MINISTRY OF EDUCATION AND CULTURE
UNIVERSITAS NEGERI SURABAYA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
DEPARTMENT OF PHYSICS
Ketintang Campus, Jalan Ketintang, C3 Building, Surabaya 60231
Website: http://s1-fisika.fmipa.unesa.ac.id/, email: s1-fisika@unesa.ac.id

Module Name :	*Fisika Modern* Modern Physics
Module level :	Bachelor degree/Undergraduate Programme
Course Code :	4520103074
Abbreviation, if applicable:	-
Courses included in the module, if applicable:	Not Applicable
Semester/Term	4/Second Year
Module coordinator(s)	Dra. Suliyanah, M.Si
Lecturer(s):	Dra. Suliyanah, M.Si Dr. Asnawi, M.Si Lydia Rohmawati, M.Si Utama Alan Deta, M.Pd., M.Si Prof. Dr. Wasis, M.Si Abu Zainuddin, M.Pd
Language:	*Bahasa Indonesia*
Classification within the curriculum:	Compulsory/ ~~Elective~~
Teaching format/class hours per week during the semester:	3 contact hours of lectures (Indonesia credit semester or sks*)
Workload :	a. Lecture: 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 b. Lab activity: 1x170 minutes lab activity, 14 weeks per semester 39.67 total hours of lab activity per semester ~ 1.59 ECTS Total of lecture and lab activity= 119 total hours per semester ~ 4.77 ECTS**
Credit Point:	3 sks (4.77 ECTS)

MINISTRY OF EDUCATION AND CULTURE
UNIVERSITAS NEGERI SURABAYA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
DEPARTMENT OF PHYSICS
Ketintang Campus, Jalan Ketintang, C3 Building, Surabaya 60231
Website: http://s1-fisika.fmipa.unesa.ac.id/, email: s1-fisika@unesa.ac.id

Requirements:	Basic Physics II
Learning goals/competencies:	1. Mastering structured studies on the concept of relativity, the nature of wave dualism, quantum mechanics, many electron atoms, atomic theory to radioactivity processes 2. Solving physics problems related to the concepts of relativity, atomics, and quantum mechanics through a mathematical approach 3. Analyze the findings / studies related to Modern Physics concepts obtained from ICT-based literature sources 4. Have a scientific attitude, think critically in solving modern physics concepts and innovate in the fields of education and research
Content	The Modern Physics course discusses the concepts/principles/theories / basic laws of Modern Physics (physics content knowledge) which underlies the study material in the Physics curriculum of SMA / SMK in depth which includes Relativity, Particle Properties of Waves, Wave Properties of Particles, Structure Atom, Quantum Mechanics, Hydrogen Atom Quantum Theory, Multiple Electron Atom, Core Structure, Nuclear Transformation, as well as being able to communicate scientifically and work effectively both individually and in groups.
Attribute Soft skill:	Scientific report, public speaking, and team work
Study/exam achievements:	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:

Assessment Components	**Percentage of contribution**
Participation	20%
Assignment	30%
Mid-semester test	20%
Final semester test	30%

Learning Methods :	1. Student-centered approach, 2. Lecture and discussion, 3. Laboratorium activity

	4. Presentations
Form of Media:	*Power Point* slides, e-book file, and multimedia.
Literature (primary references):	1. Beiser A, 2003, "Consepts of Modern Physics", Sixth Edition. McGraw Hill Inter. BookCompany 2. Supangkat, Haryadi, 1990. "Fisika Modern", Jurusan Fisika ITB. 3. Wehr,M R.1980," Physics of The Atom" , Addison Wesley Manila
Notes:	*1 sks 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.
	**1 sks = 1,59 ECTS according to Rector Decree Of Universitas Negeri Surabaya No. 598/Un38/Hk/Ak/2019