

**FACULTY OF CHEMICAL AND SYSTEM ENGINEERING**

*Specialty:* **Biomedical Engineering**

*Professional qualification:* **Engineer**

code of discipline	COURSES	FULL TIME EDUCATION									Total credits	Total
		Semester	Assessment	Classroom employment				Total of self-training	Credits	Credits of self-training		
				Teaching loads								
				Lectures	Laboratory work	Seminars	Total					
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>	<i>21</i>	<i>22</i>
b052	Mathematics – I part	I	И	45	0	45	90	135	3.6	5.4	9	225
b1001	Fundamentals of Design and CAD	I	T	15	30	0	45	68	1.6	2.4	4	113
b676	Informatics – I part	I	И	30	30	0	60	90	2.4	3.6	6	150
b190	General Chemistry	I	И	30	15	15	60	90	2.4	3.6	6	150
b1198	Introduction to the Specialty	I	T	15	0	15	30	45	0.8	1.2	2	75
	<i>Humanitarian elective courses – one of the following:</i>											
b056	– Ecology and Technical Civilization	I	T	30	0	0	30	45	1.2	1.8	3	75
b066	– Engineering Psychology and Ergonomics	I	T	30	0	0	30	45	1.2	1.8	3	75
b1150	– Career Development and Entrepreneurship	I	T	30	0	0	30	45	1.2	1.8	3	75
b1000	Sports	I			60							
<b>Total for the semester:</b>							315	473			30	788
b053	Mathematics – II part	II	И	45	0	45	90	135	3.6	5.4	9	225
b396	Electrical Engineering and Electronics	II	И	30	30	0	60	90	2.0	3.0	5	150
b344	Technical Mechanics	II	И	30	0	30	60	90	2.4	3.6	6	150
b849	Physics	II	И	30	30	0	60	90	2.4	3.6	6	150
b980	Informatics – II part	II	И	15	30	0	45	68	1.6	2.4	4	113
b1000	Sports	II			60							
<b>Total for the semester:</b>							315	473			30	788

b089	Analytical Chemistry	III	И	25	25	0	50	75	1.6	2.4	4	125
b236	Organic Chemistry – I part	III	И	45	45	0	90	135	3.6	5.4	9	225
b313	Physical Chemistry	III	И	45	45	0	90	135	3.2	4.8	8	225
b325	Industrial Safety	III	Т	20	25	0	45	68	1.6	2.4	4	113
	<i>Humanitarian elective subjects – one of the following:</i>											
b138	– Communications in Social Systems	III	Т	30	0	0	30	45	1.2	1.8	3	75
b139	– Organization Development and Staff Training	III	Т	30	0	0	30	45	1.2	1.8	3	75
	<i>Electives – one of the languages:</i>											
b148	– English	III	–	0	30	0	30	45	0.8	1.2	2	75
b153	– Russian	III	–	0	30	0	30	45	0.8	1.2	2	75
b155	– French	III	–	0	30	0	30	45	0.8	1.2	2	75
b168	– German	III	–	0	30	0	30	45	0.8	1.2	2	75
b1000	Sports	III			30							
<b>Total for the semester:</b>							<b>335</b>	<b>503</b>			<b>30</b>	<b>838</b>
b237	Organic Chemistry – II part	IV	И	30	30	0	60	90	2.0	3.0	5	150
b922	Instrumental Methods in Analytical Chemistry	IV	И	20	20	0	40	60	1.6	2.4	4	100
b196	Economics and Management	IV	И	25	0	25	50	75	1.6	2.4	4	125
b309	Colloid Chemistry	IV	Т	20	20	0	40	60	1.6	2.4	4	100
b725	Biophysics	IV	И	30	30	0	60	90	2.0	3.0	5	150
b937	Biomedical Statistics	IV	Т	30	30	0	60	90	2.0	3.0	5	150
	<i>Electives – one of the languages:</i>											
b148	– English	IV	Т	0	30	0	30	45	1.2	1.8	3	75
b153	– Russian	IV	Т	0	30	0	30	45	1.2	1.8	3	75
b155	– French	IV	Т	0	30	0	30	45	1.2	1.8	3	75
b168	– German	IV	Т	0	30	0	30	45	1.2	1.8	3	75
b1000	Sports	IV			30							
<b>Total for the semester:</b>							<b>340</b>	<b>510</b>			<b>30</b>	<b>850</b>
b232	Unit Operations	V	И	30	30	0	60	90	2.0	3.0	5	150
b432	Biochemistry	V	И	45	45	0	90	135	3.6	5.4	9	225
b1029	Design and Analysis of Control Systems	V	И	45	45	0	90	135	2.8	4.2	7	225

