



**DATA ENGINEERING
STUDIES PROGRAMME**

FACULTIES: Faculty of Electronics, Telecommunication and Informatics / Faculty of Management and Economics

FIELD OF STUDIES: Data engineering

EDUCATION LEVEL: first degree studies

PROFILE: academic

FORM OF STUDIES: full-time

	O/E	Subject name	hours					ECTS	
			L	c	l	p	s		total
SEMESTER I									
1	O	Precalculus	15	15				30	3
2	O	Linear algebra	15	15				30	3
3	O	Calculus	15	30				45	5
4	O	Elements of logic and epistemology		30				30	2
5	O	Essentials of management	15	30				45	3
6	O	Business law	15	15				30	2
7	O	Hypertext and hypermedia	15		6	20		41	3
8	O	Basics of computer programming	30		15	20		65	5
9	O	Operating systems	15		15			30	3
			135	135	36	40		346	29
SEMESTER II									
10	O	English		60				60	3
11	O	Basics of physics	30	15				45	4
12	O	Descriptive statistics	15		15			30	3
13	O	Economics and organization of enterprises	15	15				30	2
14	O	Essentials of micro- and macroeconomics	30	45				75	5
15	O	Communication and negotiations		30				30	2
16	O	Elements of discrete mathematics	15	15				30	2
17	O	Object programming	15		11	30		56	3
18	O	Algorithms and data structures	30		15	15		60	5
19	O	Numerical methods	15		15			30	2
			165	180	56	45		446	31
SEMESTER III									
20	O	Sport		30				30	
21	O	Technical physics	15	15	15			45	5
22	O	Mathematical statistics	30	30	15			75	4
23	O	Marketing	15	15				30	2
24	O	Communication in companies (IT Tools)	15		30			45	3
25	O	Essentials of accounting	15	30				45	3
26	O	Knowledge management	15	15				30	3
27	O	Databases	15		15	15		45	4
28	O	Software engineering	15		30			45	3
29	O	Programming languages	15		15			30	2
			150	135	120	15		420	29

SEMESTER IV									
30	O	Sport		30				30	
31	O	Marketing research	15		15			30	2
32	O	Corporate finance	15	15	15			45	3
33	O	Human-computer interaction	30		30			60	4
34	O	Business process modelling	15		30			45	3
		SOCIO-HUMANISTIC ELECTIVES		30				30	3
35	E	<i>Psychological aspects of assessment and decision making</i>		30				30	3
36	E	<i>Ethics</i>		30				30	3
37	E	<i>Introduction to cognitive science</i>		30				30	3
38	O	Data warehouses	15		30			45	4
39	O	Artificial intelligence	15		30	15		60	5
40	O	Data mining	15		15			30	3
41	O	Internship							6
			120	75	165	15		375	33
SEMESTER V									
EDUCATION PATH: BIG DATA IN MANAGEMENT									
42	O	Visualization of economic data	30		30			60	3
43	O	Nonrelational databases	15		30	15		60	3
44	E	<i>Business English</i>		45				45	3
45	E	<i>nformatization strategies</i>	15		15			30	3
46	E	<i>Business process analysis and optimization</i>	15		30			45	4
47	E	<i>Data Mining in business</i>	15		30			45	4
48	E	<i>Decision analysis</i>	30		30			60	6
49	E	<i>Integrated enterprise information systems</i>	15		30			45	5
			135	45	195	15		390	31
EDUCATION PATH: BIG DATA SOLUTIONS									
42	O	Visualization of economic data	30		30			60	3
43	O	Nonrelational databases	15		30	15		60	3
50	E	<i>Technical English</i>		45				45	3
51	E	<i>Geographic information systems</i>	15		15			30	4
52	E	<i>Internet services architectures</i>	30		15			45	4
53	E	<i>Computer networks lectures</i>	30					30	4
54	E	<i>Agent systems</i>	15			15		30	4
55	E	<i>Advanced nonrelational databases</i>	15		30	30		75	6
			150	45	120	60		375	31
SEMESTER VI									
EDUCATION PATH: BIG DATA IN MANAGEMENT									
56	O	Managing enterprise IT infrastructure and security	30		30			60	3
57	O	Data quality insurance	15			15		30	3
58	E	<i>E-marketing and trend analysis</i>	30		30			60	5
59	E	<i>Web Intelligence and its applications</i>	30		30			60	5
60	E	<i>E-business</i>	30		30			60	5
61	E	<i>IT project management in business</i>	15		30			45	5
62	O	Diploma thesis 1				15		15	4
			150		150	30		330	30
EDUCATION PATH: BIG DATA SOLUTIONS									
56	O	Managing enterprise IT infrastructure and security	30		30			60	3
57	O	Data quality insurance	15			15		30	3
63	E	<i>Large-scale enterprise applications</i>	30		30			60	5
64	E	<i>Computer networks laboratories</i>			15			15	2
65	E	<i>Applications of geographic information systems</i>	18		15	12		45	3
66	E	<i>Big Data processing frameworks</i>	15		30	15		60	5
67	E	<i>Distributed processing</i>	15		30	15		60	5
62	O	Diploma thesis 1				15		15	4
			123		150	72		345	30
SEMESTER VII									
DIPLOMA PROFILE - DATA MINING IN DECISION MAKING									
68	O	Diploma thesis 2				45		45	10

69	O	Intellectual property protection		15				15	2	
70	E	<i>Applications of AI methods in enterprise</i>	15		30			45	4	
71	E	<i>Interactive visualisation</i>			30			30	4	
72	E	<i>Market analysis</i>			30			30	4	
73	E	<i>Investment strategies</i>			30			30	4	
74	O	Diploma seminar				30		30	2	
			15	15	120	75		225	30	
DIPLOMA PROFILE - INTELLIGENT DATA PROCESSING										
68	O	Diploma thesis 2				45		45	10	
69	O	Intellectual property protection		15				15	2	
75	E	<i>Advanced data mining</i>			30			30	4	
76	E	<i>Deep neural networks for data analysis</i>	15			30		45	4	
77	E	<i>Database management systems</i>	15		15			30	4	
78	E	<i>Big Data analysis</i>			30			30	4	
74	O	Diploma seminar				30		30	2	
			30	15	75	105		225	30	
TOTAL			885	585	797	265		2532	213	
								TOTAL HOURS		2532
								TOTAL ECTS		213

explanations:

- O - obligatory subject
- E - electives
- L - lecture
- c - classes
- l - laboratory / computer classes
- p - project
- s - seminary