

1.	Field of study	Materials Science and Engineering
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2019/2020 (winter term), 2020/2021 (winter term), 2021/2022 (winter term), 2022/2023 (winter term)
4.	Level of qualifications/degree	first-cycle studies (in engineering)
5.	Degree profile	general academic
6.	Mode of study	full-time
7.	Academic year for which the revised course structure applies	—

Specialization: Biomaterials

A		form of teaching						year 1			year 2			year 3			year 4											
								semester 1			semester 2			semester 3			semester 4			semester 5			semester 6			semester 7		
								L	O	E	L	O	E	L	O	E	L	O	E	L	O	E	L	O	E	L	O	E
No.	Module	Lang.	E/C	Total	L	O	Total ECTS	L	O	E	L	O	E	L	O	E	L	O	E	L	O	E	L	O	E			
1	Basics of management	PL	Z	45	30	15	3	30	15	3																		
2	Applied mathematics 1	PL	E	60	30	30	5	30	30	5																		
3	Chemistry 1	PL	E	60	30	30	5	30	30	5																		
4	Computer science and IT	PL	Z	60	30	30	4	30	30	4																		
5	Designing and engineering graphics	PL	Z	45	15	30	4	15	30	4																		
6	Programming languages	PL	Z	60	30	30	3	30	30	3																		
7	Technical drawing	PL	Z	45	15	30	4	15	30	4																		
8	Chemistry 2	PL	E	60	30	30	4				30	30	4															
9	Crystallography	PL	E	60	30	30	5				30	30	5															
10	Applied mathematics 2	PL	E	60	30	30	5				30	30	5															
11	Mathematical-physical basis of materials science	PL	Z	75	30	45	3				30	45	3															
12	Physics 1	PL	E	105	45	60	6				45	60	6															
13	Technical thermodynamics	PL	Z	45	30	15	3				30	15	3															
14	Basics of electronics and electrotechnics	PL	Z	60	30	30	3							30	30	3												
15	Basics of materials science	PL	E	150	75	75	7							75	75	7												
16	Introduction to biomaterials	PL	Z	60	30	30	3							30	30	3												
17	Materials testing methods 1	PL	E	75	30	45	4							30	45	4												
18	Mechanics with elements of biomechanics	PL	E	75	45	30	3							45	30	3												
19	Physico-chemistry of biological processes	PL	E	60	30	30	3							30	30	3												
20	Physics 2	PL	E	75	30	45	5							30	45	5												
21	Ceramic biomaterials	PL	E	60	30	30	5										30	30	5									
22	Corrosion and corrosion protection	PL	Z	45	20	25	3										20	25	3									
23	Engineering materials	PL	E	75	30	45	6										30	45	6									
24	Materials testing methods 2	PL	E	75	30	45	5										30	45	5									
25	Metallic biomaterials	PL	E	75	30	45	6										30	45	6									
26	Selected marketing issues	PL	E	30	15	15	3										15	15	3									
27	Databases on materials	PL	Z	60	30	30	4													30	30	4						
28	IT techniques in medicine	PL	Z	60	30	30	4													30	30	4						
29	Materials manufacturing technologies	PL	E	150	75	75	9													75	75	9						
30	Object oriented programming and computer simulations	PL	E	60	30	30	4													30	30	4						
31	Polymers for medicine	PL	E	60	30	30	5													30	30	5						

