fundamentals of the language or wish to maintain and/or improve previous knowledge of French.					
<b>Recommended literature:</b> Capelle Guy, Menand Robert: Le Nouveau taxi 1, Hachette FLE Paris, France 2009, ISBN 978-2-01-155548 - 9					
<b>Languages necessary to complete the course:</b>					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 435					
A	B	C	D	E	FX
45,75	20,0	18,85	8,74	2,3	4,37
<b>Lecturers:</b> Mgr. Ľubomíra Kožehubová					
<b>Last change:</b> 20.06.2022					
<b>Approved by:</b>					

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022					
<b>University:</b> Comenius University Bratislava					
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics					
<b>Course ID:</b> FMFL.KJP/1-MXX-142/00		<b>Course title:</b> French Language (2)			
<b>Educational activities:</b> <b>Type of activities:</b> practicals <b>Number of hours:</b> <b>per week:</b> 2 <b>per level/semester:</b> 26 <b>Form of the course:</b> on-site learning					
<b>Number of credits:</b> 2					
<b>Recommended semester:</b> 2.					
<b>Educational level:</b> I., II.					
<b>Prerequisites:</b>					
<b>Course requirements:</b> Scale of assessment (preliminary/final): 100/0					
<b>Learning outcomes:</b>					
<b>Class syllabus:</b> The subject continues the program of French language (1) and provides courses of essential and intermediate French language.					
<b>Recommended literature:</b> Capelle Guy, Menand Robert: Le Nouveau taxi 1, Hachette FLE Paris, France 2009, ISBN 978-2-01-155548 - 9					
<b>Languages necessary to complete the course:</b>					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 265					
A	B	C	D	E	FX
38,87	25,28	19,62	10,19	2,64	3,4
<b>Lecturers:</b> Mgr. Ľubomíra Kožehubová					
<b>Last change:</b> 20.06.2022					
<b>Approved by:</b>					

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022					
<b>University:</b> Comenius University Bratislava					
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics					
<b>Course ID:</b> FMFL.KJP/1-MXX-241/00		<b>Course title:</b> French Language (3)			
<b>Educational activities:</b> <b>Type of activities:</b> practicals <b>Number of hours:</b> <b>per week:</b> 2 <b>per level/semester:</b> 26 <b>Form of the course:</b> on-site learning					
<b>Number of credits:</b> 2					
<b>Recommended semester:</b> 3.					
<b>Educational level:</b> I., II.					
<b>Prerequisites:</b>					
<b>Course requirements:</b> Scale of assessment (preliminary/final): 100/0					
<b>Learning outcomes:</b>					
<b>Class syllabus:</b> The subject provides a course of intermediate French language, covering not only general, but also technical language.					
<b>Recommended literature:</b> Capelle Guy, Menand Robert: Le Nouveau taxi 1, Hachette FLE Paris, France 2009, ISBN 978-2-01-155548 - 9					
<b>Languages necessary to complete the course:</b>					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 104					
A	B	C	D	E	FX
39,42	27,88	21,15	6,73	0,96	3,85
<b>Lecturers:</b> Mgr. Ľubomíra Kožehubová					
<b>Last change:</b> 20.06.2022					
<b>Approved by:</b>					

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022					
<b>University:</b> Comenius University Bratislava					
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics					
<b>Course ID:</b> FMFI.KJP/1-MXX-242/00		<b>Course title:</b> French Language (4)			
<b>Educational activities:</b> <b>Type of activities:</b> practicals <b>Number of hours:</b> <b>per week:</b> 2 <b>per level/semester:</b> 26 <b>Form of the course:</b> on-site learning					
<b>Number of credits:</b> 2					
<b>Recommended semester:</b> 4.					
<b>Educational level:</b> I., II.					
<b>Prerequisites:</b>					
<b>Course requirements:</b> Scale of assessment (preliminary/final): 100/0					
<b>Learning outcomes:</b>					
<b>Class syllabus:</b> The subject provides a course of intermediate French covering not only general, but also technical French language.					
<b>Recommended literature:</b> Menand Robert: Le Nouveau taxi 2, Hachette FLE, Paris, France 2009, ISBN 978-2-01-155551 - 9					
<b>Languages necessary to complete the course:</b>					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 74					
A	B	C	D	E	FX
41,89	32,43	17,57	2,7	1,35	4,05
<b>Lecturers:</b> Mgr. Ľubomíra Kožehubová					
<b>Last change:</b> 20.06.2022					
<b>Approved by:</b>					

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022	
<b>University:</b> Comenius University Bratislava	
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics	
<b>Course ID:</b> FMFI.KAI/2-AIN-134/14	<b>Course title:</b> Geometric modelling in graphics
<b>Educational activities:</b> <b>Type of activities:</b> lecture / practicals <b>Number of hours:</b> <b>per week:</b> 2 / 2 <b>per level/semester:</b> 26 / 26 <b>Form of the course:</b> on-site learning	
<b>Number of credits:</b> 6	
<b>Recommended semester:</b> 2.	
<b>Educational level:</b> II.	
<b>Prerequisites:</b>	
<b>Course requirements:</b> Projects, oral exam For the semester, the student can get 50% for exercises, the final exam in the form of a presentation of a chapter from the book has a weight of 50%. The student must solve each task in the exercises at least 30% in order to pass the final exam. Grading: 92-100 A, 84-91 B, 76-83 C, 68-75 D, 60-67 E. Details on the subject page. Scale of assessment (preliminary/final): 50/50	
<b>Learning outcomes:</b> After completing the course, students will be able to distinguish between the current methods and options for creating, modeling and digital representation of three-dimensional objects. He will be able to implement these structures and procedures to use and modify them under the existing modeling tools.	
<b>Class syllabus:</b> 1. Polygonal networks - describes the structure for polygonal representation networks, simplification, smoothing compression and networking, computing over networks (earth, normal, curvature), parameterization and triangularizácia, interactive techniques for modeling networks 2. Parametric curves and surfaces - polynomial and spline representation, design and modeling, tessellation, redistribution curves and surfaces 3. implicit FREP a volumetric representation - classification, modeling, set operations, conversion to the polygonal network 4. point clouds - representation of unorganized set of points, nearest neighbor search set of points, proximity graphs, surface reconstruction, multiview geometry 5. Procedural modeling - L-systems, generating terrain procedurally buildings and cities	
<b>Recommended literature:</b> Curves and Surfaces for computer-Aided geometric design : A practical Guide / Gerald E. Farin. San Diego : Academic Press, 1997	
<b>Languages necessary to complete the course:</b> Slovak, English	



<b>Notes:</b>					
<b>Past grade distribution</b>					
Total number of evaluated students: 25					
A	B	C	D	E	FX
40,0	16,0	20,0	8,0	12,0	4,0
<b>Lecturers:</b> prof. RNDr. Roman Ďurikovič, PhD.					
<b>Last change:</b> 20.06.2022					
<b>Approved by:</b>					

