



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 1/ Study of Science I*)</i>
Module level :	<i>Master Program of Science Education</i>
Course Code :	<i>8410102206</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. Hj. Rudiana Agustini, M.Pd.</i>
Lecturer(s):	<i>Prof. Dr. Hj. Rudiana Agustini, M.Pd.</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:	Knowledge (KNO-2) <i>CLO-1</i> <i>Mastering knowledge of energy source materials in life including biological systems, processes that generate and use energy (including photosynthesis), transport and conversion energy in biological systems and everyday life.</i> <i>CLO-2</i> <i>Mastering knowledge of energy availability and needs, forming awareness and energy-saving attitudes through an interdisciplinary approach in the form of science learning design.</i> <i>CLO-3</i> <i>Mastering research / study activities to solve energy availability problems using various sources of information, physical sciences, chemistry, biology, and relevant technology.</i> Competency (COM-3) <i>CLO-4</i> <i>Designing and creating a conducive scientific learning environment to carry out active learning and reflecting to determine its effectiveness</i>
	<i>This course examines the concept of energy and its role in everyday living systems including biological systems, forms of</i>



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Content	energy and their changes, photosynthesis (photosystem 1, photosystem 2, phosphorylation and fixation of carbon), energy conversion pathways (oxidation, glycolysis, Krebs cycle, and respiration chain).																														
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><tr><th>Index</th><th>Converted Score</th><th>Score Range</th></tr><tr><td>A</td><td>4.00</td><td>85 ≤ A ≤ 100</td></tr><tr><td>A-</td><td>3.75</td><td>80 ≤ A- < 85</td></tr><tr><td>B+</td><td>3.50</td><td>75 ≤ B+ < 80</td></tr><tr><td>B</td><td>3.00</td><td>70 ≤ B < 75</td></tr><tr><td>B-</td><td>2.75</td><td>65 ≤ B- < 70</td></tr><tr><td>C+</td><td>2.50</td><td>60 ≤ C+ < 65</td></tr><tr><td>C</td><td>2.00</td><td>55 ≤ C < 60</td></tr><tr><td>D</td><td>1.00</td><td>40 ≤ D < 55</td></tr><tr><td>E</td><td>0.00</td><td>0 ≤ E < 40</td></tr></table>	Index	Converted Score	Score Range	A	4.00	85 ≤ A ≤ 100	A-	3.75	80 ≤ A- < 85	B+	3.50	75 ≤ B+ < 80	B	3.00	70 ≤ B < 75	B-	2.75	65 ≤ B- < 70	C+	2.50	60 ≤ C+ < 65	C	2.00	55 ≤ C < 60	D	1.00	40 ≤ D < 55	E	0.00	0 ≤ 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):	1. Appling, D.R., Anthony Cahill, S.J., Mathew, C.K. (2016). Biochemistry: Concepts and Connections. Pearson 2. Pattabhi, V. And Ghautam, N. (2002). Biophysics. NewDelhi, Kluwer Academic Publisher. 3. Waigh, T. (2007). Applied Biophysics. Willey																														
Notes:	*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 **1 CU = 2.24 ECTS according to Rector Decree of Universitas Negeri Surabaya No. 598/UN38/HK/AK/2020 *Total ECTS = (total hours workload/ 60 min) / 25 hours Each ECTS is equals with 25 hours																														
Last Amendment	5 January 2023																														