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 :	*Kajian Sains Fisika II/* *Study of Physical Science II*)*
Module level :	*Master Program of Science Education*
Course Code :	8410103078
Abbreviation, if applicable:	-
Courses included in the module, if applicable:	*Not Applicable*
Semester/Term	*2nd /First Year*
Module coordinator(s)	*Dr. Eko Hariyono, M.Pd*
Lecturer(s):	*Dr. Eko Hariyono, M.Pd*
Language:	*Indonesian Language*
Classification within the curriculum:	*Compulsory/ Elective*
Teaching format/class hours per week during the semester:	*2 contact hours of lectures (Indonesia credit semester or CU*)*
Workload :	*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***
Credit Point:	*2 CU (4.48 ECTS)*
Requirements:	
Learning goals/competencies:	**Knowledge (KN0-2)** *CLO-1* *Mastering a comprehensive structured study of electomagnetic fields and electromagnetic wave propagation relevant to the field of physics education and learning* *CLO-2* *Mastering knowledge and technology with solving physics education and learning problems related to more complex school electrical teaching materials through learning activities utilizing relevant software and or virtual laboratories* **Competency (COM-3)** CLO-3 Designing and creating a conducive scientific learning environment to carry out active learning and reflecting to determine its effectiveness
Content	*Classical electromagnetics studies basic concepts and fields (without including relativistic effects) to explain electricity and magnetism separately; physical magnitude related to terrain; spatial and temporal variations of electric fields and magnetic fields to understand the phenomenon and theory of electromagnetic induction of decrease Maxwell's equation to*

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	explain the phenymena of electromagnetic waves in air and in materials. Lecture learning is expository with the discussion emphasized the description of physical laws relevant to electromagnetic fields
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:**

Index	Converted Score	Score Range
A	4.00	$85 \leq A \leq 100$
A-	3.75	$80 \leq A\text{-} < 85$
B+	3.50	$75 \leq B\text{+} < 80$
B	3.00	$70 \leq B < 75$
B-	2.75	$65 \leq B\text{-} < 70$
C+	2.50	$60 \leq C\text{+} < 65$
C	2.00	$55 \leq C < 60$
D	1.00	$40 \leq D < 55$
E	0.00	$0 \leq E < 40$

Learning Methods :	*Case Method and Discussion*
Form of Media:	*Power Point slides, e-book file, and multimedia.*
Literature (primary references):	1) Grifftith, D. J. (1999). *Introduction to electrodynamics*. New York: Prentice-Hall Inc. 2) Vanderlinde, J. (2004) *Classical electromagnetictheory*. New York: Kluwer Academic Publ. 3) Langair, M. (2003). Theoretical concepts in physics. Cambridge, UK: Cambridge University Press.
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*