A										year 1			year 2			year 3			year 4											
										semester 1			semester 2			semester 3			semester 4			semester 5			semester 6			semester 7		
No.	Module	Lang.	E/C	form of teaching			Total ECTS	L	O	E	L	O	E	L	O	E	L	O	E	L	O	E	L	O	E					
				Total	L	O		L	O	E	L	O	E	L	O	E	L	O	E	L	O	E	L	O	E					
32	Carbon and composite biomaterials	PL	E	60	30	30	5																							
33	Diploma laboratory 1	PL	Z	30		30	3																30	30	5					
34	Diploma seminar 1	PL	Z	15		15	2																15	2						
35	Materials surface engineering	PL	E	45	30	15	3																30	15	3					
36	Nanomaterials in medicine	PL	E	75	30	45	6																30	45	6					
37	Principles of materials designing and selection	PL	E	60	30	30	5																30	30	5					
38	Biological and physiological aspects of biomaterials	PL	Z	45	30	15	2																							
39	Diploma laboratory 2	PL	Z	60		60	5																	30	15	2				
40	Diploma seminar 2	PL	Z	30		30	5																	60	5					
TOTAL A:				2505	1145	1360	172	180	195	28	195	210	26	270	285	28	155	205	28	195	195	26	120	165	24	30	105	12		
B - INTERNSHIPS AND FIELD WORK										year 1			year 2			year 3			year 4											
										semester 1			semester 2			semester 3			semester 4			semester 5			semester 6			semester 7		
No.	Module	Lang.	E/C	form of teaching			Total ECTS	L	O	E	L	O	E	L	O	E	L	O	E	L	O	E	L	O	E	L	O	E		
				Total	L	O		L	O	E	L	O	E	L	O	E	L	O	E	L	O	E	L	O	E	L	O	E		
1	Professional training	PL	Z				6																							
TOTAL B - INTERNSHIPS AND FIELD WORK:				0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0		
C - OTHER REQUIREMENTS										year 1			year 2			year 3			year 4											
										semester 1			semester 2			semester 3			semester 4			semester 5			semester 6			semester 7		
No.	Module	Lang.	E/C	form of teaching			Total ECTS	L	O	E	L	O	E	L	O	E	L	O	E	L	O	E	L	O	E	L	O	E		
				Total	L	O		L	O	E	L	O	E	L	O	E	L	O	E	L	O	E	L	O	E	L	O	E		
1	Physical education	PL	Z	30		30	0	30																						
2	Physical education	PL	Z	30		30	0				30																			
3	Foreign language 1	PL	Z	30		30	2	30	2																					
4	Foreign language 2	PL	Z	30		30	2				30	2																		
5	Psychological aspects of working environment	PL	Z	30	15	15	2				15	15	2																	
6	Foreign language 3	PL	Z	30		30	2						30	2																
7	Foreign language 4	PL	E	30		30	2						30	2																
8	Humanist module	PL	Z	30	30		3													30		3								
9	Intellectual property protection	PL	Z	15	15		1													15		1								
10	Diploma thesis preparation	PL	Z				15																			15				
11	Social module	PL	Z	30	30		3																	30		3				
TOTAL C - OTHER REQUIREMENTS:				285	90	195	32	0	60	2	15	75	4	0	30	2	0	30	2	45	0	4	0	0	0	30	0	18		
TOTAL:				2790	1235	1555	210	435	30	495	30	585	30	390	30	435	30	285	30	165	30	165	30	165	30	30				
TOTAL										2790																				

The study ends with the awarding of an Engineer - Bachelor's Degree with engineering competencies in the field of Materials Science and Engineering: Biomaterials.

Legend

Each semester consists of 15 weeks

E/C - examination/course work

E - ECTS

L - lecture, O - all forms of teaching excluding lecture (practical classes, laboratory classes, discussion classes, seminar, proseminar, language classes, field practice, workshop, internship, tutoring)

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7.	Academic year for which the revised course structure applies	—

Specialization: Materials Science

A		form of teaching						year 1			year 2			year 3			year 4											
								semester 1			semester 2			semester 3			semester 4			semester 5			semester 6			semester 7		
								L	O	E	L	O	E	L	O	E	L	O	E	L	O	E	L	O	E	L	O	E
No.	Module	Lang.	E/C	Total	L	O	Total ECTS	L	O	E	L	O	E	L	O	E	L	O	E	L	O	E	L	O	E			
1	Basics of management	PL	Z	45	30	15	3	30	15	3																		
2	Applied mathematics 1	PL	E	60	30	30	5	30	30	5																		
3	Chemistry 1	PL	E	60	30	30	5	30	30	5																		
4	Computer science and IT	PL	Z	60	30	30	4	30	30	4																		
5	Designing and engineering graphics	PL	Z	45	15	30	4	15	30	4																		
6	Programming languages	PL	Z	60	30	30	3	30	30	3																		
7	Technical drawing	PL	Z	45	15	30	4	15	30	4																		
8	Chemistry 2	PL	E	60	30	30	4				30	30	4															
9	Crystallography	PL	E	60	30	30	5				30	30	5															
10	Applied mathematics 2	PL	E	60	30	30	5				30	30	5															
11	Mathematical-physical basis of materials science	PL	Z	75	30	45	3				30	45	3															
12	Physics 1	PL	E	105	45	60	6				45	60	6															
13	Technical thermodynamics	PL	Z	45	30	15	3				30	15	3															
14	Basics of electronics and electrotechnics	PL	E	60	30	30	4							30	30	4												
15	Basics of materials science	PL	E	150	75	75	7							75	75	7												
16	Materials economics	PL	Z	45	30	15	4							30	15	4												
17	Materials electrochemistry	PL	E	60	30	30	4							30	30	4												
18	Materials testing methods 1	PL	E	75	30	45	4							30	45	4												
19	Physics 2	PL	E	75	30	45	5							30	45	5												
20	Ceramics	PL	E	60	30	30	4										30	30	4									
21	Composites	PL	Z	45	25	20	3										25	20	3									
22	Corrosion and corrosion protection	PL	Z	45	20	25	3										20	25	3									
23	Materials testing methods 2	PL	E	75	30	45	5										30	45	5									
24	Metals and alloys	PL	E	60	30	30	4										30	30	4									
25	Numerical methods and algorithms	PL	E	45	15	30	3										15	30	3									
26	Polymers	PL	E	60	30	30	3										30	30	3									
27	Selected marketing issues	PL	E	30	15	15	3										15	15	3									
28	Biomaterials	PL	E	45	30	15	3													30	15	3						
29	Databases on materials	PL	Z	60	30	30	4													30	30	4						
30	Materials for electronics and electrotechnics	PL	Z	45	25	20	3													25	20	3						
31	Materials technologies and processing	PL	E	150	75	75	9													75	75	9						

