UNIVERSITAS NEGERI JAKARTA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
CHEMISTRY STUDY PROGRAM

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Bachelor in Chemistry **MODULE HANDBOOK**

Module name:	Applied Electrochemistry
Module level, if applicable:	Undergraduate
Code:	33250803
Sub-heading, if applicable:	-
Classes, if applicable:	-
Semester:	6th
Module coordinator:	Dr. Setia Budi, M.Sc
Lecturer(s):	Dr. Setia Budi, M.Sc
Language:	Bahasa Indonesia
Classification within the curriculum:	Elective course in the third year (6t4.5 semester) Bachelor Degree
Class Size	40
Type of Teaching	In class activity : Team Based Project and Project based Learning Structured activity : Group Discussion using WorkSheet Independent activity : Individual task
Teaching format / class hours per week	Learning activity can be carried out in the form of : 1. Lecture or students response a. Face to face : 50 minutes/SKS b. Structured activity : 60 minutes/SKS c. Independent activity : 60 minutes/SKS
Workload:	1 CU (SKS) for bachelor degree equal to 4 work hours per week or 170 minutes. 3x50 minutes face to face, 3x60 minutes structured tasks, 3x60 minutes independent learning, for 16 weeks (including midterm and final examination), a total of 90.5 hours/semester.
Credit points:	4.5 ECTS
Prerequisite course(s):	Physical Chemistry and Basic Inorganic Chemistry

Course Outcomes :	After taking this course the students have ability to: 1. CLO-1. Understand the principles of electrochemistry and electrosynthesis 2. CLO-2. Analyzing electrochemical socioeconomic 3. CLO-3. Synthesize materials using electrosynthetic techniques 4. CLO-4. Analyzing the properties of materials using the electroanalytical method 5. CLO-5. Analyzing the use of electrochemical engineering in the industrial world 6. CLO-6. Applying electrochemical techniques in the development of renewable energy 7. CLO-7. Analyzing the role of electrochemistry in the development of research on nanostructured materials
Content:	1. Fundamentals of Electrochemistry: Review and Key Principles 2. Socioeconomic Impact of Electrochemistry: Environmental, Industrial, and Technological Perspectives 3. Electrosynthesis Techniques: Principles, Applications, and Process Optimization 4. Electroanalytical Techniques: Fundamentals, Instrumentation, and Analytical Applications 5. Electrochemistry in Industrial Processes: Electroplating, Corrosion Prevention, and Water Treatment 6. Electrochemistry for Renewable Energy 7. Electrochemistry for Nanostructured Materials: Synthesis, Characterization, and Applications 8. Advances in Electrochemical Research: Advanced Materials Synthesis and Electroanalytical Methods
Study/exam achievements:	
Media	Microsoft Teams, Research Paper, Microsoft Power Point
Literatures	1. Zhebo Chen, Eric Miller, Huyen N. Dinh. 2013. Photoelectrochemical Water Splitting. Springer. New York 2. Yuliy D. Gamburg, G. Zangari. 2011. Theory and Practice of Metal Electrodeposition. Springer. New York 3. Mordechay Schlesinger, Milan Paunoviv. 2010. Modern Electroplating. John Wiley & Sons. Ney Jersey 4. Zhebo Chen, Huyen N. Dinh, Eric Miler. 2013. Photoelectrochemical Water Splitting. Springer. New York.

No	CO	Assesment Object	Assessment Techniques	Weight
1	CLO 1-7	Assignments b. UTS c. UAS d. Practice	Written test	10% 25% 25% 50%
			Total	100%

CLO and CO mapping

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12
CO1					V	V						
CO2					V	V						
CO3					V	V						
CO4					V	V						
CO5					V	V						
CO6					V	V						
CO7					V	V						