b173	Microbiology – part I	V	И	45	45	0	90	135	3.6	5.4	9	225
b1000	Sports	V			30							
<b>Total for the semester:</b>							<b>330</b>	<b>495</b>			<b>30</b>	<b>825</b>
b980	Biomedical Informatics	VI	И	30	30	0	60	90	2.0	3.0	5	150
b1208	Unit Operations in Biotechnological Industry	VI	И	30	30	0	60	90	2.0	3.0	5	150
b260	Digital and Microprocessor Technics	VI	И	30	30	0	60	90	2.0	3.0	5	150
b1141	Microbiology – part II	VI	И	30	30	0	60	90	2.0	3.0	5	150
b615	Bioorganic Chemistry	VI	И	30	30	0	60	90	2.0	3.0	5	150
b1039	Cell Biology	VI	Т	30	30	0	60	90	2.0	3.0	5	150
b1000	Sports	VI			30							
<b>Total for the semester:</b>							<b>300</b>	<b>450</b>			<b>30</b>	<b>750</b>
b708	Pharmaceutical Biotechnology	VII	И	30	30	0	60	90	2.0	3.0	5	150
b784	Molecular Biology and Genetics	VII	И	30	30	0	60	90	2.0	3.0	5	150
b600	Biocatalysis	VII	И	30	30	0	60	90	2.0	3.0	5	150
b848	Tissue Engineering	VII	И	30	30	0	60	90	2.4	3.6	6	150
b949	Biomedical measurements, technical devices and apparatus	VII	Т	30	30	0	60	90	2.4	3.6	6	150
	<i>Project – one of the following:</i>											
b1210	Project on Molecular Biology and Genetics	VII	защ.	0	0	30	30	45	1.2	1.8	3	75
b1211	Project on Tissue Engineering	VII	защ.	0	0	30	30	45	1.2	1.8	3	75
b1212	Project on Biochemistry	VII	защ.	0	0	30	30	45	1.2	1.8	3	75
b1213	Project on Microbiology	VII	защ.	0	0	30	30	45	1.2	1.8	3	75
<b>Total for the semester:</b>							<b>330</b>	<b>495</b>			<b>30</b>	<b>825</b>
b883	Immunology	VIII	И	30	30	0	60	90	2.0	3.0	5	150
b1180	Bioanalytical Techniques in Medicine	VIII	И	30	30	0	60	90	2.0	3.0	5	150
	<i>Elective courses – two of the following:</i>											
b1142	– Biosensors and DNA Chips	VIII	И	30	30	0	60	90	2.0	3.0	5	150
b1039	– Biotransport	VIII	И	30	30	0	60	90	2.0	3.0	5	150
b480	– Biomaterials and Biocompatibility	VIII	И	30	30	0	60	90	2.0	3.0	5	150
b1033	– Bionanotechnology	VIII	И	30	30	0	60	90	2.0	3.0	5	150
b1286	– Knowledge-based systems	VIII	И	30	30	0	60	90	2.0	3.0	5	150

b1294	- Cyberphysical Systems	VIII	И	30	30	0	60	90	2.0	3.0	5	150
b1295	– Modern Methods for Data Analysis	VIII	И	30	30	0	60	90	2.0	3.0	5	150
b997	– Medical Microbiology and Virology	VIII	И	30	30	0	60	90	2.0	3.0	5	150
b1030	– Physiology	VIII	И	30	30	0	60	90	2.0	3.0	5	150
	<b>Total for the semester:</b>						240	360			20	600
b1022	Practice in Industry		защ				200					
	BSc Thesis – 8 weeks	VIII	ДЗ								10	
	<b>Total for the entire period of education:</b>						2505				240	

Electives disciplines	semester	assessment	Teaching loads	
			–	30
Foreign language (English, French, German, Russian) by level	II - VII	T	–	30
Computer data processing (3 levels)	II - VII	И	15	30