

- Computer Science (EN) Bachelor

Course Titles in GREEN shows the courses which has EQUIVALENT Course in the Active YEAR, 2022 Take into consideration that, only courses in active year will be OPENED in the Course Section Management.

1								2							
Nº	code	title	th	pr	cr	ects	req	Nº	code	title	th	pr	cr	ects	req
1	CSS 105	Fundamentals of Programming	2	0+2	4	5		1 *	CSS 108	Programming Technologies and Educational Practice	2	0+2	3	5	PR
2	INF 106	Information and Communications Technologies (Computer Science)	1	2+0	3	5		2	CSS 152	Physics 1	2	1+0	3	5	
3	MAT 151	Linear Algebra	2	0+1	3	5		3 *	MAT 154	Mathematics for Computer Science 2	2	0+2	4	5	PR
4	MAT 153	Mathematics for Computer Science 1	2	0+2	3	5		4	MAT 156	Discrete Mathematics	2	1+0	3	5	
5	MDE XXX	* [NAE] Physical Education 1 (MDE 241, MDE 245, MDE 249, MDE 253, MDE 257, MDE 261, MDE 265, MDE 269, MDE 273, MDE 277)	0	1+0	1	2		5	MDE XXX	* [NAE] Physical Education 2 (MDE 242, MDE 246, MDE 250, MDE 254, MDE 258, MDE 262, MDE 266, MDE 270, MDE 274, MDE 278)	0	1+0	1	2	
6	XXX 1XX	* [NAE] Turkish language 1 (MDE 131, MDE 135, MDE 201, MDE 205, MDE 209, MDE 213, MDE 217, MDE 221, MDE 225, MDE 229, MDE 233, MDE 237)	0	2+0	2	3		6	XXX 1XX	* [NAE] Turkish language 2 (MDE 132, MDE 136, MDE 202, MDE 206, MDE 210, MDE 214, MDE 218, MDE 222, MDE 226, MDE 230, MDE 234, MDE 238)	0	2+0	2	3	
7	XXX 1XX	* [NAE] Foreign language 1 (MDE 001, MDE 190, MDE 192)	1	2+0	3	5		7	XXX 1XX	* [NAE] Foreign language 2 (MDE 002, MDE 191, MDE 194)	0	3+0	3	5	
Local Credit								Local Credit							
ECTS								ECTS							
Theoretical course:19								Theoretical course:19							
Non Theoretical course:0								Non Theoretical course:0							
Sum: 19								Sum: 19							
3								4							
Nº	code	title	th	pr	cr	ects	req	Nº	code	title	th	pr	cr	ects	req
1	CSS 206	Database Management Systems 1	1	2+0	3	5		1 *	CSS 220	Advanced Algorithms	2	0+1	3	5	PR
2 *	CSS 215	Introduction to Algorithms	2	0+1	3	5	PR	2	CSS 341	Computer organization and architecture	2	1+0	3	5	
3	MAT 254	Probability and Mathematical Statistics	2	1+0	3	5		3	MDE 172	Philosophy	2	1+0	3	5	
4	MDE XXX	* [NAE] Physical Education 3 (MDE 243, MDE 247, MDE	0	1+0	1	2		4	MDE XXX	* [NAE] Physical Education 4 (MDE 244, MDE 248, MDE 252, MDE 256, MDE	0	1+0	1	2	

		251, MDE 255, MDE 259, MDE 263, MDE 267, MDE 271, MDE 275, MDE 279)					
5	XXX 2XX	* [NAE] Kazakh / Russian language 1 (MDE 111, MDE 113, MDE 115, MDE 117, MDE 121, MDE 123, MDE 125, MDE 127)	0	3+0	3	5	
6	XXX 2XX	* [NAE] Turkish language 3 (MDE 133, MDE 137, MDE 203, MDE 207, MDE 211, MDE 215, MDE 219, MDE 223, MDE 227, MDE 231, MDE 235, MDE 239)	0	2+0	2	3	
7	XXX xxx	* [AE] Track electives 1 (INF 231/INF 232/CSS 250/ CSS 328)	2	1+0	3	5	

Local Credit	ECTS
Theoretical course:18	Theoretical course:30
Non Theoretical course:0	Non Theoretical course:0.
Sum: 18	Sum: 30

