

FACULTY OF METALLURGY AND MATERIALS SCIENCE

Specialty: **Biomaterials for Medical Applications**

Professional qualification: **Engineer**

code of discipline	COURSES	FULL-TIME STUDIES									Total credits	Total
		Semester	Course Loads				Total of self-training	Credits	Credits of self-training			
			Assessment	Teaching Loads								
				Lectures	Laboratory work	Seminars				Total		
1	2	3	4	5	6	7	8	9	10	11	12	13
b052	Mathematics – part I	I	E	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
b111	Inorganic Chemistry – part I	I	E	27	9	24	60	90	2.4	3.6	6	150
b676	Informatics –part I	I	E	30	30	0	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
	Humanitarian elective courses – one of the following:											0
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							
	Total for the semester:						315	473			30	788
b053	Mathematics –part II	II	E	45	0	45	90	135	3.2	4.8	8	225
b114	Inorganic Chemistry –part II	II	E	36	39	0	75	113	2.8	4.2	7	188
b344	Technical Mechanics	II	–	15	0	15	30	45	1.2	1.8	3	75
b824	Informatics –part II	II	E	15	30	0	45	68	1.6	2.4	4	113
b414	Physics	II	E	30	30	0	60	90	2.4	3.6	6	150
b252	Transport Phenomena	II	–	15	15	0	30	45	0.8	1.2	2	75
b1000	Sports	II			60							
	Total for the semester:						330	495			30	825
b344	Technical Mechanics	III	E	30	15	15	60	90	2.0	3.0	5	150
b313	Physical Chemistry	III	E	45	45	0	90	135	3.2	4.8	8	225
b252	Transport Phenomena	III	T	15	20	0	35	53	0.8	1.2	2	88
b396	Electrical Engineering and Electronics	III	E	30	30	0	60	90	2.0	3.0	5	150
b236	Organic Chemistry –part I	III	E	45	45	0	90	135	3.2	4.8	8	225
	Electives – one of the languages:											
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							
	Total for the semester:						365	548			30	913
b089	Analytical Chemistry with Instrumental Methods	IV	E	30	40	0	75	113	2.8	4.2	7	188
b237	Organic Chemistry –part II	IV	E	30	30	0	60	90	2	3	5	150
b725	Biophysics	IV	E	30	30	0	60	90	2.0	3.0	5	150
b085	Crystallography	IV	E	30	30	0	60	90	2.4	3.6	6	150
b1069	Biomechanics	IV	E	20	25	0	45	68	1.6	2.4	4	113
	Electives – one of the languages:											
b148	– English	IV	T	0	30	0	30	45	1.2	1.8	3	75
b153	– Russian	IV	T	0	30	0	30	45	1.2	1.8	3	75
b155	– French	IV	T	0	30	0	30	45	1.2	1.8	3	75
b168	– German	IV	T	0	30	0	30	45	1.2	1.8	3	75
b1000	Sports	IV			30							
	Total for the semester:						330	495			30	825

b196	Economics and Management	V	E	25	0	25	50	75	1.6	2.4	4	125
b227	Materials Science	V	E	45	45	0	90	135	3.6	5.4	9	225
b432	Biochemistry	V	E	45	45	0	90	135	3.2	4.8	8	225
b731	Corrosion Resistance of Materials	V	T	20	25	0	45	68	1.6	2.4	4	113
b223	Biomaterials	V	T	30	30	0	60	90	2.0	3.0	5	150
b1000	Sports	V			30							
Total for the semester:							335	503			30	838
b029	Industrial Automation	VI	E	30	30	0	60	90	2.0	3.0	5	150
b102	Structural Analysys	VI	E	30	30	0	60	90	2.0	3.0	6	150
b1141	Cell Biology	VI	E	30	30	0	60	90	2.0	3.0	5	150
b1418	Natural Biomaterials	VI	T	20	20	0	40	60	1.6	2.4	4	100
b1419	Textile Materials for Medical Application	VI	T	20	20	0	40	60	1.2	1.8	3	100
b1420	Metal Biomaterials	VI	E	40	40	0	80	120	3.2	4.8	7	200
b1000	Sports	VI			30							
Total for the semester:							340	510			30	850
Humanitarian elective courses – one of the following:												
b138	– Communications in Social Systems	VII	T	30	0	0	30	45	1.2	1.8	3	75
b139	–Organizational Development and Training of Staff	VII	T	30	0	0	30	45	1.2	1.8	3	75
b1421	Bioglasses	VII	T	40	40	0	80	120	2.8	4.2	7	200
b1422	Elastic Composites for Medical Application	VII	E	30	30	0	60	90	2.0	3.0	5	150
b1423	Bioceramics	VII	E	40	40	0	80	120	2.8	4.2	7	200
b1424	Binding Materials for Medical Application	VII	E	40	40	0	80	120	2.8	4.2	7	200
Project – one of the following:												
b1425	– Project on Design of Technologies	VII	D	0	15	0	15	23	0.4	0.6	1	38
b1426	– Project on Phase-structural Analysis of Biomaterials	VII	D	0	15	0	15	23	0.4	0.6	1	38
Total for the semester:							345	518			30	863
b480	Biomaterials and Biocompatibility	VIII	E	30	30	0	60	90	2.0	3.0	5	150
b1427	Bioactive Polymer Composites	VIII	E	30	30	0	60	90	2.0	3.0	5	150
b1428	Biomaterials for Drug Delivery	VIII	E	30	30	0	60	90	2.0	3.0	5	150
Elective courses–one of the following:												
b1429	– Nanomaterials for Medical Application	VIII	T	30	30	0	60	90	2.0	3.0	5	150
b1430	– Modelling and FEA	VIII	T	30	30	0	60	90	2.0	3.0	5	150
b1431	– Surface Treatment and Modification	VIII	T	30	30	0	60	90	2.0	3.0	5	150
Total for the semester:							240	360			20	600
b1022	Practice in Industry		D				200					
	BSc Thesis – 8 weeks	VIII	D								10	
Total number for the entire period of training:							2600				240	