Bioinformatics – first-cycle study programme, full-time studies

Department	Faculty of Bioinformatics
Field of study	Bioinformatics
Level of studies	First-cycle study programme
Profile of studies	Practical
Form of studies	Full-time studies
Duration of studies	7 semesters
Degree	Bachelor of Engineering
ECTS	210
The total number of hours	2445
Length of apprentinceships	6 months (24 weeks)

Specialty: Biological Data Analysis and Processing

No.	Course	Semester	ECTS
1	English Classes I	1	2
2	OSH and Ergonomics	1	2
3	Elective Course I (Basics of Entrepreneurship, Philosophy)	1	3
4	Elective Course II (Business plan, Sociology)	1	3

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5	Basics of Mathematics	1	3
6	Introduction to Computer Graphics	1	2
7	Information Technologies	1	2
8	Inorganic Chemistry	1	5
9	Basics of Logic and Set Theory	1	4
10	Basics of Biology	1	4
11	English Classes II	2	2
12	Physics	2	4
13	C++ I	2	3
14	Linear Algebra with Analytic Geometry	2	4
15	Mathematical Analysis I	2	4
16	Organic Chemistry	2	5
17	Cell Biology	2	2
18	Apprenticeships	2	6
19	English Classes III	3	2
20	Elective Course III (Business Financing, Economics)	3	3
21	C++ II	3	2
22	Algorithms and Data Structures	3	4
23	Mathematical Analysis II	3	3

24	Quantum Physics	3	3
25	Biochemistry	3	5
26	Genetics	3	3
27	Quantum Chemistry	3	5
28	Technical English I	4	2
29	Numerical Methods	4	2
30	Elective Course IV (Java, Software Engineering)	4	2
31	Calculation Methods of Quantum Chemistry	4	2
32	Molecular Modeling	4	4
33	Molecular Biology	4	3
34	Methods of Artificial Intelligence	4	4
35	Apprenticeships	4	6
36	Genotypic Data Exploration Techniques	4	2
37	High Performance Computing in Biological Sciences	4	3
38	Fundamentals of Statistical and Probabilistic Methods	5	2
39	Databases	5	4
40	Technical English II	5	2
41	Elective Course V (Cisco Network Services, Computer Decision Support Systems)	5	3

42	Genomics and Transcriptomics	5	3
43	Neural Networks	5	4
44	Drug Design	5	5
45	Team Project I (specialty-oriented)	5	3
46	Methods for Analyzing the Genetic Structure of Population	5	4
47	Molecular Modeling of Proteins	6	3
48	Elective Course VI (Biostatistics, Medical Databases)	6	4
49	Diploma Workshop I	6	5
50	Diploma Seminar I	6	5
51	Apprenticeships	6	4
52	Biological Sequence Analysis	6	3
53	Project (specialty-oriented)	6	3
54	Monograph Course I (specialty-oriented)	6	3
55	Trends in Bioinformatics	7	4
56	Diploma Workshop II	7	8
57	Diploma Seminar II	7	5
58	Data Mining Techniques in Biological Research	7	5
59	Team Project II (specialty-oriented)	7	5

60	Monograph Course II (specialty-oriented)	7	3

Specialty: Virtual Reality Methods in Bioinformatics

No.	Course	Semester	ECTS
1	English Classes I	1	2
2	OSH and Ergonomics	1	2
3	Elective Course I (Basics of Entrepreneurship, Philosophy)	1	3
4	Elective Course II (Business plan, Sociology)	1	3
5	Basics of Mathematics	1	3
6	Introduction to Computer Graphics	1	2
7	Information Technologies	1	2
8	Inorganic Chemistry	1	5
9	Basics of Logic and Set Theory	1	4
10	Basics of Biology	1	4
11	English Classes II	2	2
12	Physics	2	4
13	C++ I	2	3

14	Linear Algebra with Analytic Geometry	2	4
15	Mathematical Analysis I	2	4
16	Organic Chemistry	2	5
17	Cell Biology	2	2
18	Apprenticeships	2	6
19	English Classes III	3	2
20	Elective Course III (Business Financing, Economics)	3	3
21	C++ II	3	2
22	Algorithms and Data Structures	3	4
23	Mathematical Analysis II	3	3
24	Quantum Physics	3	3
25	Biochemistry	3	5
26	Genetics	3	3
27	Quantum Chemistry	3	5
28	Technical English I	4	2
29	Numerical Methods	4	2
30	Elective Course IV (Java, Software Engineering)	4	2
31	Calculation Methods of Quantum Chemistry	4	2

32	Molecular Modeling	4	4
33	Molecular Biology	4	3
34	Methods of Artificial Intelligence	4	4
35	Apprenticeships	4	6
36	Image Data Processing and Compression	4	2
37	Computer Graphics	4	3
38	Fundamentals of Statistical and Probabilistic Methods	5	2
39	Databases	5	4
40	Technical English II	5	2
41	Elective Course V (Cisco Network Services, Computer Decision Support Systems)	5	3
42	Genomics and Transcriptomics	5	3
43	Neural Networks	5	4
44	Drug Design	5	5
45	Team Project I (specialty-oriented)	5	3
46	Virtual Instrumentalization	5	4
47	Molecular Modeling of Proteins	6	3
48	Elective Course VI (Biostatistics, Medical Databases)	6	4
49	Diploma Workshop I	6	5

50	Diploma Seminar I	6	5
51	Apprenticeships	6	4
52	Virtual Reality Systems Programming	6	3
53	Project (specialty-oriented)	6	3
54	Monograph Course I (specialty-oriented)	6	3
55	Trends in Bioinformatics	7	4
56	Diploma Workshop II	7	8
57	Diploma Seminar II	7	5
58	Advanced Methods of Virtual Reality	7	5
59	Team Project II (specialty-oriented)	7	5
60	Monograph Course II (specialty-oriented)	7	3