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022					
<b>University:</b> Comenius University Bratislava					
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics					
<b>Course ID:</b> FMFI.KJP/1-MXX-151/00		<b>Course title:</b> German Language (1)			
<b>Educational activities:</b> <b>Type of activities:</b> practicals <b>Number of hours:</b> <b>per week: 2 per level/semester: 26</b> <b>Form of the course:</b> on-site learning					
<b>Number of credits:</b> 2					
<b>Recommended semester:</b> 1.					
<b>Educational level:</b> I., II.					
<b>Prerequisites:</b>					
<b>Course requirements:</b> Scale of assessment (preliminary/final): 100/0					
<b>Learning outcomes:</b> To master the fundamentals of the common language and basic technical terms of particular fields of study (depending on the student's level of German proficiency )					
<b>Class syllabus:</b> German language is taught at three levels: beginner, intermediate and advanced. Students opt for one of them depending on whether they need to learn the fundamentals or maintain and/or improve their previous knowledge. This course's focus is to master the fundamentals of the common language and basic technical terms of particular fields of study (depending on the student's level of German proficiency )					
<b>Recommended literature:</b> Appropriate study material is supplied by teacher based on the participants'level of German proficiency.					
<b>Languages necessary to complete the course:</b>					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 734					
A	B	C	D	E	FX
36,1	27,25	19,62	8,99	2,72	5,31
<b>Lecturers:</b> Mgr. Alexandra Maďarová, Mgr. Simona Tomášková, PhD.					
<b>Last change:</b> 21.06.2022					
<b>Approved by:</b>					

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022					
<b>University:</b> Comenius University Bratislava					
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics					
<b>Course ID:</b> FMFI.KJP/1-MXX-152/00		<b>Course title:</b> German Language (2)			
<b>Educational activities:</b> <b>Type of activities:</b> practicals <b>Number of hours:</b> <b>per week: 2 per level/semester: 26</b> <b>Form of the course:</b> on-site learning					
<b>Number of credits:</b> 2					
<b>Recommended semester:</b> 2.					
<b>Educational level:</b> I., II.					
<b>Prerequisites:</b>					
<b>Course requirements:</b> Scale of assessment (preliminary/final): 100/0					
<b>Learning outcomes:</b> To master the fundamentals of the common language and basic technical terms of particular fields of study (depending on the student's level of German proficiency )					
<b>Class syllabus:</b> German language is taught at two levels: beginner and intermediate. Students opt for one of them depending on whether they wish to obtain the fundamentals of the language or wish to maintain and/or improve previous knowledge of German. This course's focus is to to master the fundamentals of the common language and basic technical terms of particular fields of study (depending on the student's level of German proficiency )					
<b>Recommended literature:</b> Appropriate study material is supplied by teacher based on the participants'level of German proficiency					
<b>Languages necessary to complete the course:</b>					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 480					
A	B	C	D	E	FX
36,04	20,21	20,83	13,13	3,33	6,46
<b>Lecturers:</b> Mgr. Alexandra Maďarová, Mgr. Simona Tomášková, PhD.					
<b>Last change:</b> 21.06.2022					
<b>Approved by:</b>					

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022					
<b>University:</b> Comenius University Bratislava					
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics					
<b>Course ID:</b> FMFI.KJP/1-MXX-251/00		<b>Course title:</b> German Language (3)			
<b>Educational activities:</b> <b>Type of activities:</b> practicals <b>Number of hours:</b> <b>per week:</b> 2 <b>per level/semester:</b> 26 <b>Form of the course:</b> on-site learning					
<b>Number of credits:</b> 2					
<b>Recommended semester:</b> 3.					
<b>Educational level:</b> I., II.					
<b>Prerequisites:</b>					
<b>Course requirements:</b> Scale of assessment (preliminary/final): 100/0					
<b>Learning outcomes:</b> Master the basics of general language and basic professional terminology of individual fields of study (depending on the advanced level of students)					
<b>Class syllabus:</b> The course is a follow-up to the German language (1,2). The subject provides a course of intermediate or advanced German language. This course's focus is to deepen the knowledge of the common language and basic technical terms of particular fields of study (depending on the student's level of German proficiency).					
<b>Recommended literature:</b> Appropriate study material is supplied by teacher based on the participants' level of German proficiency.					
<b>Languages necessary to complete the course:</b>					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 165					
A	B	C	D	E	FX
41,21	25,45	20,61	6,67	2,42	3,64
<b>Lecturers:</b> Mgr. Alexandra Maďarová, Mgr. Simona Tomášková, PhD.					
<b>Last change:</b> 21.06.2022					
<b>Approved by:</b>					

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022					
<b>University:</b> Comenius University Bratislava					
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics					
<b>Course ID:</b> FMFI.KJP/1-MXX-252/00		<b>Course title:</b> German Language (4)			
<b>Educational activities:</b> <b>Type of activities:</b> practicals <b>Number of hours:</b> <b>per week: 2 per level/semester: 26</b> <b>Form of the course:</b> on-site learning					
<b>Number of credits:</b> 2					
<b>Recommended semester:</b> 4.					
<b>Educational level:</b> I., II.					
<b>Prerequisites:</b>					
<b>Course requirements:</b> Scale of assessment (preliminary/final): 100/0					
<b>Learning outcomes:</b> Master the basics of general language and basic professional terminology of individual fields of study (depending on the advanced level of students)					
<b>Class syllabus:</b> The course is a follow-up to the German language (1-3). It provides a course of intermediate and advanced German language. This course's focus is to deepen the knowledge of the common language and basic technical terms of particular fields of study (depending on the student's level of German proficiency).					
<b>Recommended literature:</b> Appropriate study material is supplied by teacher based on the participants'level of German proficiency.					
<b>Languages necessary to complete the course:</b>					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 90					
A	B	C	D	E	FX
42,22	24,44	12,22	12,22	3,33	5,56
<b>Lecturers:</b> Mgr. Alexandra Maďarová, Mgr. Simona Tomášková, PhD.					
<b>Last change:</b> 21.06.2022					
<b>Approved by:</b>					

## STATE EXAM DESCRIPTION

<b>Academic year:</b> 2021/2022	
<b>University:</b> Comenius University Bratislava	
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics	
<b>Course ID:</b> FMFI.KAI/2-AIN-953/15	<b>Course title:</b> Methods of Applied Informatics
<b>Number of credits:</b> 4	
<b>Educational level:</b> II.	
<b>State exam syllabus:</b>	
<b>Last change:</b> 29.05.2020	
<b>Approved by:</b>	

