STUDIA II LEVEL, MAGISTERSKIE (4 sem)

DIRECTION**: BIOTECHNOLOGY** **2018/2019**

Specialty**: Bioinformatics** (prof. A. Sokalski)

Sem.	complementary engineering	I	II	III
Godz.	26h/30 ECTS/2E	24h / 30 ECTS / 2E	24h / 30 ECTS / 2E	24h / 30 ECTS /1E
26	Electives I 2w(2 ECTS)			
25				
24	Chemical informatics 2l (2 ECTS)	Bioprocess project 2p (3ECTS)	Introduction to multimedia in biotechnology 1l (1 ECTS)	Economics and organization of industrial biotechnology 2w (3 ECTS)
23			Principles of business 2w (3 ECTS)	
22	Environment protection 2w (2 ECTS)	Theoretical chemistry **E** 2w+2l (4 +2) ECTS		Computational genomics **E** 1w+1l (1+1 ECTS)
21			Rational drug design 2w (3 ECTS)	
20	Introduction to materials science and engineering 2w (2 ECTS)			Genetic engineering in analytics and diagnostics 3l (2 ECTS)
19			Molecular modeling **E** 1w +2l + 1s (2 + 2 + 1) ECTS	
18	Technical safety 1w (3 ECTS)	Molecular dynamics 2w +2c (4 + 2) ECTS		
17	Technical drawing 2L (2 ECTS)			Philosophy of science and technology 1w (2 ECTS)
16				Mathematical methods in the experiment design and analysis 1w (1 ECTS)
15	Recycling of materials 2w (2 ECTS)		Instrumental drug analysis 1w + 2l (2 + 2) ECTS	Graduate laboratory II 14l (10 ECTS)
14		Networks and workstations with UNIX system 2l (2 ECTS)		
13	Biotechnology with introduction to industrial microbiology 2w + 1p (2 + 1 ECTS)			
12		Bioinformatics **E** 2w +2l (4 + 2) ECTS	Methodology of experimental research 2w (3 ECTS)	
11				
10	Fundamentals of chemical technology 2w +2p (2+2 ECTS) **E**		Bionanotechnology **E** 2w + 1s (3 + 1) ECTS	
9				
8		Applied informatics 4l (4 ECTS)		
7			Retrieval of scientific information 1l (1 ECTS)	
6	Measurements in chemical equipment 1w + 2l (2 + 2 ECTS)		Advanced programming and numerical methods 2l (2 ECTS)	
5				
4		Foreign language II 3c (2 ECTS)	Graduate laboratory I 4l (4 ECTS)	
3	Introduction to chemical engineering **E**			
2				
1	2w + 1c (2 + 2 ETCS)	Foreign language I 1c (1 ECTS)		Graduate seminar 1s (10 ECTS)
Sem.	complementary engineering	I	II	III

Allowable deficit of ECTS credits after each semester **15** credits

Electives I: CHC020054w Fundamentals of physical chemistry 2w 2ECTS,
BTC020013w Molecular biology 2w 2ECTS
TCC020024w Basic unit processes in chemical technology 2w 2ECTS