

**STUDIA II LEVEL, MAGISTERSKIE (4 sem)**  
**DIRECTION: CHEMICAL AND PROCESS ENGINEERING**  
**Specialty: APPLIED CHEMICAL ENGINEERING**  
 (Prof. A. Trusek-Hołownia)

**Electives II:**  
 Statistical thermodynamics in molecular modeling -  
 2w (2 ECTS)  
 Materials used in chemical unit operation  
 2w (2 ECTS)

Microwaves and other advanced thermal technologies in  
 chemical engineering - 2w (2 ECTS)  
 New concepts and solutions in chemical engineering  
 2w (2 ECTS)

Sem.	complementary engineering	I	II	III
Godz.	26h / 30 ECTS / 2E	23h / 30 ECTS / 3E	26h / 30 ECTS / 1E	23h / 30 ECTS / 1E
26	Electives I 2w(2 ECTS)		Principles of business 2w (3 ECTS)	
25				
24	Chemical informatics	Chemical nanoengineering 2w + 1s (3 + 1) ECTS	Multiphase systems in chemical processes 2w (2 ECTS)	Electives II 2w (2 ECTS)
23	2l (2 ECTS)			
22	Environment protection 2w (2 ECTS)	Modern methods of liquid separation 1w + 1s (2 + 2) ECTS	Biotechnology process engineering 1w + 2l (2 + 2) ECTS	Management of quality in chemical enterprise E 2w (3 ECTS)
21				
20	Introduction to materials science and engineering 2w (2 ECTS)	Software for simulation and design of chemical systems 2l (2 ECTS)	Project of chemical processes 2l (2 ECTS)	Economics of production processes 1w + 2l (1 + 2) ECTS
19				
18	Technical safety 1w (3 ECTS)	Projects in CAD 2l (3 ECTS)	Polymeric materials 2w + 2l (2 + 2) ECTS)	Philosophy of science and technology 1w (2 ECTS)
17	Technical drawing 2l (2 ECTS)			
16	Recycling of materials 2w (2 ECTS)	Process equipment 2w + 2l (3 + 2) ECTS	CFD - computer modeling of processes 1w + 2l (2 + 2) ECTS	Graduate laboratory II 14l (10 ECTS)
15				
14	Biotechnology with introduction to industrial microbiology	Transport phenomena in chemical processes E 2w (3 ECTS)	Computer simulations in designing materials for chemical processes 1w + 2l (2 + 2) ECTS	
13	2w + 1p (2 + 1 ECTS)			
12	Fundamentals of chemical technology E 2w + 2p (2+2 ECTS)	Renewable energy sources 1w + 1s (2 + 1) ECTS	Industrial waste management E 2w (2 ECTS)	
11				
10	Measurements in chemical equipment 1w + 2l (2 + 2 ECTS)	Mathematical and statistical methods in chemical engineering 1w + 2l (2 + 2) ECTS	Foreign language I 1c (1 ECTS)	
9				
8	Introduction to chemical engineering E 2w + 1c (2 + 2 ECTS)	Foreign language II 3c (2 ECTS)	Graduate laboratory I 4l (4 ECTS)	
7				
6				Graduate seminar - and thesis preparation 1s (10 ECTS)
5				
4				
3				
2				
1				
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**