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022	
<b>University:</b> Comenius University Bratislava	
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics	
<b>Course ID:</b> FMFI.KAI/2-AIN-132/15	<b>Course title:</b> Neural Networks
<b>Educational activities:</b> <b>Type of activities:</b> lecture / practicals <b>Number of hours:</b> <b>per week:</b> 2 / 2 <b>per level/semester:</b> 26 / 26 <b>Form of the course:</b> on-site learning	
<b>Number of credits:</b> 6	
<b>Recommended semester:</b> 2.	
<b>Educational level:</b> II.	
<b>Prerequisites:</b>	
<b>Antirequisites:</b> FMFI.KAI/1-AIN-480/00	
<b>Course requirements:</b> individual projects during the semester. Final written-oral exam Scale: A 90%, B 80%, C 70%, D 60%, E 50% Scale of assessment (preliminary/final): 70/30	
<b>Learning outcomes:</b> After completing the course will student understands the basic principles of connectionism (neural networks) know the basic models of neural networks and know their usefulness when solving various tasks (eg. Pattern recognition, classification, time series prediction, memorizing patterns and others). Lectures are combined with computer simulations exercises in Python.	
<b>Class syllabus:</b> Introduction, inspiration from biology, brief history, NS with logical neurons. Binary / continuous perceptron: the concept of learning with the teacher, classification of patterns. Single-layer NS: linear self-association, classification, error functions. Multilayer perceptron: error backpropagation method, training and test set, generalization, model selection, validation. Modifications of gradient methods, second order optimization, regularization. Optimization problems. Unsupervised learning, feature extraction, principal component analysis, self-organizing map, data visualization. Sequence data modeling: forward NS, relation to n-grams, partially and completely recurrent models, SRN model, BPTT algorithms, RTRL. Expansion of hidden representation: NS with radial basis functions (RBF), echo state network (ESN). Deep learning, convolutional neural networks: introduction. Modern recurrent NS: autoencoders, GRU, LSTM. Hopfield model: deterministic dynamics, attractors, autoassociative memory.	

Stochastic recurrent NS models: basics of probability theory and statistical mechanics, Boltzmann machine, RBM model, Deep Belief Network. The recent trends in NS.					
<b>Recommended literature:</b> Neural networks and learning machines / Simon Haykin. Upper Saddle River : Pearson education, 2009 Úvod do teórie neurónových sietí / Vladimír Kvasnička ... [et al.]. Bratislava : Iris, 1997 Neural networks (slajdy k prednáškam), Igor Farkaš, Knižničné a edičné centrum FMFI UK v Bratislave, 2011. Goodfellow I., Bengio Y., Courville A. (2016). Deep Learning. MIT Press. Zhang A. et al. (2020). Dive into Deep Learning. An interactive deep learning book with code, math, and discussions, based on the NumPy interface.					
<b>Languages necessary to complete the course:</b> Slovak, English					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 151					
A	B	C	D	E	FX
29,8	15,89	14,57	10,6	11,26	17,88
<b>Lecturers:</b> prof. Ing. Igor Farkaš, Dr.					
<b>Last change:</b> 18.11.2021					
<b>Approved by:</b>					



## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022	
<b>University:</b> Comenius University Bratislava	
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics	
<b>Course ID:</b> FMFI.KAI/2-AIN-204/10	<b>Course title:</b> Pattern Recognition
<b>Educational activities:</b> <b>Type of activities:</b> lecture / practicals <b>Number of hours:</b> <b>per week:</b> 2 / 2 <b>per level/semester:</b> 26 / 26 <b>Form of the course:</b> on-site learning	
<b>Number of credits:</b> 6	
<b>Recommended semester:</b> 2.	
<b>Educational level:</b> II.	
<b>Prerequisites:</b>	
<b>Course requirements:</b> tests, projects, oral exam Scale: A 90%, B 80%, C 70%, D 60%, E 50% Scale of assessment (preliminary/final): 40/60	
<b>Learning outcomes:</b> Graduates will acquire basic methods of classification.	
<b>Class syllabus:</b> The role of classification, feature articles and Syntax Notation. Selection and pretreatment symptoms. Classifiers, basic concepts. Bayesian decision theory, discriminatory and divisive functions hypersurface, the criterion of the minimum error. Decision trees. Discriminant analysis, linear classifier. Mechanisms of support vectors (SVM). Neural networks. Uncontrolled classifiers. Hidden Markov models. Quality rating classification. Syntactic recognition, inference grammar. Special types of grammar.	
<b>Recommended literature:</b> Pattern classification / Richard O. Duda, Peter E. Hart, David G. Stork. New York : Wiley Interscience, 2001 Classification pattern recognition and reduction of dimensionality / edited by P. R. Krishnaiah, L. N. Kanal. Amsterdam : North-Holland, 1982 Modern multivariate statistical techniques : Regression, classification, and manifold learning / Alan Julian Izenman. New York : Springer, 2008	
<b>Languages necessary to complete the course:</b>	

<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 182					
A	B	C	D	E	FX
14,29	16,48	25,82	20,88	12,64	9,89
<b>Lecturers:</b> Ing. Viktor Kocur, PhD.					
<b>Last change:</b> 21.09.2018					
<b>Approved by:</b>					

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022					
<b>University:</b> Comenius University Bratislava					
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics					
<b>Course ID:</b> FMFL.KTV/2-MXX-110/00		<b>Course title:</b> Physical Education and Sport (1)			
<b>Educational activities:</b> <b>Type of activities:</b> practicals <b>Number of hours:</b> <b>per week: 2 per level/semester: 26</b> <b>Form of the course:</b> on-site learning					
<b>Number of credits:</b> 2					
<b>Recommended semester:</b> 1.					
<b>Educational level:</b> II.					
<b>Prerequisites:</b>					
<b>Course requirements:</b> Scale of assessment (preliminary/final): 100/0					
<b>Learning outcomes:</b>					
<b>Class syllabus:</b> Practicing of the students' game skills in collective sports: basketball, volleyball, football, floorball and hockey. Mastering of the basic technique of a particular sport discipline in other sports. In paddling, basic training on still and slightly flowing water. Development of coordination skills, improvement of articular mobility and cardiovascular system.					
<b>Recommended literature:</b>					
<b>Languages necessary to complete the course:</b> Slovak, English					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 1657					
A	B	C	D	E	FX
98,37	0,6	0,06	0,0	0,0	0,97
<b>Lecturers:</b> PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, Mgr. Jana Leginusová, Mgr. Tomáš Kuchár, PhD., PaedDr. Mikuláš Ortutay, Mgr. Martin Dovičák, PhD., Mgr. Júlia Raábová, PhD., Mgr. Branislav Nedbálek, Mgr. Tomáš Lovecký					
<b>Last change:</b> 15.03.2022					
<b>Approved by:</b>					

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022					
<b>University:</b> Comenius University Bratislava					
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics					
<b>Course ID:</b> FMFI.KTV/2-MXX-120/00		<b>Course title:</b> Physical Education and Sport (2)			
<b>Educational activities:</b> <b>Type of activities:</b> practicals <b>Number of hours:</b> <b>per week: 2 per level/semester: 26</b> <b>Form of the course:</b> on-site learning					
<b>Number of credits:</b> 2					
<b>Recommended semester:</b> 2.					
<b>Educational level:</b> II.					
<b>Prerequisites:</b>					
<b>Course requirements:</b> Scale of assessment (preliminary/final): 100/0					
<b>Learning outcomes:</b>					
<b>Class syllabus:</b> Practicing of offensive and defensive game combinations and playing with modified rules in collective sports such as basketball, volleyball, football, floorball, hockey. Command of elements of higher difficulty in locomotion skills (swimming - crawl stroke, breast stroke, butterfly stroke, trampoline jumping and aerobics – practicing of areobics compositions, bodybuilding – development of the main muscle groups, paddling on running water. Testing of the level of physical fitness and coordination skills.					
<b>Recommended literature:</b>					
<b>Languages necessary to complete the course:</b> Slovak, English					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 1557					
A	B	C	D	E	FX
98,52	0,39	0,06	0,06	0,06	0,9
<b>Lecturers:</b> Mgr. Martin Dovičák, PhD., Mgr. Tomáš Kuchár, PhD., Mgr. Jana Leginusová, PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, Mgr. Branislav Nedbálek, PaedDr. Mikuláš Ortutay, Mgr. Júlia Raábová, PhD., Mgr. Tomáš Lovecký					
<b>Last change:</b> 15.03.2022					
<b>Approved by:</b>					

