

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Electroplating and Electrofinishing		Code 1010702211010710025
Field of study Chemical Technology	Profile of study (general academic, practical) (brak)	Year /Semester 1 / 1
Elective path/specialty Industrial Electrochemistry	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: Second-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 2 Classes: - Laboratory: 5 Project/seminars: -		No. of credits 6
Status of the course in the study program (Basic, major, other) (brak)		(university-wide, from another field) (brak)
Education areas and fields of science and art		ECTS distribution (number and %)
Responsible for subject / lecturer: Ph.D., D.Sc. Tadeusz Leczykiewicz Faculty of Chemical Technology email: tadeusz.leczykiewicz@put.poznan.pl tel. 61 665 2153 Faculty of Chemical Technology Piotrowo 3, 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Student has a basic knowledge of physical chemistry, inorganic chemistry and electrochemistry. Student knows the mathematical tools used in the chemical calculation.
2	Skills	Student uses basic laboratory techniques. Student has the ability to present research results in the form of a report .
3	Social competencies	Student understands the need for further education and improving the personal competences.
Assumptions and objectives of the course: The aim of the course is to focus the student on the management and supervising of advanced electroplating technologies. Students gain knowledge of current trends in metal plating technology, economic aspects of the processes as well as the current legal regulations in the field of electroplating in the European Union.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Student has knowledge of the plating processes, including choice of materials, methods, techniques, apparatus and equipment for electrochemical processes and methods for estimating properties of obtained coatings - [[K_W03, K_W07, K_W12]]		
2. Student has knowledge of basic legal aspects and methods of utilization the electroplating wastes - [[K_W03, K_W08]]		
Skills:		
1. The student has the ability to design and control the processes of galvanic deposition, is able to select a suitable coating and deposition technique to the substrate - [[K_U05, K_U13, K_U15, K_U22]]		
2. . The student has the ability to use electrochemical apparatus (galvano-potentiostat) used in electroplating processes - [[K_U05, K_U09]]		
3. Student is able to critically evaluate the obtained results, presents them in the form of a report and defines further studies - [[K-U06, K-U21]]		
Social competencies:		
1. Student understands the need for further education and improving the personal competences - [[K_K01]]		
2. Student is aware of the principles of engineering ethics - [[K_K03, K_K05]]		
3. Student has an awareness of the need to protect the environment - [[K_K02]]		

Assessment methods of study outcomes		
1. Current control of knowledge and skill during laboratory exercises. 2. Evaluation of oral answers in the field of laboratory exercises. 3. A written final exam.		
Course description		
The basic topics connected with deposition of metals and alloys such as: surface preparation, production of conversion coatings, chemical composition of baths for metal deposition and oxide coatings, galvanic waste utilization, quality control of coatings, basic and advanced galvanizing equipment. The legal aspects connected with electroplating operations.		
Basic bibliography:		
1. Poradnik galwanotechnika, praca zbiorowa, WNT Warszawa 2002. 2. A. Ciszewski, Podstawy inżynierii elektrochemicznej, PP Poznań 2004. 3. M. Schlesinger, M. Paunovic, Modern Electroplating, Fourth Edition Wiley 2000. M. Schlesinger, M. Paunovic, Modern Electroplating, Fourth Edition Wiley 2000.		
Additional bibliography:		
1. N. Kanani, Electroplating. Basic principles, processes and practice Elsevier 2004.		
Result of average student's workload		
Activity	Time (working hours)	
1. Lecture	30	
2. Consultation to the lecture	4	
3. Consultation to the laboratory	6	
4. Preparation to the laboratory	10	
5. Laboratory	75	
6. Exam preparation	8	
7. Exam	2	
Student's workload		
Source of workload	hours	ECTS
Total workload	135	6
Contact hours	117	0
Practical activities	75	0