A										year 1			year 2			year 3			year 4														
										form of teaching			semester 1			semester 2			semester 3			semester 4			semester 5			semester 6			semester 7		
No.	Module	Lang.	E/C	Total	L	O	Total ECTS	L	O	E	L	O	E	L	O	E	L	O	E	L	O	E	L	O	E								
32	Mechanics and strength of materials	PL	E	75	45	30	3										45	30	3														
33	Object oriented programming and computer simulations	PL	E	60	30	30	4										30	30	4														
34	Diploma laboratory 1	PL	Z	30		30	3														30	3											
35	Diploma seminar 1	PL	Z	15		15	2														15	2											
36	Materials recycling	PL	Z	45	15	30	5														15	30	5										
37	Materials surface engineering	PL	E	45	30	15	3														30	15	3										
38	Nanomaterials and nanotechnologies	PL	E	60	30	30	4														30	30	4										
39	Principles of materials designing and selection	PL	E	60	30	30	5														30	30	5										
40	Specialised subject 1	PL	Z	30	30		2														30	2											
41	Diploma laboratory 2	PL	Z	60		60	5																60	5									
42	Diploma seminar 2	PL	Z	30		30	5																30	5									
43	Specialised subject 2	PL	Z	30	30		2																30	2									
TOTAL A:				2505	1195	1310	172	180	195	28	195	210	26	225	240	28	195	225	28	235	200	26	135	150	24	30	90	12					
B - INTERNSHIPS AND FIELD WORK										year 1			year 2			year 3			year 4														
										form of teaching			semester 1			semester 2			semester 3			semester 4			semester 5			semester 6			semester 7		
No.	Module	Lang.	E/C	Total	L	O	Total ECTS	L	O	E	L	O	E	L	O	E	L	O	E	L	O	E	L	O	E	L	O	E					
1	Professional training	PL	Z				6																										
TOTAL B - INTERNSHIPS AND FIELD WORK:				0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
C - OTHER REQUIREMENTS										year 1			year 2			year 3			year 4														
										form of teaching			semester 1			semester 2			semester 3			semester 4			semester 5			semester 6			semester 7		
No.	Module	Lang.	E/C	Total	L	O	Total ECTS	L	O	E	L	O	E	L	O	E	L	O	E	L	O	E	L	O	E	L	O	E					
1	Physical education	PL	Z	30		30	0		30																								
2	Physical education	PL	Z	30		30	0				30																						
3	Foreign language 1	PL	Z	30		30	2		30	2																							
4	Foreign language 2	PL	Z	30		30	2				30	2																					
5	Psychological aspects of working environment	PL	Z	30	15	15	2				15	15	2																				
6	Foreign language 3	PL	Z	30		30	2							30	2																		
7	Foreign language 4	PL	E	30		30	2								30	2																	
8	Humanist module	PL	Z	30	30		3													30		3											
9	Intellectual property protection	PL	Z	15	15		1													15		1											
10	Diploma thesis preparation	PL	Z				15																				15						
11	Social module	PL	Z	30	30		3																	30		3							
TOTAL C - OTHER REQUIREMENTS:				285	90	195	32	0	60	2	15	75	4	0	30	2	0	30	2	45	0	4	0	0	0	30	0	18					
TOTAL:				2790	1285	1505	210	435	30	495	30	495	30	450	30	480	30	285	30	150	30	150	30	150	30	150	30	30					
TOTAL										2790																							

The study ends with the awarding of an Engineer - Bachelor's Degree with engineering competencies in the field of Materials Science and Engineering: Materials Science.

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