

Faculty of Chemistry					
SUBJECT CARD					
Name of subject in Polish	Instrumentalna analiza leków				
Name of subject in English	Instrumental Drug Analysis				
Main field of study (if applicable):	Biotechnology, Chemistry				
Specialization (if applicable):	Bioinformatics, Medicinal Chemistry				
Profile:	academic				
Level and form of studies:	2nd level, full-time				
Kind of subject:	obligatory				
Subject code					
Group of courses	no				
	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU)	15		30		
Number of hours of total student workload (CNPS)	60		60		
Form of crediting	crediting with grade		crediting with grade		
For group of courses mark (X) final course					
Number of ECTS points	2		2		
including number of ECTS points for practical (P) classes			2		
including number of ECTS points for direct teacher-student contact (BU) classes	0.65		1,4		
PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES					
1. General knowledge about fundamentals in analytical chemistry					
SUBJECT OBJECTIVES					
C1 Getting to know experimental procedures used in basic instrumental techniques for drug analysis					
C2 Getting to know methods of sampling					
C3 Learning how to perform basic calculations of analyze results of analyzes carried out					
SUBJECT LEARNING OUTCOMES					
relating to knowledge:					
PEK_W01 knows methods for analyses of drugs					
relating to skills:					
PEK_U01 knows what methods and tools can be used for practical evaluation of drug					
relating to social competences:					
PEK_K01 can collaborate within the group					
PROGRAMME CONTENT					
Lectures				Number of hours	
Lec 1	Introduction to the drug analysis - basic definitions and concepts, steps of the sample preparation and the analysis of active substances				2
Lec 2	Parameters characterizing instrumental methods of the analysis, analytical chains, validation of methods and procedures				2
Lec 3	Overview the spectroscopic methods used in the drug analysis				2
Lec 4	Overview on electrophoresis and chromatography				2
Lec 5	Overview of methods used for sample pre-concentration (SPE, membrane)				2
Lec 6	Overview on methods for analysis of suspended forms of drug				2

Lec 7	Overview of methods used in rheology	2
Lec 8	Examination	1
	Total hours	15
Laboratory		Number of hours
Lab 1	Introduction to the laboratory rules	2
Lab 2	Analysis of amino-acids containing drugs	4
Lab 3	Wettability properties of polymeric adhesives	4
Lab 4	Membrane and SPE systems for pre-concentration of analytes	4
Lab 5	System rheology – viscosity vs. shear rate relationship	4
Lab 6	Analysis of drug suspension	4
Lab 7	Analysis of drug delivery systems	4
Lab 8	Additional laboratory (rescue lab)	4
	Total hours	30
TEACHING TOOLS USED		
N1. Informative lectures N2. Preparation of reports N3. Consultations		
EVALUATION OF SUBJECT LEARNING OUTCOMES ACHIEVEMENT		
Evaluation (F – forming (during semester), P – concluding (at semester end))	Educational effect number	Way of evaluating educational effect achievement
F1	PEK_U01	Average of marks of reports
P	PEK_W01	examination
PRIMARY AND SECONDARY LITERATURE		
<u>PRIMARY LITERATURE:</u>		
[1]. A. Kar, Pharmaceutical Drug Analysis, New Age International (P) Ltd. Publishers, New Delhi, 2005		
[2] D. G. Watson, Pharmaceutical Analysis, Churchill Livingstone, Edinburgh, 1999		
[3] S. AHUJA, Stephen SCYPINSKI, Handbook of Modern Pharmaceutical Analysis, Academic Press, San Diego, 2000		
<u>SECONDARY LITERATURE:</u>		
[1] R. Kellner, J.-M. Mermet, M. Otto, H. M. Widmer (editors), Analytical Chemistry, Wiley-VCH, Weinheim, 1998		
[2] Skoog D.A., West D.M., Holler F.J. (1996). Fundamentals of Analytical Chemistry, Saunders College Publishing		
SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)		
Prof. Marek Bryjak (marek.bryjak@pwr.edu.pl) Dr. Piotr Cyganowski (piotr.cyganowski@pwr.edu.pl)		