5

Nº	code	title	th	pr	cr	ects	req
1	CSS 312	Computer Networks 1	1	2+0	3	5	
2	CSS 382	Internship 1	0	1+0	1	2	
3	MDE 151	Module of Social and Political Knowledge (Political Science)	1	0+0	1	2	
4	MDE 152	Module of Social and Political Knowledge (Sociology)	1	0+0	1	2	
5	MDE 171	Modern History of Kazakhstan	2	1+0	3	5	
6	CSS 3XX	* [AE] Track electives 3 (CSS 342, CSS 309, CSS 324)	2	1+0	3	5	
7	CSS 3XX	* [AE] Track electives 4 (CSS 319/CSS 346/CSS 439)	2	1+0	3	5	
8	XXX 3XX	* [AE] General area electives 1 (CSS 214/ CSS	2	1+0	3	5	

		260, MDE 264, MDE 268, MDE 272, MDE 276, MDE 280)					
5	XXX 2XX	* [NAE] Turkish language 4 (MDE 134, MDE 138, MDE 204, MDE 208, MDE 212, MDE 216, MDE 220, MDE 224, MDE 228, MDE 232, MDE 236, MDE 240)	0	2+0	2	3	
6	XXX 2XX	* [NAE] Kazakh / Russian language 2 (MDE 112, MDE 114, MDE 116, MDE 118, MDE 122, MDE 124, MDE 126, MDE 128)	0	3+0	3	5	
7	XXX xxx	* [AE] Track electives 2 (CSS 217/CSS 254/ INF 423)	1	2+0	3	5	

Local Credit	ECTS
Theoretical course:18	Theoretical course:30
Non Theoretical course:0	Non Theoretical course:0.
Sum: 18	Sum: 30

6

Nº	code	title	th	pr	cr	ects	req
1	MDE 153	Module of Social and Political Knowledge (Cultural Studies)	1	0+0	1	2	
2	MDE 154	Module of Social and Political Knowledge (Psychology)	1	0+0	1	2	
3	CSS 3XX	* [AE] General area electives 2 (CSS 409/ INF 368/ INF 305/ CSS 464/ CSS 306/ INF 349)	2	1+0	3	5	
4	CSS 3XX	* [AE] Track electives 5 (CSS 356, INF 345, INF 337, INF 435)	2	1+0	3	5	
5	CSS 3XX	* [AE] Track electives 6 (CSS 323, CSS 345, INF 324, INF 376)	2	1+0	3	5	
6	XXX 32X	* [AE] ABET electives (INF	2	1+0	3	5	

		216/ INF 326/ INF 228/ CSS 303/ CSS 321/ CSS 417/ INF 361/ INF 328)							
Local Credit					ECTS				
Theoretical course: 14					Theoretical course: 24				
Non Theoretical course: 4					Non Theoretical course: 7				
Sum: 18					Sum: 31				

7

Nº	code	title	th	pr	cr	ects	req
1	CSS 407	Industrial practice 2	0	3+0	3	5	
2	CSS 410	Research tools and methods	2	1+0	3	5	
3	CSS 43X	*[AE] General area electives 4 (CSS 415, CSS 465)	2	1+0	3	5	
4	CSS 4XX	*[AE] General area electives 6 (MAT 364/ INF 261)	2	1+0	3	5	
5	CSS 4XX	*[AE] General area electives 5 (INF 415/INF 228/INF 360)	2	1+0	3	5	
6	CSS 4XX	*[AE] General area electives 7 (INF 405/ INF 263/CSS 446)	2	1+0	3	5	

Local Credit	ECTS
Theoretical course:15	Theoretical course:25
Non Theoretical course:3	Non Theoretical course:5.
Sum: 18	Sum: 30

Total Local Credit	Total ECTS
Theoretical course: 132	Theoretical course: 216
Non Theoretical course: 15	Non Theoretical course: 24
Sum: 147	Sum: 240

