Module Description

Module name	Course Module
Module level, if applicable	Master of Physics Education
Code, if applicable	32363152
Subtitle, if applicable	-
Course, if applicable	Advanced Modern Physics
Semester(s) in which the module istaught	II (Even Semester)
Person responsiblefor the module	Lecturer of Courses
Lecturer	1. Dr. Iwan Sugihartono, M.Si
Language	Indonesian Language [Bahasa Indonesia]
Relation to Curriculum	This course is a compulsory course and offered in the 2st semester.
Type of teaching, contact hours	Teaching methods used in this course are: - Lecture (i.e., case-based learning, cooperative learning, and blended learning) - Structured assignments (i.e., essays and case study) - Practice (i.e., computer simulation and case study in laboratorium) The class size for lecture is 20 students. Contact hours for lecture is 26.67 hours, assignments are 64 hours, and privat study is 64 hours
Workload	For this course, students required to meet a minimum of 154.67 hours in one semester, which consist of: 26.67 hours for lecture, 64 hours for structured assignments, 64 hours for private study,
Credit points	5.2 ECTS
Requirements according to the examination regulations	Students should have attended all lectures and submitted all scheduled individual and group assignments prior to the final examination.

Recommended prerequisites	Students should have attended all lectures and submitted all scheduled individual and group assignments prior to the final examination.
Program learning outcomes	PLO 2 Master advanced knowledge of classical physics and modern physics PLO 4. Able to develop learning aids by utilizing advanced information technology and the student environment.

Content	**Students will learn about:** This course is a compulsory course that discusses the development of modern physics and its application in various current technologies. The discussion in this lecture covers various topics, including the development of classical physics and its weaknesses in explaining some experimental results, the theory of special relativity, particle-wave properties, atomic modeling, introduction to quantum mechanics in the form of the Schroedinger equation which is applied to the application of the Hydrogen atomic model and atomic spectroscopy, many-electron atoms, molecules, radioactivity, and their uses. Furthermore, to provide a factual understanding, students will be provided with the latest topics related to research in the field of modern physics. Lectures will be conducted using a case-based blended learning approach. Mastery of this study will help students improve their knowledge and develop themselves professionally in the field of physics education.
Forms of Assessment	Assessment of the learning process follows the following components: attendance 5%; assignments and presentations 30%; mid-test 30%, and final-test 35%.
Study and examination requirements	**Study and examination requirements:** - Students must attend 15 minutes before the class starts. - Students must switch off all electronic devices. - Students must inform the lecturer if they will not attend the classdue to sickness, etc. - Students must submit all class assignments before the deadline. - Students must attend the exam to get final grade. **Form of examination:** Forms of examination: Essay
Media employed	Powerpoint slides, simulation videos, learning management

	system (LMS), ZOOM application, and UNJ e-learning.
Reading list	1. Thornton, S. T. and Rex, A. Modern Physics for Scientists and Engineers 3rd Edition. Singapore: Thomson, 2006 2. Krane, K. Modern Physics 2nd Edition. New York: John Wiley & Sons, 1996.