



MINISTRY OF EDUCATION, CULTURE, RESEARCH,
AND TECHNOLOGY

UNIVERSITAS NEGERI SURABAYA

FACULTY OF MATHEMATICS AND NATURAL SCIENCES
Ketintang Campus, D-1 Building, Surabaya 60231 +6231-8296427
Website: www.fmipa.unesa.ac.id, email: info_fmipa@unesa.ac.id

Master Program of Science Education

Module Handbook

Module Name :	<i>Kajian Sains Kimia 1/ Study of Chemical Science I*)</i>
Module level :	<i>Master Program of Science Education</i>
Course Code :	<i>8410102201</i>
Abbreviation, if applicable:	-
Courses included in the module, if applicable:	<i>Not Applicable</i>
Semester/Term	<i>2nd /First Year</i>
Module coordinator(s)	<i>Prof.Dr.Titik Taufikurohmah, M.Si.</i>
Lecturer(s):	<i>Prof.Dr.Titik Taufikurohmah, M.Si.</i>
Language:	<i>Indonesian Language</i>
Classification within the curriculum:	<i>Compulsory/ Elective</i>
Teaching format/class hours per week during the semester:	<i>2 contact hours of lectures (Indonesia credit semester or CU*)</i>
Workload :	<i>2 x 50 minutes lectures, 2 x 90 minutes structured activity, 2 x 100 minutes individual activity, 14 weeks per semester, 112 total hours per semester ~ 4.48 ECTS**</i>
Credit Point:	<i>2 CU (4.48 ECTS)</i>
Requirements:	
Learning goals/competencies:	<p>Knowledge (KNO-2) CLO-1 <i>Mastering knowledge and analyzing various concepts of instrumental analysis knowledge with spectroscopic methods (including UV-Vis spectroscopy, IR, NMR, MS, and SSA) and electrochemistry (including potentiometry, coulometry, and voltametry) for the needs of solving research problems or relevant problems to produce creative, original, and.</i></p> <p>Competency (COM-3) CLO-2 <i>Developing research independently by optimizing the use of modern instrumental techniques both by spectroscopic methods and electrochemical methods.</i></p> <p>CLO-3 <i>Develop theories and techniques of instrumental analysis with spectroscopic methods (including UV-Vis spectroscopy, IR, NMR, MS, and SSA) and electrochemical methods (including potentiometry, coulometry, and voltametry) through research and improvisation and/or field.</i></p>
	<i>This course examines modern instrumental analysis techniques</i>



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Content	both with spectroscopic methods (including UV-Vis spectroscopy, IR, NMR, MS, and SSA) as well as electrochemical methods (including potentiometry, coulometry, and voltametry) as well as problem practice in appropriate laboratory / research activities. This material presentation strategy includes presentations and discussions accompanied by independent and/or group tasks																														
Attribute Soft skill:	Scientific report, public speaking, and team work																														
Study/exam achievements:	Students are considered to be competent and pass if at least get 70. Final score is calculated as follows: 20% Participation + 30% Assignment + 20% Middle Exam (UTS) + 30% Final Exam (UAS) Final index is defined as follow: <table border="1" style="margin-left: 40px;"> <thead> <tr> <th>Index</th> <th>Converted Score</th> <th>Score Range</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>4.00</td> <td>$85 \leq A \leq 100$</td> </tr> <tr> <td>A-</td> <td>3.75</td> <td>$80 \leq A- < 85$</td> </tr> <tr> <td>B+</td> <td>3.50</td> <td>$75 \leq B+ < 80$</td> </tr> <tr> <td>B</td> <td>3.00</td> <td>$70 \leq B < 75$</td> </tr> <tr> <td>B-</td> <td>2.75</td> <td>$65 \leq B- < 70$</td> </tr> <tr> <td>C+</td> <td>2.50</td> <td>$60 \leq C+ < 65$</td> </tr> <tr> <td>C</td> <td>2.00</td> <td>$55 \leq C < 60$</td> </tr> <tr> <td>D</td> <td>1.00</td> <td>$40 \leq D < 55$</td> </tr> <tr> <td>E</td> <td>0.00</td> <td>$0 \leq E < 40$</td> </tr> </tbody> </table>	Index	Converted Score	Score Range	A	4.00	$85 \leq A \leq 100$	A-	3.75	$80 \leq A- < 85$	B+	3.50	$75 \leq B+ < 80$	B	3.00	$70 \leq B < 75$	B-	2.75	$65 \leq B- < 70$	C+	2.50	$60 \leq C+ < 65$	C	2.00	$55 \leq C < 60$	D	1.00	$40 \leq D < 55$	E	0.00	$0 \leq E < 40$
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Learning Methods :	Case Method and Discussion																														
Form of Media:	Power Point slides, e-book file, and multimedia.																														
Literature (primary references):	<ol style="list-style-type: none"> Harvey, D. (2000). <i>Modern analytical chemistry</i>. New York: McGraw-Hill, Co. Pescok, RL, Shield, LD, Cairns, T., and McWilliam, IG. (1976). <i>Modern methods of chemical analysis</i>. New York: John Willey & Sons, Inc. Skoog, DA. (1985). <i>Principles of instrumental analysis</i>. New York: Saunder College Publishing. Silvertein, RM, Bassler, CG, and Morrill, TC. (1974). <i>Spectrometric identification of organic compound</i>. USA: John Willey & Sons, Inc. 																														
Notes:	<p>*1 CU in learning process = three periods consist of: (a) scheduled instruction in a classroom (50 minutes); (b) structured activity (90 minutes); and (c) individual activity (100 minutes) according to according to Rector Decree of Universitas Negeri Surabaya No. 598/UN38/HK/AK/2020</p> <p>**1 CU = 2.24 ECTS according to Rector Decree of Universitas Negeri Surabaya No. 598/UN38/HK/AK/2020</p> <p>*Total ECTS = (total hours workload/ 60 min) / 25 hours</p> <p>Each ECTS is equals with 25 hours</p>																														





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<i>Last Amendment</i>

<i>5 January 2023</i>
