


**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>	
Designing with elements of rapid 3D prototyping		13.3.1216	
<b>Name of unit administrating study</b>			
null			
<b>Studies</b>			
<b>faculty</b>	<b>field of study</b>	<b>type</b>	second tier studies (MA)
Faculty of Chemistry	Chemical Business	<b>form</b>	full-time
		<b>specialty</b>	all
		<b>specialization</b>	all
Faculty of Chemistry	Chemistry	<b>type</b>	second tier studies (MA)
		<b>form</b>	full-time
		<b>specialty</b>	all
Faculty of Chemistry	Environmental Protection	<b>specialization</b>	all
		<b>type</b>	second tier studies (MA)
		<b>form</b>	full-time
		<b>specialty</b>	all
		<b>specialization</b>	all
<b>Teaching staff</b>			
dr inż. Paweł Mazierski			
<b>Forms of classes, the realization and number of hours</b>		<b>ECTS credits</b>	
<b>Forms of classes</b>		4 classes - 30 h tutorial classes - 30 h student's own work - 40 h TOTAL: 100 h - 4 ECTS	
Laboratory classes			
<b>The realization of activities</b>			
classroom instruction			
<b>Number of hours</b>			
Laboratory classes: 30 hours			
<b>The academic cycle</b>			
2023/2024 winter semester			
<b>Type of course</b>		<b>Language of instruction</b>	
an elective course		english	
<b>Teaching methods</b>		<b>Form and method of assessment and basic criteria for evaluation or examination requirements</b>	
<ul style="list-style-type: none"> <li>- critical incident (case) analysis</li> <li>- designing experiments</li> <li>- discussion</li> <li>- group work</li> </ul>		<b>Final evaluation</b>	
		Graded credit	
		<b>Assessment methods</b>	
		assignment work – project or presentation	
		<b>The basic criteria for evaluation</b>	
		Performance of specific practical work (project) and presentation of the project, positive note from all parts of a project. Assessment criteria in accordance with the University of Gdansk Study Regulations.	
<b>Method of verifying required learning outcomes</b>			
<b>Required courses and introductory requirements</b>			
<b>A. Formal requirements</b>			
lack			
<b>B. Prerequisites</b>			
lack			
<b>Aims of education</b>			
Designing with elements of rapid 3D prototyping. The course aims to provide the fundamental knowledge of the design, prototyping and fabrication of			

chemical apparatus using 3D printing technology.	
<b>Course contents</b>	
The student will get acquainted with the necessary steps to finalize a product, which helps in realization of a conceptual design. The student will learn all the steps to be taken from the idea to its finalization as well as the software for creating 3D models. Finally, the course includes the production of small laboratory equipment using a 3D printer.	
<b>Bibliography of literature</b>	
Literature required to pass the course Kamrani, Ali K.; Nasr, Emad Abouel - Rapid Prototyping – theory and practice Extracurricular readings Bhowmik, Sumit - Modeling and Optimization of Advanced Manufacturing Processes	
<b>The learning outcomes (for the field of study and specialization)</b>	<b>Knowledge</b>
	<b>Skills</b>
	<b>Social competence</b>
Chemical Business: K_BChII_W02 knows and understands the axiological conditions regarding the use of modern techniques and measuring instruments as well as IT tools in chemistry, taking into account economic aspects K_BChII_W08 knows and understands basic principles of creation, operation and development of various forms of entrepreneurship, with particular emphasis on the chemical industry K_BChII_U04 is able to independently plan and perform specific research tasks in the field or in the laboratory, interpret their results working individually or in a team, assuming various roles and functions in it K_BChII_U08 is able to define his/her interests and develop them within the selected subject of the master's thesis, while implementing the process of self-education and planning his/her future career K_BChII_K03 is willing to critically assess the level of his/her own knowledge in the light of the achievements of the studied scientific discipline K_BChII_K04 is willing to properly assess the acquired knowledge, respect it and disseminate it in order to solve specific cognitive and practical issues Chemistry: K_W05 has extended knowledge in the field of the specialization studied K_W10 uses knowledge of the principles of operation of the scientific and research apparatus used in chemistry K_U03 finds necessary information in specialist literature, databases and other sources, lists basic scientific journals in chemistry K_U09 has deepened ability to prepare various forms of oral presentations on chemistry in Polish and English K_K01 knows the limitations of her/his own knowledge; understands the need for further education and can inspire other people to do so K_K03 understands the need for systematic work on various projects of a long-term nature and knows how to set priorities for the implementation of undertaken tasks K_K06 undertakes research tasks consciously and responsibly, understanding the social aspects of the practical application of the acquired knowledge and skills and the responsibility related to it Environmental Protection: K_OŚII_W04 chooses methods, techniques and research tools used in environmental protection K_OŚII_W09 applies safety and hygiene principles when	knows the rules of technical drawing knows the engineering software for design and 3D modeling lists the components of a 3D printer is able to work in the concept design system
	uses engineering terminology, uses engineering software for 3D modeling, prepares technical documentation, analyzes the 3D models in terms of the possibility of producing designed objects
	Students: understand need for learning, inspire other for learning; cooperate in group, taking different roles; exhibit creativity in determination of priorities necessary for realization of different tasks; understand social aspects of practical use of knowledge and abilities as well as connected with them responsibility.

<p>working independently on a test or measurement stand in a laboratory or in the field</p> <p>K_OŚII_U07 has advanced skills in presenting the results of their own research, discussions based on literature data and public speaking, including leading a debate</p> <p>K_OŚII_K02 recognizes threats, creates safe work conditions and is responsible for the safety of own and other people's work</p> <p>K_OŚII_K05 critically assesses her/his own knowledge and the knowledge of the teams in which s/he works, can critically assess the content received</p> <p>K_OŚII_K07 is willing to undertake individual and team activity; to professionally plan and organize its course and set priorities for their actions</p>	
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