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022					
<b>University:</b> Comenius University Bratislava					
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics					
<b>Course ID:</b> FMFL.KTV/2-MXX-210/00		<b>Course title:</b> Physical Education and Sport (3)			
<b>Educational activities:</b> <b>Type of activities:</b> practicals <b>Number of hours:</b> <b>per week:</b> 2 <b>per level/semester:</b> 26 <b>Form of the course:</b> on-site learning					
<b>Number of credits:</b> 2					
<b>Recommended semester:</b> 3.					
<b>Educational level:</b> II.					
<b>Prerequisites:</b>					
<b>Course requirements:</b> Scale of assessment (preliminary/final): 100/0					
<b>Learning outcomes:</b>					
<b>Class syllabus:</b> To improve offensive and defensive game combinations in collective sports. Practicing of tactical and technical elements in individual sports. Compensatory exercises to correct wrong body posture. Stretching. Competition rules in sport disciplines.					
<b>Recommended literature:</b>					
<b>Languages necessary to complete the course:</b> Slovak, English					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 1281					
A	B	C	D	E	FX
98,75	0,47	0,08	0,0	0,0	0,7
<b>Lecturers:</b> PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, Mgr. Jana Leginusová, Mgr. Tomáš Kuchár, PhD., PaedDr. Mikuláš Ortutay, Mgr. Martin Dovičák, PhD., Mgr. Júlia Raábová, PhD., Mgr. Branislav Nedbálek, Mgr. Tomáš Lovecký					
<b>Last change:</b> 15.03.2022					
<b>Approved by:</b>					

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022					
<b>University:</b> Comenius University Bratislava					
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics					
<b>Course ID:</b> FMFI.KTV/2-MXX-220/00		<b>Course title:</b> Physical Education and Sport (4)			
<b>Educational activities:</b> <b>Type of activities:</b> practicals <b>Number of hours:</b> <b>per week: 2 per level/semester: 26</b> <b>Form of the course:</b> on-site learning					
<b>Number of credits:</b> 2					
<b>Recommended semester:</b> 4.					
<b>Educational level:</b> II.					
<b>Prerequisites:</b>					
<b>Course requirements:</b> Scale of assessment (preliminary/final): 100/0					
<b>Learning outcomes:</b>					
<b>Class syllabus:</b> Sport training for Faculty Championships in a selected sport with modified rules. Selection of sport-talented students into teams of the Faculty Sport League, University League of Bratislava Faculties, and participation in sport events of the Faculty and University.					
<b>Recommended literature:</b>					
<b>Languages necessary to complete the course:</b> Slovak, English					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 1110					
A	B	C	D	E	FX
98,47	0,45	0,09	0,09	0,09	0,81
<b>Lecturers:</b> PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, Mgr. Jana Leginusová, Mgr. Tomáš Kuchár, PhD., PaedDr. Mikuláš Ortutay, Mgr. Martin Dovičák, PhD., Mgr. Branislav Nedbálek, Mgr. Júlia Raábová, PhD., Mgr. Tomáš Lovecký					
<b>Last change:</b> 15.03.2022					
<b>Approved by:</b>					

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022	
<b>University:</b> Comenius University Bratislava	
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics	
<b>Course ID:</b> FMFI.KAI/2-AIN-206/15	<b>Course title:</b> Physical-based Animations and Mathematical Modeling
<b>Educational activities:</b> <b>Type of activities:</b> lecture / practicals <b>Number of hours:</b> <b>per week:</b> 2 / 2 <b>per level/semester:</b> 26 / 26 <b>Form of the course:</b> on-site learning	
<b>Number of credits:</b> 6	
<b>Recommended semester:</b> 1.	
<b>Educational level:</b> II.	
<b>Prerequisites:</b>	
<b>Course requirements:</b> Evaluation: assignments, homeworks, Exam: final exam, oral exam Evaluation scale: A 92%, B 84%, C 76%, D 68%, E 60% For the semester, the student can get 10% for exercises, 60% for homework, final written exam with a weight of 30% oral final exam is voluntary with a weight of 20%. The student must solve at least 30% of each homework in order to pass the final written exam. Grading: 92-100 A, 84-91 B, 76-83 C, 68-75 D, 60-67 E. Details on the course page. Scale of assessment (preliminary/final): 40/60	
<b>Learning outcomes:</b> Students will learn the basic techniques of simulation particle systems, solving systems of ordinary differential equations numerically, the object collision detection. Understand the principles of dynamics of rigid bodies and the principle of the creation of computer animation and camera movement. Understand how to construct physics engine for games or video animation.	
<b>Class syllabus:</b> Particle systems, motion equations of first order integration methods to calculate the speed and position, state vector system, external forces, restrictive conditions - constraints, response forces, particle collisions - plane. Numerical solution of differential equations, Euler method, Runge-Kuta method, stability criteria to select the time step. Lagrange method without networks, modeling and animation point cloud, SPH, deformation Animation mobility, spline interpolation to animate movement, reparametrisation spline curves by length, and orientation quaternion interpolation of two or more quaternion. Collision detection, Z buffer algorithm, necessary and sufficient conditions when there are two bodies in a collision, parting line, hierarchy envelopes force response (Response Forces). Three phase detection wide, medium and narrow. Dynamics of rigid bodies, equations of motion, velocity, acceleration, angular velocity and angular acceleration, inertia matrix. Procedurárne animation, systems and methods for creating computer animation liquids, fire, smoke.	

Computer animation in games and in the film industry. Other applications of computer animation with further developments in the field of computer animation using physical effects.					
<b>Recommended literature:</b> Visual Quantum mechanics : Selected Topics with Computer/Generated animations of Quantum-Mechanical phenomena / Bernd Thaller. New York : Springer, 2000 Computer facial animation / Frederic I. Parke, Keith Waters. Wellesley : A. K. Peters , 1996 SIGGRAPH tutorialy dostupné na <a href="http://dl.acm.org/dl.cfm?CFID=412417535&amp;CFTOKEN=50913605">http://dl.acm.org/dl.cfm?CFID=412417535&amp;CFTOKEN=50913605</a> Dostupné texty k prednáške. <a href="https://dai.fmph.uniba.sk/w/Physical-based_Animations_and_Mathematical_Modeling_Material">https://dai.fmph.uniba.sk/w/Physical-based_Animations_and_Mathematical_Modeling_Material</a>					
<b>Languages necessary to complete the course:</b> Slovak, English					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 341					
A	B	C	D	E	FX
34,6	18,18	12,61	14,08	7,92	12,61
<b>Lecturers:</b> prof. RNDr. Roman Ďurikovič, PhD., Mgr. Andrej Mihálik, PhD.					
<b>Last change:</b> 20.06.2022					
<b>Approved by:</b>					



## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022	
<b>University:</b> Comenius University Bratislava	
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics	
<b>Course ID:</b> FMFI.KAI/2-AIN-109/15	<b>Course title:</b> Programming of Parallel and Distributed Systems
<b>Educational activities:</b> <b>Type of activities:</b> lecture / practicals <b>Number of hours:</b> <b>per week:</b> 3 / 1 <b>per level/semester:</b> 39 / 13 <b>Form of the course:</b> on-site learning	
<b>Number of credits:</b> 6	
<b>Recommended semester:</b> 2.	
<b>Educational level:</b> II.	
<b>Prerequisites:</b>	
<b>Course requirements:</b> excercises, exam A 90%, B 80%, C 70%, D 60%, E 50% Scale of assessment (preliminary/final): 80/20	
<b>Learning outcomes:</b> Graduates of the course will be acquainted with the issues of parallel and distributed programming. They will get acquainted with the basic algorithms used in practice, as well as with methods how to prove the correctness or effectiveness of algorithms. They will gain an overview of basic parallel and distributed architectures, a brief overview of various paradigms and programming languages.	
<b>Class syllabus:</b> At the beginning, students will be introduced to a simple way to write algorithms for parallel and distributed computing, so that these notations are applicable to different types of architectures. They will also gain the basics of logic that will be used to express and prove the properties of programs. Then they will get acquainted with the basic architectures of parallel and distributed systems. The core of the course consists of selected basic algorithms of parallel and distributed systems (eg Shortest path, Reader-problémWriters problem, Evening philosophers, Meeting coordination, Drinking philosophers, Sorting, Faulty channels, Global snapshots, Stable feature detection, Byzantine agreement). Alternatively, their zones may expand in line with developments in the field. At the end of the course there will be an overview of different programming languages and paradigms and logics.	
<b>Recommended literature:</b> Parallel program design : A Foundation / K. Mani Chandy , Jayadev Misra. Reading : Addison-Wesley, 1988 An introduction to parallel algorithms / Joseph Jája. Boston : Addison-Wesley, 1992 C. Stirling: Modal and Temporal Properties of Processes, Springer 2001 Elektronické poznámky k prednáške, <a href="http://ii.fmph.uniba.sk/~gruska/udpp/Beziacaudppprednaska2014.pdf">http://ii.fmph.uniba.sk/~gruska/udpp/Beziacaudppprednaska2014.pdf</a>	
<b>Languages necessary to complete the course:</b> Slovak, English	

<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 264					
A	B	C	D	E	FX
25,38	18,18	21,97	23,11	6,44	4,92
<b>Lecturers:</b> doc. RNDr. Damas Gruska, PhD.					
<b>Last change:</b> 18.11.2021					
<b>Approved by:</b>					

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022					
<b>University:</b> Comenius University Bratislava					
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics					
<b>Course ID:</b> FMFI.KAI/2-AIN-923/15		<b>Course title:</b> Project Seminar (1)			
<b>Educational activities:</b> <b>Type of activities:</b> seminar <b>Number of hours:</b> <b>per week: 2 per level/semester: 26</b> <b>Form of the course:</b> on-site learning					
<b>Number of credits:</b> 6					
<b>Recommended semester:</b> 2.					
<b>Educational level:</b> II.					
<b>Prerequisites:</b>					
<b>Course requirements:</b> Evaluation of the diploma thesis progress 1. Presentation, 2. First prototype implemented, 3. Research papers studied and the detail knowledge of the the problem is required. 4. Framework for development of the thesis should be already set. A 92%, B 84%, C 76%, D 68%, E 60% Scale of assessment (preliminary/final): 100/0					
<b>Learning outcomes:</b> Learning to quickly extract the basic idea of scientific articles.					
<b>Class syllabus:</b> The first phase of the project master thesis. Conventions for writing professional texts informatics. Work on the project and implementation so that results in the diploma thesis.					
<b>Recommended literature:</b> LATEX : Podrobný průvodce / Helmut Kopka, Patrick W. Daly ; překlad Jan Gregor. Brno : Computer Press, 2004 LATEX : A Document preparation system / Leslie Lamport. Reading : Addison-Wesley, 1986					
<b>Languages necessary to complete the course:</b> slovak, english					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 271					
A	B	C	D	E	FX
57,93	14,39	11,07	3,69	4,06	8,86
<b>Lecturers:</b> prof. RNDr. Roman Ďurikovič, PhD.					
<b>Last change:</b> 23.09.2017					
<b>Approved by:</b>					

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022					
<b>University:</b> Comenius University Bratislava					
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics					
<b>Course ID:</b> FMFI.KAI/2-AIN-924/15		<b>Course title:</b> Project Seminar (2)			
<b>Educational activities:</b> <b>Type of activities:</b> seminar <b>Number of hours:</b> <b>per week:</b> 2 <b>per level/semester:</b> 26 <b>Form of the course:</b> on-site learning					
<b>Number of credits:</b> 6					
<b>Recommended semester:</b> 3.					
<b>Educational level:</b> II.					
<b>Prerequisites:</b> FMFI.KAI/2-AIN-923/15 - Project Seminar (1)					
<b>Recommended prerequisites:</b> 2-AIN-924 Projektový seminár (1)					
<b>Course requirements:</b> Evaluation of the diploma thesis progress 1. Presentation, 2. First prototype implemented, 3. Research papers studied and the detail knowledge of the the problem is required. 4. Framework for development of the thesis should be already set. 5. Ano chapter of the thesis should be in its final stage. All requirements must be satisfactory completed. A 92%, B 84%, C 76%, D 68%, E 60% Scale of assessment (preliminary/final): 100/0					
<b>Learning outcomes:</b> Theoretical background of the thesis will be known and the implementation flips to its final stage of evaluation.					
<b>Class syllabus:</b>					
<b>Recommended literature:</b> LATEX : Podrobný průvodce / Helmut Kopka, Patrick W. Daly ; překlad Jan Gregor. Brno : Computer Press, 2004 LATEX : A Document preparation system / Leslie Lamport. Reading : Addison-Wesley, 1986					
<b>Languages necessary to complete the course:</b> slovensky, anglicky					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 272					
A	B	C	D	E	FX
53,31	15,07	12,13	4,78	6,99	7,72

<b>Lecturers:</b> prof. RNDr. Roman Ďurikovič, PhD.
<b>Last change:</b> 23.09.2017
<b>Approved by:</b>

