

## Study plan - Approved

Academic year: 2019/2020

Study programme: ADUIb - Data Science and Artificial Intelligence - (Joint degree study, bachelor I. deg., full time form)

Study field: 22. - Mathematics

Guarantee : doc. RNDr. Ivan Žežula, CSc., from: 2019-09-01 - subprogramme matematika

Study field: 18. - Computer Science

Guarantee : doc. RNDr. Csaba Török, CSc., from: 2019-09-01 - subprogramme Informatika

## Study section

Min. 174 Credits

## Compulsory courses

Block - Mathematics										Min. 74 Credits
Abbreviation	Name	Current	Credit	Range	End	Year	Sem.	Prerequisites		Teacher
ÚMV/ALGa/10	Algebra I		7	3L + 3P	PaS	1	W			Studenovská, Fabrici, Janítková, Rindošová, Varga
ÚMV/UAD/10	Introduction to data analysis		2	1L + 1P	H	1	W			Žežula, Hančová
ÚMV/ALG3b/10	Algebra II for informaticians and physicists		7	4L + 2P	PaS	1	S	ÚMV/ALGa/10		Soťák, Maceková
ÚMV/ADA/19	Data analysis		4	1L + 3P	H	1	S	ÚMV/UAD/10		Žežula, Hančová
ÚMV/MSW/10	Mathematical software		3	1L + 2P	H	1	S			Lukáč, Klein
ÚMV/FRPa/19	Function of real variable		7	2L + 4P	PaS	2	W			Hutník, Šupina, Halčinová
ÚMV/LCO/10	Linear and integer programming		5	2L + 2P	PaS	2	W	ÚMV/ALGa/10		Soťák, Gajdoš
ÚMV/DSM3a/10	Discrete mathematics for informaticians		4	2L + 1P	PaS	2	W			Madaras, Maceková
ÚMV/FRPb/19	Function of real variables		8	4L + 3P	PaS	2	S	ÚMV/FRPa/19 or ÚMV/MZib/10		Hutník, Kiseľák
ÚMV/TPP/19	Probability theory		5	2L + 2P	PaS	2	S	ÚMV/MAN1c/10 or ÚMV/MAN2c/10 or ÚMV/FRPa/19		Žežula, Klein
ÚMV/DSMb/10	Discrete mathematics II		5	2L + 2P	PaS	2	S	ÚMV/DSMa/10 or ÚMV/DSM3a/10		Soťák, Fabrici
ÚMV/MST/19	Mathematical statistics		5	2L + 2P	PaS	3	W			Žežula, Hančová
ÚMV/BKP2/14	Bachelor Project		2	1P	A	3	W			Soťák
ÚMV/PDA/19	Project DA II		4	4P	H	3	W			Lučvjanská
ÚMV/NUM/19	Numerical methods		6	2L + 3P	PaS	3	S	ÚMV/FRPb/19 and (ÚMV/ALG1b/10 or ÚMV/ALG2b/10 or ÚMV/ALG3b/10)		Hornák, Kiseľák

Block - Informatics										Min. 65 Credits
Abbreviation	Name	Current	Credit	Range	End	Year	Sem.	Prerequisites		Teacher
ÚINF/UIIN1/15	Introduction to study of informatics		5	2L + 2P	S	1	W			Krajčí, Krídlo
ÚINF/POS2/15	User environments of operating systems		2	2P	H	1	W			Sokol, Krivoš-Belluš
ÚINF/DBS/15	Database systems for Mathematicians		6	3L + 2P	S	1	W			Török
ÚINF/PAZ1a/15	Programming, algorithms, and complexity		8	3L + 4P	PaS	1	W			Šebej, Bednárová
ÚINF/PAZ1b/15	Programming, algorithms, and complexity		7	2L + 4P	PaS	1	S	ÚINF/PAZ1a/15		Bednárová, Šebej
ÚINF/USU/19	Introduction to machine learning		5	2L + 2P	PaS	2	W			Kopčo, Antoni
ÚINF/UIB1/17	Introduction to information security		3	2L	H	2	W			Sokol
ÚINF/AFJ1a/15	Automata and formal languages		4	2L + 1P	S	2	S			Szabari, Geffert, Bednárová
ÚINF/PBS/15	Pro-seminar to bachelor thesis		1	1P	A	2	S			Antoni
ÚINF/PPPy/18	Advanced programming in Python		2	2P	PaS	2	S	ÚINF/PAZ1a/15 or ÚINF/ePAZ1a/15 or ÚINF/PRG1/15		Šnajder, Guniš
ÚINF/PDA/19	Project DA I		4	4P	H	2	S			Török, Bruoth
ÚINF/FUN1/15	Functional programming		4	2L + 2P	H	3	W	ÚINF/PAZ1a/15 or ÚINF/ePAZ1a/15		Krajčí, Krídlo
ÚINF/UNS1/15	Introduction to neural networks		5	2L + 2P	S	3	W			Antoni

