


KAPITAŁ LUDZKI
 NARODOWA STRATEGIA SPÓJNOŚCI

 Projekt współfinansowany przez
 Unię Europejską w ramach
 Europejskiego Funduszu
 Społecznego

UNIA EUROPEJSKA
 EUROPEJSKI
 FUNDUSZ SPOŁECZNY


Course title		ECTS code	
Designing with elements of rapid 3D prototyping		13.3.1216	
Name of unit administrating study			
null			
Studies			
faculty	field of study	type	second tier studies (MA)
Faculty of Chemistry	Chemical Business	form	full-time
		specialty	all
		specialization	all
Faculty of Chemistry	Chemistry	type	second tier studies (MA)
		form	full-time
		specialty	all
Faculty of Chemistry	Environmental Protection	specialization	all
		type	second tier studies (MA)
		form	full-time
		specialty	all
		specialization	all
Teaching staff			
dr inż. Paweł Mazierski			
Forms of classes, the realization and number of hours		ECTS credits	
Forms of classes		4 classes - 30 h tutorial classes - 30 h student's own work - 40 h TOTAL: 100 h - 4 ECTS	
Laboratory classes			
The realization of activities			
lectures in the classroom			
Number of hours			
Laboratory classes: 30 hours			
The academic cycle			
2022/2023 winter semester			
Type of course		Language of instruction	
an elective course		english	
Teaching methods		Form and method of assessment and basic criteria for evaluation or examination requirements	
With the use of the multimedia presentation on the conceptual design, the use of a software for 3D modeling (15 h) and work in the prototype room - production of small laboratory equipment using a 3D printer (15 h).		Final evaluation	
		Graded credit	
		Assessment methods	
		Assessment of the implementation of the final project	
		The basic criteria for evaluation	
		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.	
Method of verifying required learning outcomes			

<p>Business Chemistry: The method of verifying the acquisition of knowledge: Assessment of correctness of answers to questions covering subject issues (K_BChII_W02, K_BChII_W08). Assessment of the correct use of engineering terminology, the correctness of creating 3D models. Assessment of the ability to indicate tools included in the software, with the help of which the student is able to achieve the assumed goal (K_BChII_U04, K_BChII_U08). Assessment of the independence of looking for a path as soon as possible and the least energy-consuming solution of an engineering task, independence in planning the sequence of execution of individual elements of the project. Assessment of the ability to cooperate with other group members during the implementation of group tasks. Assessment of the student's compliance with the rules of work at a computer station (K_BChII_K03, K_BChII_K04).</p> <p>Chemistry: The method of verifying the acquisition of knowledge: Assessment of correctness of answers to questions covering subject issues (K_W05, K_W10). Assessment of the correct use of engineering terminology, the correctness of creating 3D models. Assessment of the ability to indicate tools included in the software, with the help of which the student is able to achieve the assumed goal (K_U03, K_U09). Assessment of the independence of looking for a path as soon as possible and the least energy-consuming solution of an engineering task, independence in planning the sequence of execution of individual elements of the project. Assessment of the ability to cooperate with other group members during the implementation of group tasks. Assessment of the student's compliance with the rules of work at a computer station (K_K01, K_K03, K_K06).</p> <p>Environmental Protection: The method of verifying the acquisition of knowledge: Assessment of correctness of answers to questions covering subject issues (K_OŚII_W04, K_OŚII_W09). Assessment of the correct use of engineering terminology, the correctness of creating 3D models. Assessment of the ability to indicate tools included in the software, with the help of which the student is able to achieve the assumed goal (K_OŚII_U07). Assessment of the independence of looking for a path as soon as possible and the least energy-consuming solution of an engineering task, independence in planning the sequence of execution of individual elements of the project. Assessment of the ability to cooperate with other group members during the implementation of group tasks. Assessment of the student's compliance with the rules of work at a computer station (K_OŚII_K02, K_OŚII_K05, K_OŚII_K07).</p>	
<p>Required courses and introductory requirements</p> <p>A. Formal requirements lack</p> <p>B. Prerequisites lack</p>	
<p>Aims of education</p> <p>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.</p>	
<p>Course contents</p> <p>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.</p>	
<p>Bibliography of literature</p> <p>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</p>	
<p>The learning outcomes (for the field of study and specialization)</p> <p>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,</p>	<p>Knowledge</p> <p>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</p> <p>Skills</p> <p>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</p> <p>Social competence</p> <p>Students: understand need for learning, inspire other for learning; cooperate in group, taking different roles; exhibit creativity in determination of priorities necessary</p>

<p>interpret their results working individually or in a team, assuming various roles and functions in it</p> <p>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</p> <p>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</p> <p>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</p> <p>Chemistry:</p> <p>K_W05 has extended knowledge in the field of the specialization studied</p> <p>K_W10 uses knowledge of the principles of operation of the scientific and research apparatus used in chemistry</p> <p>K_U03 finds necessary information in specialist literature, databases and other sources, lists basic scientific journals in chemistry</p> <p>K_U09 has deepened ability to prepare various forms of oral presentations on chemistry in Polish and English</p> <p>K_K01 knows the limitations of her/his own knowledge; understands the need for further education and can inspire other people to do so</p> <p>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</p> <p>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</p> <p>Environmental Protection:</p> <p>K_OŚII_W04 chooses methods, techniques and research tools used in environmental protection</p> <p>K_OŚII_W09 applies safety and hygiene principles when 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>	<p>for realization of different tasks; understand social aspects of practical use of knowledge and abilities as well as connected with them responsibility.</p>
<p>Contact</p> <p>pawel.mazierski@o2.pl</p>	