

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Electroplating and Electrofinishing</b>		Code <b>1010702211010700025</b>
Field of study <b>Chemical Technology</b>	Profile of study (general academic, practical) <b>general academic</b>	Year /Semester <b>1 / 1</b>
Elective path/specialty <b>Industrial Electrochemistry</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>30</b> Classes: <b>-</b> Laboratory: <b>75</b> Project/seminars: <b>-</b>		No. of credits <b>6</b>
Status of the course in the study program (Basic, major, other) <b>other</b>		(university-wide, from another field) <b>university-wide</b>
Education areas and fields of science and art <b>technical sciences</b> <b>Technical sciences</b>		ECTS distribution (number and %) <b>6 100%</b> <b>6 100%</b>
<b>Responsible for subject / lecturer:</b>  dr Tadeusz Leczykiewicz email: tadeusz.leczykiewicz@put.poznan.pl tel. 61 665 2153 Wydział Technologii Chemicznej ul. Berdychowo 4 60-965 Poznań		
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	Student has a basic knowledge of physical chemistry, inorganic chemistry and electrochemistry. Student knows the mathematical tools used in the chemical calculation.
2	<b>Skills</b>	Student uses basic laboratory techniques. Student has the ability to present research results in the form of a report .
3	<b>Social competencies</b>	Student understands the need for further education and improving the personal competences.
<b>Assumptions and objectives of the course:</b> 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.		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b>		
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]		
<b>Skills:</b>		
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]		
<b>Social competencies:</b>		
1. Student understands the need for further education and improving the personal competences - [K_K01]		
2. Student is aware of the principles of engineering - [K_K03, K_K05]		
3. Student has an awareness of the need to protect the environment - [K_K02]		

<b>Assessment methods of study outcomes</b>		
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.		
<b>Course description</b>		
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.		
<b>Basic bibliography:</b>		
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.		
<b>Additional bibliography:</b>		
1. N. Kanani Electroplating. Basic principles, processes and practice Elsevier 2004.		
<b>Result of average student's workload</b>		
<b>Activity</b>	<b>Time (working hours)</b>	
1. Lecture	30	
2. Consultation to the lecture	5	
3. Consultation to the laboratory	20	
4. Preparation to the laboratory	10	
5. Laboratory	75	
6. Exam preparation	8	
7. Exam	2	
<b>Student's workload</b>		
<b>Source of workload</b>	<b>hours</b>	<b>ECTS</b>
Total workload	150	6
Contact hours	130	0
Practical activities	75	0