

Subject Description Form

Subject Code	ABCT4760					
Subject Title	Industrial Electrochemistry Laboratory					
Credit Value	1					
Level	4					
Co-requisite	Industrial Electrochemistry					
Objectives	This subject aims to provide students with experience in handling electrochemical equipment such as potentiostat, and in applying electrochemical techniques to solve fundamental and industrial problems.					
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> a. carry out electrochemistry experiments independently, and critically evaluate and interpret experimental results; b. reflect the principles of electrochemistry through experimental work; c. apply electrochemical techniques to solve industrial problems. 					
Subject Synopsis/ Indicative Syllabus	<ol style="list-style-type: none"> 1. Corrosion Test by Electrochemical Methods 2. Effect of Organic Additives on a Plating Bath 3. Determination of Metal Ion Concentration by Polarography 4. Electroless Plating of Nickel 5. Aluminum Anodizing 6. Determination of Diffusion Coefficient of Redox Active Species by Linear Sweep Voltammetry 					
Teaching/Learning Methodology	Students will be shown the operation of equipment in the laboratory classes. They will be asked to apply the electrochemical techniques to solve designated problems, analyse the collected data and write up reports.					
Assessment Methods in Alignment with Intended Learning Outcomes	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)			
			a	b	c	
	1. Continuous Assessment	80	√		√	
	2. Test	20		√	√	
	Total	100 %				
Explanation of the appropriateness of the assessment methods in assessing the						

	intended learning outcomes:		
	Assessment tools such as laboratory reports and lab test will be used to evaluate students' competence in operating electrochemical equipment and in the interpretation and analysis of experimental data.		
Student Study Effort Expected	Class contact:		
	▪ Lab		12 Hrs.
	Other student study effort:		
	▪ Lab reports		16Hrs.
	▪ Self study		4 Hrs.
	Total student study effort		
Reading List and References	<u>Essential</u> Pletcher, D.; Industrial Electrochemistry Chapman & Hall 1990 Walsh, F. C. 2nd ed. <u>Supplementary</u> Lowenheim, F. Electroplating McGraw Hill 1978 A. Schlesinger, M.; Modern Electroplating John Wiley 2000 Paunovic, M. Dell, R. M.; Understanding Batteries Royal Society of Chemistry 2001 Rand, D. A. J. Harlow: Longman Trethewey, K. R. Corrosion for Science and 1995 Engineering, 2 nd ed. Bradford, S. A. Corrosion Control, 2 nd ed. CASTI Publishing Inc. 2001		