AE - Area elective

2	PR	CSS 250	Electronics	2	0+2	3	5	Elective	3	AE
3	PR	CSS 254	Digital design	1	2+0	3	5	Elective	4	AE
4	AR	CSS 306	Cyber Security	1	2+0	3	5	Elective	6	AE
5	AR PR	CSS 309	Low-level Architecture	2	0+2	3	5	Elective	5	AE
6	AR	CSS 319	Software Testing and Validation	2	1+0	3	5	Elective	5	AE
7	AR	CSS 323	Product Management	2	1+0	3	5	Elective	6	AE
8	AR PR	CSS 324	Introduction to Machine Learning	2	1+0	3	5	Elective	5	AE
9	AR	CSS 325	Biology	1	2+0	3	5	Elective	6	AE
10		CSS 328	Introduction to Data Analysis	2	1+0	3	5	Elective	3	AE
11	AR	CSS 342	Software engineering	2	1+0	3	5	Elective	5	AE
12	AR	CSS 345	Advanced computer architecture	2	1+0	3	5	Elective	6	AE
13	AR	CSS 346	FPGA Programming	2	1+0	3	5	Elective	5	AE
14		CSS 356	Introduction to IoT	1	2+0	3	5	Elective	6	AE
15	AR	CSS 409	Computer Networks 2	0	3+0	3	5	Elective	6	AE
16		CSS 412	Industrial practice 3	0	8+0	8	12	Elective	8	AE
17	AR	CSS 415	IT Management	3	0+0	3	5	Elective	7	AE
18	AR	CSS 439	Distributed Big Data Systems	2	1+0	3	5	Elective	5	AE
19	AR	CSS 446	IT audit	2	1+0	3	5	Elective	7	AE
20	AR	CSS 464	FAANG	2	1+0	3	5	Elective	6	AE
21	AR	CSS 465	Project Management	2	1+0	3	5	Elective	7	AE
22		CSS 497	Pregradualional Internship	0	8+0	8	12	Elective	8	AE
23	AR	INF 228	UX/UI design	2	1+0	3	5	Elective	7	AE
24		INF 231	Web programming: front end	2	1+0	3	5	Elective	3	AE
25		INF 232	Web programming: back end	2	1+0	3	5	Elective	3	AE
26	AR	INF 251	Physics 2	2	0+1	3	5	Elective	6	AE
27	AR	INF 261	Game Physics	1	2+0	3	5	Elective	7	AE
28	AR	INF 263	Applied Graph Theory	2	1+0	3	5	Elective	7	AE
29	AR	INF 305	Database Management Systems 2	1	2+0	3	5	Elective	6	AE
30	AR	INF 324	Computer vision	2	1+0	3	5	Elective	6	AE
31	PR	INF 337	Deep Learning	2	0+1	3	5	Elective	6	AE
32	AR	INF 345	Fundamentals of DevOps	2	1+0	3	5	Elective	6	AE
33	AR	INF 349	3D animation and visual effects	2	1+0	3	5	Elective	6	AE
34	AR	INF 360	IT-law	2	1+0	3	5	Elective	7	AE
35	AR	INF 368	The Go programming language	1	2+0	3	5	Elective	6	AE
36	AR	INF 376	Natural Language Processing	2	1+0	3	5	Elective	6	AE
37	AR	INF 405	Personal Development in Computer Science	3	0+0	3	5	Elective	7	AE
38	AR	INF 415	Leadership in IT	2	1+0	3	5	Elective	7	AE
39		INF 423	Statistics and Visualization for Data Analysis	2	1+0	3	5	Elective	4	AE