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022	
<b>University:</b> Comenius University Bratislava	
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics	
<b>Course ID:</b> FMFI.KAI/2-AIN-128/15	<b>Course title:</b> Real-time Graphics and GPU Computations
<b>Educational activities:</b> <b>Type of activities:</b> lecture / practicals <b>Number of hours:</b> <b>per week:</b> 2 / 2 <b>per level/semester:</b> 26 / 26 <b>Form of the course:</b> on-site learning	
<b>Number of credits:</b> 6	
<b>Recommended semester:</b> 2.	
<b>Educational level:</b> II.	
<b>Prerequisites:</b>	
<b>Antirequisites:</b> FMFI.KAG/2-MPG-101/00 and FMFI.KAG/2-MPG-102/00	
<b>Course requirements:</b> The student can get 70% of the evaluation for the project. The student must elaborate the project of at least 50% in order to pass the final oral exam. Grading: 92-100 A, 84-91 B, 76-83 C, 68-75 D, 60-67 E. More detailed informations on the course page. Scale of assessment (preliminary/final): 70/30	
<b>Learning outcomes:</b> The course represents the key themes, principles and techniques used in the rendering of virtual scenes in real time. This procedure is most commonly used in making 3D games, but also in various scientific visualizations, such as visualization of medical data. After the course the students will be able to analyze and implement current procedures, algorithms, programming effects for graphics cards and the create the visualization applications. The subjects students will be able to develop gaming applications on different platforms, applications in virtual and mixed reality and create visualizations of medical data.	
<b>Class syllabus:</b> 1. Graphic display channel - description of the graphics hardware architectures, programming of graphics cards, coordinate systems, programmable parts of the display channel, description and formats of virtual scene during the rendering, OpenGL API 2. Animation - a description of the object pose representation (position, rotation, scale), nuts and Quaternions, linear and cubic interpolation for animation 3. Light - description of lighting models and their implementation using shaders, textures in lighting model, direct and deferred lighting, use rendering to texture and shadows, approximation of global illumination methods 4. Post-process Effects - description of algorithms to improve the quality of the final output image, motion blur, depth of field, SSAO, reflections and refractions, HDRI, bloom, toon shading 5. Image-based rendering - use of texture to speed up calculations of lighting, textures for backgrounds to represent complex objects (bilboarding), image processing algorithms on the GPU, volumetric graphics	

6. Accelerating algorithms - algorithms and structures to accelerate rendering complex scenes, trimming techniques, level of detail, collision detection					
7. GPGPU - description of the graphics card performance for general computing, CUDA and OpenCL language, image and video processing, physical simulation of phenomena on the GPU, ray tracing on the GPU					
<b>Recommended literature:</b> Real-time rendering / Tomas Akenine-Möller, Eric Haines, Naty Hoffman. Wellesley : A. K. Peters, 2008					
<b>Languages necessary to complete the course:</b> Slovak, English					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 42					
A	B	C	D	E	FX
30,95	30,95	9,52	7,14	9,52	11,9
<b>Lecturers:</b> Mgr. Andrej Mihálik, PhD.					
<b>Last change:</b> 22.06.2022					
<b>Approved by:</b>					

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022					
<b>University:</b> Comenius University Bratislava					
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics					
<b>Course ID:</b> FMFI.KJP/1-MXX-161/00		<b>Course title:</b> Russian Language (1)			
<b>Educational activities:</b> <b>Type of activities:</b> practicals <b>Number of hours:</b> <b>per week:</b> 2 <b>per level/semester:</b> 26 <b>Form of the course:</b> on-site learning					
<b>Number of credits:</b> 2					
<b>Recommended semester:</b> 1.					
<b>Educational level:</b> I., II.					
<b>Prerequisites:</b>					
<b>Course requirements:</b> Scale of assessment (preliminary/final): 100/0					
<b>Learning outcomes:</b> Basic communication in Russian, developing other Russian language skills - listening comprehension, reading and writing.					
<b>Class syllabus:</b> To master the fundamentals of general Russian. The language level is A1. Learning the Cyrillic (Russian) alphabet, gaining basic language competence, building up skills and confidence in dealing with unfamiliar authentic and semi-authentic texts. The subject provides a course in Russian language for beginners.					
<b>Recommended literature:</b> The textbook: : Точка Ру А1 (Ольга Долматова, Екатерина Новачац), pracovné karty Падежи 1 (Л.С. Безкоровайная, В.Е. Штыленко).					
<b>Languages necessary to complete the course:</b>					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 707					
A	B	C	D	E	FX
58,56	16,55	11,03	4,38	1,84	7,64
<b>Lecturers:</b> Viktoria Mirsalova					
<b>Last change:</b> 20.06.2022					
<b>Approved by:</b>					



## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022					
<b>University:</b> Comenius University Bratislava					
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics					
<b>Course ID:</b> FMFI.KJP/1-MXX-162/00		<b>Course title:</b> Russian Language (2)			
<b>Educational activities:</b> <b>Type of activities:</b> practicals <b>Number of hours:</b> <b>per week: 2 per level/semester: 26</b> <b>Form of the course:</b> on-site learning					
<b>Number of credits:</b> 2					
<b>Recommended semester:</b> 2.					
<b>Educational level:</b> I., II.					
<b>Prerequisites:</b>					
<b>Course requirements:</b> Scale of assessment (preliminary/final): 100/0					
<b>Learning outcomes:</b> Basic communication in Russian, developing other Russian language skills - listening comprehension, reading and writing.					
<b>Class syllabus:</b> To master the fundamentals of general Russian. Learning the Cyrillic (Russian) alphabet, gaining basic language competence, building up skills and confidence in dealing with unfamiliar authentic and semi-authentic texts. The subject continues the program of Russian language (1) and provides a course of Russian for beginners.					
<b>Recommended literature:</b> Textbook: Точка Ру А1 (Ольга Долматова, Екатерина Новачац), pracovné karty Падежи 1 (Л.С. Безкоровайная, В.Е. Штыленко).					
<b>Languages necessary to complete the course:</b>					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 421					
A	B	C	D	E	FX
65,08	15,68	8,79	3,8	0,95	5,7
<b>Lecturers:</b> Viktoria Mirsalova					
<b>Last change:</b> 20.06.2022					
<b>Approved by:</b>					

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022					
<b>University:</b> Comenius University Bratislava					
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics					
<b>Course ID:</b> FMFI.KJP/1-MXX-261/00		<b>Course title:</b> Russian Language (3)			
<b>Educational activities:</b> <b>Type of activities:</b> practicals <b>Number of hours:</b> <b>per week:</b> 2 <b>per level/semester:</b> 26 <b>Form of the course:</b> on-site learning					
<b>Number of credits:</b> 2					
<b>Recommended semester:</b> 3.					
<b>Educational level:</b> I., II.					
<b>Prerequisites:</b>					
<b>Course requirements:</b> Scale of assessment (preliminary/final): 100/0					
<b>Learning outcomes:</b> Basic communication in Russian, developing other Russian language skills - listening comprehension, reading and writing.					
<b>Class syllabus:</b> Learning the handwritten Russian (Russian Cursive Cyrillic), developing further language skills, gaining knowledge of Russian culture, history and way of life, pre-intermediate to intermediate grammar and vocabulary. The course "Russian for Intermediate Students" is a follow-up to "Russian for Beginners". The subject of the course is general Russian in the range appropriate to the given level.					
<b>Recommended literature:</b> Точка Ру А2 (Ольга Долматова, Екатерина Новачац) а Short Stories in Russian (Olly Richards, Alex Rowlings)					
<b>Languages necessary to complete the course:</b>					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 200					
A	B	C	D	E	FX
70,5	17,5	8,5	2,5	0,0	1,0
<b>Lecturers:</b> Viktoria Mirsalova					
<b>Last change:</b> 20.06.2022					
<b>Approved by:</b>					

