


**KAPITAŁ LUDZKI**  
 NARODOWA STRATEGIA SPÓJNOŚCI

 Projekt współfinansowany przez  
 Unię Europejską w ramach  
 Europejskiego Funduszu  
 Społecznego

**UNIA EUROPEJSKA**  
 EUROPEJSKI  
 FUNDUSZ SPOŁECZNY


<b>Course title</b>		<b>ECTS code</b>	
Monographic lecture - Modern technologies in industry		13.3.1154	
<b>Name of unit administrating study</b>			
null			
<b>Studies</b>			
<b>faculty</b>	<b>field of study</b>	<b>type</b>	drugiego stopnia
Wydział Chemii	Chemia	<b>form</b>	stacjonarne
		<b>specjalty</b>	chemia biomedyczna, chemia i technologia środowiska, analityka i diagnostyka chemiczna, chemia obliczeniowa
		<b>specialization</b>	wszystkie
<b>Teaching staff</b>			
prof. dr hab. inż. Adriana Zaleska-Medynska; dr inż. Anna Gołąbiewska; dr inż. Aleksandra Pieczyńska; dr inż. Joanna Nadolna; dr inż. Paweł Mazierski; dr hab. inż. Ewelina Grabowska-Musiał; dr inż. Anna Malankowska			
<b>Forms of classes, the realization and number of hours</b>		<b>ECTS credits</b>	
<b>Forms of classes</b>		3	
Lecture		classes - 30 h	
<b>The realization of activities</b>		tutorial classes – 10 h	
classroom instruction		student's own work – 35 h	
<b>Number of hours</b>		Total: 75 h - 3 ECTS	
Lecture: 30 hours			
<b>The academic cycle</b>			
2023/2024 winter semester			
<b>Type of course</b>		<b>Language of instruction</b>	
obligatory		polish	
<b>Teaching methods</b>		<b>Form and method of assessment and basic criteria for evaluation or examination requirements</b>	
multimedia-based lecture		<b>Final evaluation</b>	
		Graded credit	
		<b>Assessment methods</b>	
		written exam: open questions (short written answer)	
		<b>The basic criteria for evaluation</b>	
		<ul style="list-style-type: none"> <li>positive mark from the written exam covering the issues listed in the program content of the lecture, the scale according to the UG Study Regulations</li> <li>oral exam - supplement of the written exam, but only for those students who obtained from the written test &gt; 40% of the points possible to receive</li> </ul>	
<b>Method of verifying required learning outcomes</b>			
<b>Required courses and introductory requirements</b>			
<b>A. Formal requirements</b>			
basics of general chemistry			
<b>B. Prerequisites</b>			
<b>Aims of education</b>			
Familiarize students with the issues listed in the program content of the lecture			
<b>Course contents</b>			
Subjects of the lecture:			
1. Pharmaceutical industry			
2. Production of pesticides (crop protection chemicals)			

3. Application of the stopped-flow technique in industry
4. Production of hydrogen, including biohydrogen
5. Hydrogen storage and transport
6. Gas separation techniques and porous materials for gas separation
7. Techniques of separation, conversion and storage of CO<sub>2</sub>
8. Production of photovoltaic cells
9. Production and recycling of lithium-ion batteries
10. New generation batteries
11. Paints and varnishes
12. Other protective layers
13. Glass production technologies
14. Porcelain production technologies
15. Wood and paper industry

### Bibliography of literature

Literature required to pass the course

Scientific publications / books on the discussed issues - a list updated and given during lectures

Extracurricular readings

Selected individually by the student depending on the selected issues

### The learning outcomes (for the field of study and specialization)

#### Knowledge

defines and presents modern technologies.  
describes, illustrates and explains functioning of modern technologies.  
characterizes the basic parameters of modern technologies work.  
uses the basic technological and chemical concepts describing the process of obtaining catalysts, radioactive isotopes, biohydrogen, photovoltaic cells, API and lithium-ion batteries.  
discusses the advantages and disadvantages of the production and use of energy from renewable sources.

#### Skills

In a clear way, both in speech and in writing, present correct technological reasoning

#### Social competence

understands the functioning of modern technologies  
understands the importance of further education  
is aware of the dangerous caused by degradation of the natural environment and understand the importance of the improving technology.  
Student demonstrates creativity in individual and teamwork and keeps open to the suggestions of the teacher and other team members.

### Contact

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