

MODULE HANDBOOK

Module Name	Electrochemistry Analysis
Module level	Bachelor
Abbreviation, if applicable	3074212050
Sub-heading, if applicable	-
Course included in the module, if applicable	-
Semester/term	5 th / third year
Module coordinator(s)	Dr. Pirim Setiarso, M.Si
Lecturer(s)	Dr. Pirim Setiarso, M.Si Prof. Dr. Titik Taufikur Rochmah, M.Si Prof. Dr. Nita Kusumawati, M.Sc
Language	Indonesian
Classification within the curriculum	Compulsory Course
Teaching format/class hours per week during the semester:	2 hours lecturers (50 min per hours)
Workload:	2 x 50 minutes lectures, 2 x 60 minutes structured activity, 2 x 60 minutes individual activity, 14 weeks per semester, 79.33 total hours per semester ~ 3.18 ECTS**
Credit points:	2 x 1.59 = 3.18 ECTS
Prerequisite course(s):	Quantitative Chemical Analysis; Basics of Chemical Separations; Spectroscopy and Chromatographic Methods
Targeted learning outcomes:	CLO 1, 2, 5 CLO 1. Capable to demonstrate knowledge related to theoretical concepts about structure, dynamics, and energy, as well as the basic principles of separation, analysis, synthesis and characterization of chemicals CLO 2. Capable to demonstrate the pedagogical knowledge of chemistry in designing, implementing, and evaluating chemistry learning CLO 5. Applying logical, critical, systematic and innovative thinking in the context of development or implementation of science, technology, and art that regards and applies humanities in accordance with chemistry education in solving problems
Content:	Introduction: The stages of the scientific method Analysis Electrochemistry as a scientific activity, material and energy, extensive and intensive properties, chemical and physical properties, elements, compounds, and mixtures Analysis Potentiometry: Nernst equation as basic analysis electrochemistry qualitatively and quantitatively. Potentiometrically Titration, Application Potentiometric Titration

	<p>Analysis Conductometry: Basic concept of Analysis Conductometry, Conductometry titration, Application Conductometry Titration</p> <p>Coulometry, Polarography and voltammetry : theory Coulometry, polarography and voltammetry. Qualitative and quantitative Analysis Coulometry polarography , voltammetry. Application Analysis Coulometry polarography , voltammetry</p>										
Study / exam achievements:	<p>Students are considered to complete the course and pass if they obtain at least 40% of maximum final grade. The final grade (NA) is calculated based on the following ratio:</p> <table border="1"> <thead> <tr> <th>Assessment Components</th> <th>Percentage of contribution</th> </tr> </thead> <tbody> <tr> <td>Participation</td> <td>20%</td> </tr> <tr> <td>Assignment</td> <td>30%</td> </tr> <tr> <td>Mid-semester test</td> <td>20%</td> </tr> <tr> <td>Final semester test</td> <td>30%</td> </tr> </tbody> </table>	Assessment Components	Percentage of contribution	Participation	20%	Assignment	30%	Mid-semester test	20%	Final semester test	30%
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Media:	Computer, LCD, White board										
Learning Methods	Individuals assignment, group assignment, discussion, presentation,										
Literature:	<ol style="list-style-type: none"> 1. Ewing G.W, 1981, <i>Instrumental Methods Of Chemical Analysis</i>, International Student Edition, Tokyo: McGraw-Hill Kogakusha Ltd 2. Pecsok, et al.1976. <i>Modern Methods of Analytical Chemistry</i>. 2nd New York: John Wiley and Sons 3. Sawyer, Heineman, and Beebe,1984, <i>Chemistry Experiments for Instrumental Methods</i>, New York : John Wiley & Sons 4. Skoog, Douglas.A. 1982, <i>Fundamental of Analytical Chemistry</i>. Fourth Edition. Tokyo: Holt- Sounders 										
Notes:	<p>*1 CU in learning process = three periods consist of: (a) scheduled instruction in a classroom or laboratory (50 minutes); (b) structured activity (60 minutes); and (c) individual activity (60 minutes) according to the Regulation of Indonesia Ministry of Research, Technology, and Higher Education No. 44 Year 2015 jo. the Regulation of Indonesia Ministry of Research, Technology, and Higher Education No. 50 Year 2018.</p> <p>**1 CU = 1.59 ECTS according to Rector Decree Of Universitas Negeri Surabaya No. 598/UN38/Hk/Ak/2019</p>										