40		INF 435	Applied Bioinformatics	2	1+0	3	5	Elective	6	AE
41	AR	MAT 364	Cryptography	2	1+0	3	5	Elective	7	AE

NAE - Non-area elective

Nº	req	code	title	th	pr	cr	ects	type	term	type
1		MDE 111	Kazakh Language 1 (A1 level/ for foreigners)	0	3+0	3	5	Elective	3	NAE
2		MDE 112	Kazakh Language 2 (A2 level/for foreigners)	0	3+0	3	5	Elective	4	NAE
3		MDE 113	Kazakh Language 1 (B1 level)	0	3+0	3	5	Elective	3	NAE
4		MDE 114	Kazakh Language 2 (B1 level)	0	3+0	3	5	Elective	4	NAE
5		MDE 115	Kazakh Language 1 (B2 level)	0	3+0	3	5	Elective	3	NAE
6		MDE 116	Kazakh Language 2 (B2 level)	0	3+0	3	5	Elective	4	NAE
7		MDE 117	Kazakh Language 1 (C1 level)	0	3+0	3	5	Elective	3	NAE
8		MDE 118	Kazakh Language 2 (C1 level)	0	3+0	3	5	Elective	4	NAE
9		MDE 121	Russian Language 1 (A1 level/ for foreigners)	0	3+0	3	5	Elective	3	NAE
10		MDE 122	Russian Language 2 (A2 level/ for foreigners)	0	3+0	3	5	Elective	4	NAE
11		MDE 123	Russian Language 1 (B1 level)	0	3+0	3	5	Elective	3	NAE
12		MDE 124	Russian Language 2 (B1 level)	0	3+0	3	5	Elective	4	NAE
13		MDE 125	Russian Language 1 (B2 level)	0	3+0	3	5	Elective	3	NAE
14		MDE 126	Russian Language 2 (B2 level)	0	3+0	3	5	Elective	4	NAE
15		MDE 127	Russian Language 1 (C1 level)	0	3+0	3	5	Elective	3	NAE
16		MDE 128	Russian Language 2 (C1 level)	0	3+0	3	5	Elective	4	NAE
17		MDE 131	Turkish Language 1 (A1 level)	0	2+0	2	3	Elective	1	NAE
18		MDE 132	Turkish Language 2 (A1 level)	0	2+0	2	3	Elective	2	NAE
19		MDE 133	Turkish Language 3 (A2 level)	0	2+0	2	3	Elective	3	NAE
20		MDE 134	Turkish Language 4 (A2 level)	0	2+0	2	3	Elective	4	NAE
21		MDE 135	Turkish Language 1 (B1 level) (Media club)	0	2+0	2	3	Elective	1	NAE
22		MDE 136	Turkish Language 2 (B1 level) (Media club)	0	2+0	2	3	Elective	2	NAE
23		MDE 137	Turkish Language 3 (B2 level) (Media club)	0	2+0	2	3	Elective	3	NAE
24		MDE 138	Turkish Language 4 (B2 level) (Media club)	0	2+0	2	3	Elective	4	NAE
25		MDE 161	Economy	2	1+0	3	5	Elective	6	NAE
26		MDE 162	Law	2	1+0	3	5	Elective	6	NAE
27		MDE 164	Ecology	2	1+0	3	5	Elective	6	NAE
28		MDE 166	Entrepreneurship	2	1+0	3	5	Elective	6	NAE
29		MDE 167	Leadership	2	1+0	3	5	Elective	6	NAE
30		MDE 190	Foreign Language 1 (English for Specific Purposes - B1 level)	0	3+0	3	5	Elective	1	NAE
31		MDE 191	Foreign Language 2 (English for Specific Purposes - B1+ level)	0	3+0	3	5	Elective	2	NAE
32		MDE 192	Foreign Language 1 (English for Specific Purposes - B2 level)	0	3+0	3	5	Elective	1	NAE
33		MDE 194	Foreign Language 2 (English for Specific Purposes - B2+ level)	0	3+0	3	5	Elective	2	NAE