ÚINF/KOPR/19	Concurrent programming		4	1L + 2P	H	3	W	ÚINF/PAZ1a/15 or ÚINF/ePAZ1a/15	Török, Gurský
ÚINF/TSD/19	Technológie spracovania veľkých dát		2	2P	H	3	S		Gurský
ÚFV/VADA/19	Vybrané aplikácie dátovej analýzy		3	3L	S	3	S		Žukovič, Panimucha

Block - Foreign Language									
Abbreviation	Name	Current	Credit	Range	End	Year	Sem.	Prerequisites	Teacher
CJP/PFAJ4/07	English Language of Natural Science		2	2P	PaS	1	S		Kimčáková, Mitriková, Slovenská

## Compulsory elective courses

Min. 27 Credits

Block - Mathematical Foundations of Data Science										Min. 9 Credits
Abbreviation	Name	Current	Credit	Range	End	Year	Sem.	Prerequisites	Teacher	
ÚMV/MAP/19	Matrix calculus		5	2L + 2P	PaS	2	W	ÚMV/ALGa/10 or ÚMV/ALG3b/10	Žežula, Klein	
ÚMV/KOP/10	Convex programming		5	3L + 1P	PaS	2	S	ÚMV/LCO/10 and (ÚMV/MAN1c/10 or ÚMV/MAN2d/10 or ÚMV/FRPb/19)	Madaras, Maceková	
ÚMV/DYS/19	Dynamic systems		5	2L + 2P	PaS	3	W	ÚMV/FRPb/19	Hutník, Kiselák	
ÚMV/DSMc/10	Discrete mathematics III		5	2L + 2P	PaS	3	W	ÚMV/DSMb/10	Madaras, Maceková	
ÚMV/MAD/14	Data Modelling and Analysis by Means of CAS Systems		4	3P	A	3	W		Madaras	
ÚMV/VMA/19	Selected topics on mathematical analysis		4	2L + 2P	H	3	S	ÚMV/FRPb/19	Hutník, Kiselák	

Block - Information Technology Methods for Data Science										Min. 9 Credits
Abbreviation	Name	Current	Credit	Range	End	Year	Sem.	Prerequisites	Teacher	
ÚINF/MIS/15	Management of information systems		4	1L + 2P	H	2	S		Semanišin	
ÚINF/LOP1/15	Logic programming		5	2L + 2P	H	2	S		Křídlo, Krajčí	
ÚINF/AFJ1b/15	Automata and formal languages		5	2L + 1P	S	3	W	ÚINF/AFJ1a/15	Geffert, Szabari, Bednárová	
ÚINF/ASU1/15	Algorithms and data structures		4	2L + 1P	S	3	S	(ÚINF/PAZ1a/15 or ÚINF/ePAZ1a/15) and (ÚINF/PAZ1b/15 or ÚINF/ePAZ1b/15)	Semanišin, Krivoš-Belluš	
ÚINF/PMO1/15	Process modelling		5	2L + 2P	S	3	S	ÚINF/PAZ1b/15 or ÚINF/ePAZ1b/15	Semanišin	
ÚINF/UGR1/15	Introduction to computer graphics		5	2L + 2P	S	2, 3	W		Jirásek, Krivoš-Belluš	
ÚINF/PSIN/15	Computer network Internet		5	3L + 1P	PaS	2, 3	S	ÚINF/PAZ1a/15 or ÚINF/ePAZ1a/15	Jirásek, Gurský	

## Elective courses

Block - III									
Abbreviation	Name	Current	Credit	Range	End	Year	Sem.	Prerequisites	Teacher
ÚINF/PRR1a/15	Advanced programming		2	2P	H		W		Krivoš-Belluš
ÚINF/PRR1b/15	Advanced programming		2	2P	H		S		Krivoš-Belluš
ÚMV/SVK/10	Students scientific conference		4		H		S		
ÚINF/SVK1/15	Student scientific conference		4		H	3	S		
ÚINF/OP/14	Odborná prax		2	2tP	A	2, 3	W		Szabari, Kuzna
ÚINF/PSW1/06	Programming of web-pages		2	2P	P	2	S		Guniš
ÚINF/VKBa/15	Selected topics in security of computer networks		2	2P	H	2, 3	W		Jirásek, Sokol
ÚINF/VKBb/15	Selected topics in security of computer networks		2	2P	H	2, 3	S		Jirásek, Sokol
ÚINF/UPR1/15	Introduction to law for informatics		4	2L + 1P	S	2, 3	W		Sokol
ÚFV/TMS/10	Secrets of microworld		3	2L	S	2, 3	S		Urbán, Vokál, Vrláková

