

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Fundamentals of Electrochemical Technology</b>		Code
Field of study <b>Environmental Protection Technologies</b>	Profile of study (general academic, practical) <b>general academic</b>	Year /Semester <b>3/6</b>
Elective path/specialty	Subject offered in: <b>Polish</b>	Course (compulsory, elective) <b>obligatory</b>
Cycle of study: <b>first-cycle studies</b>	Form of study (full-time, part-time) <b>full-time</b>	
No. of hours Lecture: <b>2</b> Classes: <b>-</b> Laboratory: <b>2</b> Project/seminars: <b>-</b>		No. of credits <b>5</b>
Status of the course in the study program (Basic, major, other) <b>Basic</b>		(university-wide, from another field) <b>University-wide</b>
Education areas and fields of science and art <b>Technical science</b>		ECTS distribution (number and %) <b>5 100 %</b>
<b>Responsible for subject / lecturer:</b>  <b>Dr hab. Piotr Krawczyk</b> piotr.krawczyk@put.poznan.pl; tel. 616653655 Wydział Technologii Chemicznej ul. Berdychowo 4, 60-965 Poznań		
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	Ordered knowledge of mathematics and physical chemistry.
2	<b>Skills</b>	Ability to use the basic techniques in a laboratory scale.
3	<b>Social competencies</b>	The need for further education and enhance of professional and personal competences.
<b>Assumptions and objectives of the course:</b> The aim of the course is to familiarize students with an overview of technical electrochemistry methods and develop skills for their practical application.		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b>		
1. The knowledge in the field of basics of electrochemical processes –[ K_W13], 2. The knowledge in the field of various electrochemical technologies–[K_W16], 3. The knowledge in the field of related fields –[K_W12].		
<b>Skills:</b>		
1. The student has the ability to selection of measurement techniques –[K_U04, K_U12], 2. The student has the ability to use specialized vocabulary in English –[K_U01].		
<b>Social competencies:</b>		
1. The student understands the need for self-study and improvement of their professional competence –[K_K01], 2. Student can act and cooperate in the group accepting different roles –[K_K03].		
<b>Assessment methods of study outcomes</b>		
Laboratory assessment on the basis of the current work during the laboratory and the written tests.  The written exam. Oral exam with the participation of examiner.		
<b>Course description</b>		

<ol style="list-style-type: none"> <li>1. The principles of electrochemical processes.</li> <li>2. Electrodes balances.</li> <li>3. The kinetics of electrode processes.</li> <li>4. The selected electrochemical processes.</li> <li>5. The processes based on the electrochemical processes.</li> </ol>		
<b>Basic bibliography:</b> <ol style="list-style-type: none"> <li>1. A. Kiszka – Elektrochemia cz. I i II (Jonika i Elektrodyka) WNT, W-wa, 2001,</li> <li>2. R. Dylewski, W. Gniot, M. Gonet, Elektrochemia przemysłowa, Wyd. Politechniki Śląskiej, 1999,</li> <li>3. A. Czerwiński, "Ogniwa, akumulatory, baterie", WNT, W-wa, 1999.</li> </ol>		
<b>Additional bibliography:</b> <ol style="list-style-type: none"> <li>1. A.V. da Rosa, „Fundamentals of Renewable Energy Processes” Elsevier/Academic Press, 1990,</li> <li>2. H. Scholl, T. Błaszczak, P. Krzyczmonik, Elektrochemia, Wyd. Uniwersytetu Łódzkiego, 1998.</li> </ol>		
<b>Result of average student's workload</b>		
<b>Activity</b>	<b>Time (working hours)</b>	
1. lecture	30	
2. consultation to the lecture	6	
3. consultation to the laboratory	6	
4. preparation for the laboratory	8	
5. laboratory	30	
6. preparation for the laboratory credit	20	
7. laboratory credit	4	
<b>Student's workload</b>		
<b>Source of workload</b>	<b>hours</b>	<b>ECTS</b>
Total workload	104	5
Contact hours	76	3
Practical activities	28	2