

<b>Course title</b> Prototypowanie z elementami projektowania procesów technologicznych/Prototyping and elements of technological process design		<b>ECTS code</b> 13.3.0438	
<b>Name of unit administrating study</b> Faculty of Chemistry			
<b>Studies</b>			
<b>Field of study</b>	<b>Type</b>	<b>Form</b>	
Chemistry	Master	Full-time studies	
Dr inż. Joanna Nadolna			
<b>Forms of classes, the realization and number of hours</b>		<b>ECTS credits</b> classes 30 h Tutorial classes 5 h Student's own work 15 h TOTAL: 50 h - 2 ECTS	
<b>A. Forms of classes, in accordance with the UG Rector's regulations</b> Lecture, laboratory classes			
<b>B. The realization of activities</b> In-class learning			
<b>Number of hours</b> lecture 15 h, laboratory classes 15 h			
<b>The academic cycle</b> 2020/2021 winter semester			
<b>Type of course</b> obligatory		<b>Language of instruction</b> Polish	
<b>Teaching methods</b> <ul style="list-style-type: none"><li>• Laboratory experiments</li><li>• Lectures including multimodal presentations</li></ul>		<b>Form and method of assessment and basic criteria for evaluation or examination requirements</b>	
		<b>A. Final evaluation, in accordance with the UG study regulations</b> Course completion (with a grade)	
		<b>B. Assessment methods</b> <ul style="list-style-type: none"><li>• Written test with open questions, project,</li><li>• Determining the final grade based on partial grades received during the semester.</li></ul>	
		<b>C. The basic criteria for evaluation or exam requirements</b> <b>Lectures:</b> <ul style="list-style-type: none"><li>• multimedia presentation prepared by students,</li><li>• positive assessment of project individually prepared by student,</li><li>• positive assessment from written test including the topics mentioned in the program contents of the auditorium classes, the scale according to UG study regulations.</li></ul> <b>Laboratories:</b> <ul style="list-style-type: none"><li>• attendance at laboratory classes,</li><li>• performing experiments according to instructions,</li><li>• positive assessment of reports prepared by student, the scale according to UG study regulations.</li></ul>	
<b>Required courses and introductory requirements</b> Basics of general chemistry, basic knowledge of inorganic and organic chemistry			
<b>Aims of education</b> <ul style="list-style-type: none"><li>• To improve knowledge regarding all issues listed in the course content,</li><li>• To improve knowledge regarding issues in the field of intellectual property,</li><li>• To improve knowledge regarding method of writing a patent application, including patent claims,</li><li>• To improve practical skills regarding the idea of design thinking,</li><li>• To improve practical skills regarding the way of presentation of ideas (elevator pitch),</li></ul>			

- To improve knowledge regarding elements of technology design.

### Course contents

- patents and licenses (method of preparing patent claims, patent search, patent purity, preparation of applications in Poland and in the world),
- design thinking,
- prototyping and creative problem solving,
- team work, team management,
- elements of technology design (choice of chemical and technological concept),
- assessment of technology maturity,
- presenting ideas (elevator pitch).

### Bibliography of literature

#### Literature required to pass the course

- Literature used during classes,
- Patent descriptions of selected technologies. Patent descriptions will be taken from the site:  
<http://www.freepatentsonline.com/>.

### Knowledge

The student:

1. identifies and recognizes market needs,
2. describes the commercialization plan,
3. classifying of operation units,
4. characterizes the technological process,
5. classifies the patentability of products / technologies.

### Skills

The student:

1. works in groups,
2. prepares patent claims,
3. presents ideas briefly and simply,
4. solves problems creatively,
5. analyzes the state of knowledge in the field of selected technologies,
6. assesses the maturity of technology,
7. characterizes users of the product or technology,
8. designs prototypes,
9. plans experiments on a laboratory scale,
10. chooses chemical and technological concept correctly.

### Social competence

The student:

1. understands the need for group work,
2. understands the need for systematic reading of the latest chemical literature (patent and articles from scientific and popular science journals),
3. understands the need to become familiar with the needs of the modern market and the customer,
4. understands the need to deepen interdisciplinary knowledge,
5. understands the need for effective self-presentation,

6. demonstrates responsibility for timely implementation of tasks understands the need for continuous education in the latest technologies in the field of chemistry, biochemistry and biotechnology.