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022					
<b>University:</b> Comenius University Bratislava					
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics					
<b>Course ID:</b> FMFI.KJP/1-MXX-262/00		<b>Course title:</b> Russian Language (4)			
<b>Educational activities:</b> <b>Type of activities:</b> practicals <b>Number of hours:</b> <b>per week: 2 per level/semester: 26</b> <b>Form of the course:</b> on-site learning					
<b>Number of credits:</b> 2					
<b>Recommended semester:</b> 4.					
<b>Educational level:</b> I., II.					
<b>Prerequisites:</b>					
<b>Course requirements:</b> Scale of assessment (preliminary/final): 100/0					
<b>Learning outcomes:</b> Learning the handwritten Russian (Russian Cursive Cyrillic), developing further language skills, gaining knowledge of Russian culture, history and way of life, pre-intermediate to intermediate grammar and vocabulary.					
<b>Class syllabus:</b> Learning the handwritten Russian (Russian Cursive Cyrillic), developing further language skills, gaining knowledge of Russian culture, history and way of life, pre-intermediate to intermediate grammar and vocabulary. The course "Russian for Intermediate Students" is a follow-up to "Russian for Beginners". The subject of the course is general Russian in the range appropriate to the given level.					
<b>Recommended literature:</b> Точка Ру А2 (Ольга Долматова, Екатерина Новачац) a Short Stories in Russian (Olly Richards, Alex Rowlings)					
<b>Languages necessary to complete the course:</b>					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 144					
A	B	C	D	E	FX
75,69	13,19	6,94	2,78	0,69	0,69
<b>Lecturers:</b> Viktoria Mirsalova					
<b>Last change:</b> 20.06.2022					
<b>Approved by:</b>					

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022					
<b>University:</b> Comenius University Bratislava					
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics					
<b>Course ID:</b> FMFI.KJP/1-MXX-171/20		<b>Course title:</b> Slovak Language for Foreign Students (1)			
<b>Educational activities:</b> <b>Type of activities:</b> practicals <b>Number of hours:</b> <b>per week: 2 per level/semester: 26</b> <b>Form of the course:</b> on-site learning					
<b>Number of credits:</b> 2					
<b>Recommended semester:</b> 1.					
<b>Educational level:</b> I., II.					
<b>Prerequisites:</b>					
<b>Course requirements:</b> tests Course prerequisites: <a href="https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebežneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/">https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebežneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/</a> Scale of assessment (preliminary/final): 100/0					
<b>Learning outcomes:</b> This course is aimed for foreign students to learn the fundamentals of the Slovak language with the focus on basic communication as well as all other language skills- listening comprehension,reading and writing.					
<b>Class syllabus:</b> The syllabus is targeted at the comprehension of the basics of the Slovak language for the absolute beginners (A1).					
<b>Recommended literature:</b> Križom- Krážom Slovenčina 1, additional material to further support the covered topics.					
<b>Languages necessary to complete the course:</b>					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 23					
A	B	C	D	E	FX
47,83	0,0	0,0	0,0	0,0	52,17
<b>Lecturers:</b> Mgr. Aneta Barnes					
<b>Last change:</b> 21.06.2022					
<b>Approved by:</b>					

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022					
<b>University:</b> Comenius University Bratislava					
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics					
<b>Course ID:</b> FMFI.KJP/1-MXX-172/20		<b>Course title:</b> Slovak Language for Foreign Students (2)			
<b>Educational activities:</b> <b>Type of activities:</b> practicals <b>Number of hours:</b> <b>per week: 2 per level/semester: 26</b> <b>Form of the course:</b> on-site learning					
<b>Number of credits:</b> 2					
<b>Recommended semester:</b> 2.					
<b>Educational level:</b> I., II.					
<b>Prerequisites:</b>					
<b>Course requirements:</b> tests Course prerequisites: <a href="https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebežneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/">https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebežneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/</a> Scale of assessment (preliminary/final): 100/0					
<b>Learning outcomes:</b> This course is aimed for foreign students to learn the fundamentals of the Slovak language with the focus on basic communication as well as all other language skills- listening comprehension,reading and writing.					
<b>Class syllabus:</b> The syllabus is targeted at the comprehension of the basics of the Slovak language for the absolute beginners (A1) and this course is a follow up course to the Slovak language course 1.					
<b>Recommended literature:</b> Križom- Krážom Slovenčina 1, additional material to further support the covered topics					
<b>Languages necessary to complete the course:</b>					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 22					
A	B	C	D	E	FX
81,82	0,0	4,55	0,0	0,0	13,64
<b>Lecturers:</b> Mgr. Aneta Barnes					
<b>Last change:</b> 21.06.2022					
<b>Approved by:</b>					

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022					
<b>University:</b> Comenius University Bratislava					
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics					
<b>Course ID:</b> FMFI.KJP/1-MXX-271/20		<b>Course title:</b> Slovak Language for Foreign Students (3)			
<b>Educational activities:</b> <b>Type of activities:</b> practicals <b>Number of hours:</b> <b>per week: 2 per level/semester: 26</b> <b>Form of the course:</b> on-site learning					
<b>Number of credits:</b> 2					
<b>Recommended semester:</b> 3.					
<b>Educational level:</b> I., II.					
<b>Prerequisites:</b>					
<b>Course requirements:</b> tests Course prerequisites: <a href="https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebežneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/">https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebežneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/</a> Scale of assessment (preliminary/final): 100/0					
<b>Learning outcomes:</b> This course is aimed for foreign students to better comprehend all the language skills important to enable correct usage of the Slovak language – listening comprehension, reading, writing and speaking.					
<b>Class syllabus:</b> The syllabus is targeted at the comprehension of all the language skills of the Slovak language , and it is a follow up course to the Slovak language course 2.					
<b>Recommended literature:</b> Križom-Krážom Slovenčina 2, additional material to further support the covered topics.					
<b>Languages necessary to complete the course:</b>					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 8					
A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0
<b>Lecturers:</b> Mgr. Aneta Barnes					
<b>Last change:</b> 21.06.2022					
<b>Approved by:</b>					

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022					
<b>University:</b> Comenius University Bratislava					
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics					
<b>Course ID:</b> FMFI.KJP/1-MXX-272/20		<b>Course title:</b> Slovak Language for Foreign Students (4)			
<b>Educational activities:</b> <b>Type of activities:</b> practicals <b>Number of hours:</b> <b>per week: 2 per level/semester: 26</b> <b>Form of the course:</b> on-site learning					
<b>Number of credits:</b> 2					
<b>Recommended semester:</b> 4.					
<b>Educational level:</b> I., II.					
<b>Prerequisites:</b>					
<b>Course requirements:</b> tests Course prerequisites: <a href="https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebežneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/">https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebežneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/</a> Scale of assessment (preliminary/final): 100/0					
<b>Learning outcomes:</b> This course is aimed for foreign students to better comprehend all the language skills important to enable correct usage of the Slovak language – listening comprehension, reading, writing and speaking.					
<b>Class syllabus:</b> The syllabus is targeted at the comprehension of all the language skills of the Slovak language , and it is a follow up course to the Slovak language course 3.					
<b>Recommended literature:</b> Križom-Krážom Slovenčina 2, additional material to further support the covered topics.					
<b>Languages necessary to complete the course:</b>					
<b>Notes:</b>					
<b>Past grade distribution</b> Total number of evaluated students: 7					
A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0
<b>Lecturers:</b> Mgr. Aneta Barnes					
<b>Last change:</b> 21.06.2022					
<b>Approved by:</b>					

