

<b>Course title</b> Produkcja – proces, kontrola i zapewnienie jakości / Manufacturing – process, quality control and assurance		<b>ECTS code</b> 13.3.0744	
<b>Name of unit administrating study</b> Faculty of Chemistry			
<b>Studies</b>			
<b>Field of study</b>	<b>Type</b>	<b>Form</b>	
Chemical Business	Bachelor / Engineer	Full-time studies	
<b>Teaching staff</b> Prof. dr hab. Marek Kwiatkowski			
<b>Forms of classes, the realization and number of hours</b>		<b>ECTS credits</b> 1	
<b>A. Forms of classes, in accordance with the UG Rector's regulations</b> lecture		classes - 15 h tutorial classes – 3 h student's own work – 7 h	
<b>B. The realization of activities</b> in-class learning		Total: 25 h - 1 ECTS	
<b>C. Number of hours</b> 15 h lecture			
<b>The academic cycle</b> Third year, summer semester			
<b>Type of course</b> obligatory		<b>Language of instruction</b> Polish	
<b>Teaching methods</b> Lecture illustrated with PowerPoint presentation		<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> Final multiple choice test.	
		<b>D. The basic criteria for evaluation or exam requirements</b> More than 50% correct answers in the test. Scoring scale in accordance with the Rules of Study, University of Gdańsk	
<b>Required courses and introductory requirements</b> Basic knowledge of chemical technology and microeconomics.			
<b>Aims of education</b> Getting the students familiar with the most important issues specific for manufacturing in chemical industry.			
<b>Course contents</b> Manufacturing of chemicals economics. Main sectors of chemical industry. Continuous vs. batch processes. Energy management. Handling of mass streams. Organization of production process. In-process monitoring and quality control of the products. Importance of R&D, implementing new products. Environmental issues and risks related to chemical manufacturing. Concepts of sustainable development, green chemistry and lean production. Industrial quality assurance systems.			
<b>Bibliography of literature</b>			
<b>A. Literature required to pass the course</b> Lichniak I. (red.), Nauka o przedsiębiorstwie, Oficyna Wydawnicza SGH, Warszawa 2009. Schmidt-Szałowski K., Sentek J. "Podstawy technologii chemicznej. Organizacja procesów produkcyjnych", Oficyna Wydawnicza PW, Warszawa 2001. Synoradzki L., Wisiański J. "Projektowanie procesów technologicznych. Od laboratorium do instalacji przemysłowej", Oficyna Wydawnicza PW, Warszawa 2006.			
<b>B. Extracurricular readings</b>			



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Gornowicz M., Romaniuk K., Szczubełek G., "Ekonomika produkcji", EXPOL, Olsztyn 2014,  
<http://www.uwm.edu.pl/pro-edu/upload/file/podreczniki/Zad.2/Ekonomika%20produkcji.pdf>  
J. Szarawara, J. Piotrowski, Podstawy teoretyczne technologii chemicznej, WNT, Warszawa 2010

**Knowledge**

Student comprehensively describes technical and organizational aspects of chemical manufacturing process, quality control and quality assurance; reflects on the environmental impact of chemical industry; discusses the issues related to implementing innovations in chemical production.

**Skills**

Student solves specific problems concerning organization of the chemical manufacturing, uses professional terminology.

**Social competence**

Student prepares herself for final test based on the course content and literature available.