

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Process chromatography</b>		Code <b>1010702221010722971</b>
Field of study <b>Chemical Technology</b>	Profile of study (general academic, practical) <b>(brak)</b>	Year /Semester <b>1 / 2</b>
Elective path/specialty <b>Organic Technology</b>	Subject offered in: <b>Polish</b>	Course (compulsory, elective) <b>obligatory</b>
Cycle of study: <b>Second-cycle studies</b>	Form of study (full-time, part-time) <b>full-time</b>	
No. of hours Lecture: <b>1</b> Classes: <b>-</b> Laboratory: <b>-</b> Project/seminars: <b>-</b>		No. of credits <b>2</b>
Status of the course in the study program (Basic, major, other) <b>(brak)</b>		(university-wide, from another field) <b>(brak)</b>
Education areas and fields of science and art		ECTS distribution (number and %)
<b>Responsible for subject / lecturer:</b>  prof. dr hab. inż. Adam Voelkel email: Adam.Voelkel@put.poznan.pl tel. (61) 665 3687 Wydział Technologii Chemicznej ul. Piotrowo 3 60-965 Poznań		
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	Basic physical, inorganic, organic and analytical chemistry on academic level; knowledge of mathematical tools used in chemical calculations
2	<b>Skills</b>	Can use basic laboratory techniques of separation and cleaning chemical compounds
3	<b>Social competencies</b>	Understands the need to supplement her/his education and increasing personal and professional competences
<b>Assumptions and objectives of the course:</b> Presentation of process applications of chromatographic techniques. Newest achievements and tendencies in process design. Basic of process chromatography dedicated to separation of biologically active substances.		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b> 1. knowledge in the field of techniques, methods connected with the application of techniques in process chromatography - [K_W03, K_W11] 2. can describe methods, techniques, tools and materials used for the solution of simple problems connected with process chromatography - [K_W07, K_W13]		
<b>Skills:</b> 1. Student can select the proper technique for process chromatography - [K_U01, K_U08, K_U09, K_U14] 2. Student can discuss chromatographic problems in English - [K_U05, K_U06]		
<b>Social competencies:</b> 1. Student understands the need to supplement her/his education and increasing professional competences - [K_K01] 2. Student has the awareness to obey the engineer ethic rules - [K_K03, K_K05] 3. Student can act and cooperate in the group accepting different roles - [K_K04]		
<b>Assessment methods of study outcomes</b>		
written control work.		
<b>Course description</b>		

<p>Combined techniques on process chromatography. Sample derivatization for chromatographic analysis. Miniaturization in process gas chromatography. Process applications of chromatography as a tool of separation of biologically active substances. Engineering of chromatographic installation. Modeling of chromatographic processes. Chromatography in biochemical industry.</p>		
<p><b>Basic bibliography:</b></p> <p>1. Chromatografia procesowa, K. Kadlec, A. Voelkel, WPP, Poznań, 2011</p> <p>2. Zastosowanie metod chromatograficznych, K. Bielicka-Daszkiwicz, K. Milczewska, A. Voelkel, Wyd. PP, Poznań, 2005, 2010.</p>		
<p><b>Additional bibliography:</b></p> <p>1. L. Mondello, Comprehensive Chromatography in Combination with Mass Spectrometry, Wiley, Singapur, 2011</p>		
<p><b>Result of average student's workload</b></p>		
<p><b>Activity</b></p>	<p><b>Time (working hours)</b></p>	
1. lecture	15	
2. lecture consultations	2	
3. credit preparation	10	
4. credit	2	
<p><b>Student's workload</b></p>		
<p><b>Source of workload</b></p>	<p><b>hours</b></p>	<p><b>ECTS</b></p>
Total workload	29	2
Contact hours	17	2
Practical activities	0	0