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022					
<b>University:</b> Comenius University Bratislava					
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics					
<b>Course ID:</b> FMFL.KTV/2-MXX-115/17		<b>Course title:</b> Sports in Natur (1)			
<b>Educational activities:</b> <b>Type of activities:</b> <b>Number of hours:</b> <b>per week: per level/semester:</b> <b>Form of the course:</b> on-site learning					
<b>Number of credits:</b> 2					
<b>Recommended semester:</b> 1.					
<b>Educational level:</b> II.					
<b>Prerequisites:</b>					
<b>Course requirements:</b> Grades: A 90%, B 80%, C 70%, D 60%, E 50% The condition for the award of 1 or 2 credits is the completion of a multi-day course in its full scope, or the completion of one-day courses in the scope of 4 days. Candidates can apply to the leaders of individual courses. From the presented offer of courses, you can choose the one that suits your interests, abilities and deadlines.					
<b>Learning outcomes:</b> Acquisition and development of basic motor skills and abilities in selected sports: skiing and snowboarding. Mastering the correct technique of performing individual movements, which are necessary for skiing and snowboarding.					
<b>Class syllabus:</b> The student can sign up for the outdoor sports courses offered by the department: skiing, snowboarding. The lessons in the courses are focused on the development of basic and special movement skills and mastering the techniques needed for the sports.					
<b>Recommended literature:</b>					
<b>Languages necessary to complete the course:</b> Slovak					
<b>Notes:</b> KTVŠ does not rent ski equipment.					
<b>Past grade distribution</b> Total number of evaluated students: 83					
A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0
<b>Lecturers:</b> Mgr. Martin Dovičák, PhD., Mgr. Tomáš Kuchár, PhD., Mgr. Jana Leginusová, PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, PaedDr. Mikuláš Ortutay, Mgr. Júlia Raábová, PhD.					



<b>Last change:</b> 16.06.2022
<b>Approved by:</b>

## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022					
<b>University:</b> Comenius University Bratislava					
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics					
<b>Course ID:</b> FMFL.KTV/2-MXX-116/18		<b>Course title:</b> Sports in Natur (2)			
<b>Educational activities:</b> <b>Type of activities:</b> <b>Number of hours:</b> <b>per week:</b> <b>per level/semester:</b> <b>Form of the course:</b> on-site learning					
<b>Number of credits:</b> 2					
<b>Recommended semester:</b> 2.					
<b>Educational level:</b> II.					
<b>Prerequisites:</b>					
<b>Course requirements:</b> Grades: A 90%, B 80%, C 70%, D 60%, E 50%. The condition for the award of 1 or 2 credits is the completion of a multi-day course in its full scope, or the completion of one-day courses in the scope of 4 days. Candidates can apply to the leaders of individual courses. From the presented offer of courses, you can choose the one that suits your interests, abilities and deadlines.					
<b>Learning outcomes:</b> Creating a positive and lasting relationship with physical activity. Acquisition and mastery of basic motor skills and abilities in outdoor sports: windsurfing, beach volleyball, water tourism - river rafting, hiking and other sports according to interest. Training and improving the technique needed for the sports.					
<b>Class syllabus:</b> The student can sign up for the outdoor sports courses offered by the department: water tourism - river rafting, windsurfing, beach volleyball, hiking and other hobby sports. The lessons in the courses are focused on the development of basic and special movement skills and, mastering the techniques needed for the sports.					
<b>Recommended literature:</b>					
<b>Languages necessary to complete the course:</b> Slovak					
<b>Notes:</b> KTVŠ will provide sports equipment.					
<b>Past grade distribution</b> Total number of evaluated students: 50					
A	B	C	D	E	FX
94,0	0,0	0,0	0,0	0,0	6,0

<b>Lecturers:</b> Mgr. Martin Dovičák, PhD., Mgr. Tomáš Kuchár, PhD., Mgr. Jana Leginusová, PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, PaedDr. Mikuláš Ortutay, Mgr. Júlia Raábová, PhD., Mgr. Tomáš Lovecký
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<b>Last change:</b> 16.06.2022
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<b>Approved by:</b>
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## COURSE DESCRIPTION

<b>Academic year:</b> 2021/2022	
<b>University:</b> Comenius University Bratislava	
<b>Faculty:</b> Faculty of Mathematics, Physics and Informatics	
<b>Course ID:</b> FMFI.KAI+KDMFI/2-AINa-111/20	<b>Course title:</b> Web Technologies and Methodology
<b>Educational activities:</b> <b>Type of activities:</b> lecture / practicals <b>Number of hours:</b> <b>per week:</b> 2 / 2 <b>per level/semester:</b> 26 / 26 <b>Form of the course:</b> on-site learning	
<b>Number of credits:</b> 6	
<b>Recommended semester:</b> 1.	
<b>Educational level:</b> II.	
<b>Prerequisites:</b>	
<b>Antirequisites:</b> FMFI.KAI+KDMFI/2-AIN-111/15	
<b>Course requirements:</b> Semester: project 60pts, final test 15pts (minimum 50%) Exam: oral exam 25pts (admittance requirement: 60pts from the semester) Passing the course: 50pts altogether and 50% from the final test Scale: A 90%, B 80%, C 70%, D 60%, E 50% Scale of assessment (preliminary/final): 75/25	
<b>Learning outcomes:</b> An overview of web technologies and their applications for various purposes. Principles and methodologies of web applications, web user interfaces, and web content design.	
<b>Class syllabus:</b> <ul style="list-style-type: none"> <li>- Overview of web technologies and web architecture</li> <li>- Information architecture, types of websites, web applications, components and interfaces</li> <li>- Client platforms (mobile, tablet, desktop) and implications for web design and development</li> <li>- Methodologies of website and web application development (waterfall model, agile methodologies)</li> <li>- Interaction design methodologies (user research and modelling, iterative prototype-based design, prototype testing)</li> <li>- Principles and methodologies of web content curation</li> <li>- Testing, optimization and maintenance of web applications and web content</li> <li>- Website and web application quality measures</li> </ul>	
<b>Recommended literature:</b> Web Style Guide, 4th ed. / P.J. Lynch, S. Horton. Yale University Press, 2016. Available online: <a href="http://webstyleguide.com/">http://webstyleguide.com/</a> Mobile First. L. Wroblewski, A Book Apart, 2011 Selected current online publications	

<b>Languages necessary to complete the course:</b>					
<b>Notes:</b>					
<b>Past grade distribution</b>					
Total number of evaluated students: 2					
A	B	C	D	E	FX
0,0	0,0	0,0	100,0	0,0	0,0
<b>Lecturers:</b> doc. RNDr. Zuzana Kubincová, PhD., doc. RNDr. Martin Homola, PhD., Mgr. Ján Kľuka, PhD.					
<b>Last change:</b> 23.06.2022					
<b>Approved by:</b>					