			level)							
34		MDE 201	Turkish Language 1 (B1 level) (Debate club)	0	2+0	2	3	Elective	1	NAE
35		MDE 202	Turkish Language 2 (B1 level) (Debate club)	0	2+0	2	3	Elective	2	NAE
36		MDE 203	Turkish Language 3 (B2 level) (Debate club)	0	2+0	2	3	Elective	3	NAE
37		MDE 204	Turkish Language 4 (B2 level) (Debate club)	0	2+0	2	3	Elective	4	NAE
38		MDE 205	Turkish Language 1 (B1 level) (Cooking club)	0	2+0	2	3	Elective	1	NAE
39		MDE 206	Turkish Language 2 (B1 level) (Cooking club)	0	2+0	2	3	Elective	2	NAE
40		MDE 207	Turkish Language 3 (B2 level) (Cooking club)	0	2+0	2	3	Elective	3	NAE
41		MDE 208	Turkish Language 4 (B2 level) (Cooking club)	0	2+0	2	3	Elective	4	NAE
42		MDE 209	Turkish Language 1 (B1 level) (Storytelling club)	0	2+0	2	3	Elective	1	NAE
43		MDE 210	Turkish Language 2 (B1 level) (Storytelling club)	0	2+0	2	3	Elective	2	NAE
44		MDE 211	Turkish Language 3 (B2 level) (Storytelling club)	0	2+0	2	3	Elective	3	NAE
45		MDE 212	Turkish Language 4 (B2 level) (Storytelling club)	0	2+0	2	3	Elective	4	NAE
46		MDE 213	Turkish Language 1 (B1 level) (Singing club)	0	2+0	2	3	Elective	1	NAE
47		MDE 214	Turkish Language 2 (B1 level) (Singing club)	0	2+0	2	3	Elective	2	NAE
48		MDE 215	Turkish Language 3 (B2 level) (Singing club)	0	2+0	2	3	Elective	3	NAE
49		MDE 216	Turkish Language 4 (B2 level) (Singing club)	0	2+0	2	3	Elective	4	NAE
50		MDE 217	Turkish Language 1 (B1 level) (Translation club)	0	2+0	2	3	Elective	1	NAE
51		MDE 218	Turkish Language 2 (B1 level) (Translation club)	0	2+0	2	3	Elective	2	NAE
52		MDE 219	Turkish Language 3 (B2 level) (Translation club)	0	2+0	2	3	Elective	3	NAE
53		MDE 220	Turkish Language 4 (B2 level) (Translation club)	0	2+0	2	3	Elective	4	NAE
54		MDE 221	Turkish Language 1 (B1 level) (Poetry club)	0	2+0	2	3	Elective	1	NAE
55		MDE 222	Turkish Language 2 (B1 level) (Poetry club)	0	2+0	2	3	Elective	2	NAE
56		MDE 223	Turkish Language 3 (B2 level)(Poetry club)	0	2+0	2	3	Elective	3	NAE
57		MDE 224	Turkish Language 4 (B2 level) (Poetry club)	0	2+0	2	3	Elective	4	NAE
58		MDE 225	Turkish Language 1 (B1 level) (Movie club)	0	2+0	2	3	Elective	1	NAE
59		MDE 226	Turkish Language 2 (B1 level) (Movie club)	0	2+0	2	3	Elective	2	NAE
60		MDE 227	Turkish Language 3 (B2 level) (Movie club)	0	2+0	2	3	Elective	3	NAE
61		MDE 228	Turkish Language 4 (B2 level) (Movie club)	0	2+0	2	3	Elective	4	NAE
62		MDE 229	Turkish Language 1 (B1 level) (Tourism club)	0	2+0	2	3	Elective	1	NAE
63		MDE 230	Turkish Language 2 (B1 level) (Tourism club)	0	2+0	2	3	Elective	2	NAE
64		MDE 231	Turkish Language 3 (B2 level) (Tourism club)	0	2+0	2	3	Elective	3	NAE
65		MDE 232	Turkish Language 4 (B2 level) (Tourism club)	0	2+0	2	3	Elective	4	NAE
66		MDE 233	Turkish Language 1 (B1 level) (Drama club)	0	2+0	2	3	Elective	1	NAE
67		MDE 234	Turkish Language 2 (B1 level) (Drama club)	0	2+0	2	3	Elective	2	NAE
68		MDE 235	Turkish Language 3 (B2 level) (Drama club)	0	2+0	2	3	Elective	3	NAE
69		MDE 236	Turkish Language 4 (B2 level) (Drama club)	0	2+0	2	3	Elective	4	NAE
70		MDE 237	Turkish Language 1 (B1 level) (Art club)	0	2+0	2	3	Elective	1	NAE
71		MDE 238	Turkish Language 2 (B1 level) (Art club)	0	2+0	2	3	Elective	2	NAE

[illegible]

110		MDE 277	Physical Education 1 (Football)	0	1+0	1	2	Elective	1	NAE
111		MDE 278	Physical Education 2 (Football)	0	1+0	1	2	Elective	2	NAE
112		MDE 279	Physical Education 3 (Football)	0	1+0	1	2	Elective	3	NAE
113		MDE 280	Physical Education 4 (Football)	0	1+0	1	2	Elective	4	NAE

NTE - Non Theoretical Elective

Nº	req	code	title	th	pr	cr	ects	type	term	type
1		CSS 492	Graduation exam	0	6+0	6	12	Elective	8	NTE
2		CSS 493	Diploma defence	0	6+0	6	12	Elective	8	NTE

RC - Recommended Additional Courses

Nº	req	code	title	th	pr	cr	ects	type	term	type
1		MDE 001	General English (A1 level)	0	6+0	6	6	Elective	1	RC
2		MDE 002	General English (A2 level)	0	6+0	6	6	Elective	2	RC