ÚINF/TYS1/15	Typographical systems		2	2P	H	2, 3	S		Krajčí
ÚGE/GIS/15	Geographic Information Systems		6	2L + 2P	S	2, 3	W		Gallay, Nováková
ÚFV/IFY1a/01	Physics for Informaticists I		2	2L	H	2	W		Füzer
ÚFV/IFY/09	Physics for Informatics		3	2L	S	3	W		Füzer
ÚFV/NOT1a/03	Nontraditional Optimization Techniques I		5	2L + 2P	S	3	W		Uličný
ÚMV/POV/10	Practical operations research		3	1L + 2P	H	3	S		Madaras
ÚFV/NOT1b/03	Nontraditional Optimization Techniques II		5	2L + 2P	S	3	S		Uličný
ÚMV/ZBR/14	Bridge Fundamentals		2	2P	A		W		Ploščica, Horňák

Block - Fb_EC Development of language skills									
Abbreviation	Name	Current	Credit	Range	End	Year	Sem.	Prerequisites	Teacher
CJP/PFAJAKA/07	Academic English		2	2P	H		W		Slovenská
CJP/PFAJGA/07	Communicative Grammar in English		2	2P	H		W		Klimčáková
CJP/PFAJKKA/07	Communicative Competence in English		2	2P	H		S		Mitriková, Nadová
KGER/NJKG/07	Communicative Grammar in German Language		2	2P	H		W		Puchalová, Molokáčová

Block - Fb_EC Games and sports									
Študent môže absolvovať všetky ponúkané predmety z bloku TV, ale do štandardného počtu 180 kreditov sa študentovi môžu započítať maximálne 6 kreditov.									
Abbreviation	Name	Current	Credit	Range	End	Year	Sem.	Prerequisites	Teacher
ÚTVŠ/TVa/11	Sports Activities I.		2	2P	A	1	W		Bakalár, Dračková, Horbacz, Kaško, Kúchelová, Uher, Valanský, Vokál, Čurgali
ÚTVŠ/TVb/11	Sports Activities II.		2	2P	A	1	S		Bakalár, Dračková, Horbacz, Kaško, Kúchelová, Uher, Valanský, Vokál, Čurgali
ÚTVŠ/TVc/11	Sports Activities III.		2	2P	A	2	W		Čurgali, Bakalár, Dračková, Horbacz, Kaško, Kúchelová, Uher, Valanský, Vokál
ÚTVŠ/TVd/11	Sports Activities IV.		2	2P	A	2	S		Čurgali, Bakalár, Dračková, Horbacz, Kaško, Kúchelová, Uher, Valanský, Vokál
ÚTVŠ/KP/12	Survival Course		2	36sP	A		W		Dombrovský, Valanský
ÚTVŠ/ÚTVŠ/CM/13	Seaside Aerobic Exercise		2	36sP	A		S		Buková, Horbacz
ÚTVŠ/LKSp/13	Summer Course-Rafting of TISA River		2	36sP	A		S		

Block - I									
Abbreviation	Name	Current	Credit	Range	End	Year	Sem.	Prerequisites	Teacher
Dek. PF UPJŠ/USPV/13	Introduction to Study of Sciences		2	12sL + 3dP	A	1	W		

Certified study programmes	
Abbreviation	Name
IB1	Ethics in Biomedical Sciences For Medical Practice
IB10	Medzinárodný certifikát Eco-C
IB11	Medzinárodný certifikát ECDL
IB12a	Use, Administration, and Development in the SAP System – Administrator
IB12c	Use, Administration, and Development in the SAP System – Consultant
IB12p	Use, Administration, and Development in the SAP System – Programmer
IB12u	Use, Administration, and Development in the SAP System – User
IB13	Psychological, social, and cultural aspects of health
IB2	Essentials of Law – Aspects of Private Law
IB3	Essentials of Law – Aspects of Public Law
IB4	Project Management
IB5	Closed-end Economy
IB6	Conflict and Crisis Situations Resolving in Educational Practice
IB9	Medzinárodný certifikát TOEFL
ITpP	IT pre prax

State exams										Min. 6 Credits	
Compulsory courses											
Block - State exam											
Abbreviation	Name	Current	Credit	Range	End	Year	Sem.	Prerequisites			Teacher
ÚMV/BPO/14	Bachelor thesis and its defence		4		OB						
ÚMV/ADUI/19	Methods of data analysis and artificial intelligence		2		SS			ÚMV/MST/19 and ÚMV/LCO/10 and ÚINF/USU/19 and ÚMV/FRPb/19 and ÚINF/UNS1/15			
Compulsory elective courses											

Such a symbol can occur after the teaching range:

**d** - Days in a semester

**h** - Hours in a week

**s** - Hours in a semester

**t** - Weeks in a semester

When none of these symbols are given, expected range of teaching is "hours in a week"

Other signs can occur next to the courses of the study programmes

**l** - course will not be implemented in the given academic year

**+** - course will not be implemented, perhaps the next academic year

**--** - course is implemented for the last time

**\*** - course has more prerequisites

Explanatory notes:

Range: L - Lecture, P - Practice

Semester: W - Winter, S - Summer

End: S - Examination, H - Evaluation, Z - Credit Exam, A - Passing, PaS - Continuous assessment with examination, P - Continuous assessment / Practice