UIN SUNAN KALIJAGA YOGYAKARTA
FACULTY OF SCIENCE AND TECHNOLOGY
Jl. Marsda Adisucipto Yogyakarta 55281, Telp:+62274519739, Fax:+62274540971,
E-mail: fst@uin-suka.ac.id, website: http://saintek.uin-suka.ac.id/

Undergraduate Programme in Physics

Telp : +62274 519739
Email :fisika@uin-suka.ac.id
Website : http://fisika.uin-suka.ac.id/

MODULE HANDBOOK

Module Name	Atomic and Nuclear Physics
Module level, if applicable	Bachelor
Code, if applicable	FIS414040
Subtitle, if applicable	-
Courses, if applicable	Atomic and Nuclear Physics
Semester(s) in which the module is taught	4th(Fourth)
Person responsible for the module	Dr. Nita Handayani, M.Si
Lecturer(s)	Dr. Nita Handayani, M.Si
Language	Indonesia
Relation to curriculum	Compulsory course in the second year (4th semester) Bachelor Degree
Type of teaching, contact hours	150 minutes lectures, and 180 minutes structured activities per week.
Workload	Total workload is 136 hours per semester, which consists of 150 minutes lectures per week for 14 weeks, 180 minutes structured activities per week, 180 minutes individual study per week, in total is 16 weeks per semester, including mid exam and final exam
Credit points	3
Requirements according to the examination regulations	Minimal attendance 75% All assignments are submitted Come to class on time
Recommended prerequisites	Mathematical Physics 2 Modern Physics
Module objectives/intended learning outcomes	After completing this course, the students: CO 1. Able to explain the concepts of nuclear atomic physics including the history of the discovery of atoms and atomic nuclei, the concept of nuclear stability and various types of decay. CO 2. Able to explain the working principles of various nuclear-related equipment, including particle accelerators, nuclear reactors and nuclear detectors CO 3. Able to apply logical, critical and systematic thinking to solve problems and research in the field of nuclear/particle physics
Content	Atomic Models, Atomic Nucleus, Stable Nucleus, Nuclear Size and Shape, Nuclear Force, Nuclear Binding Energy, Nuclear Models, Semi-Empirical Weissacker Formula, Separation Energy, Radioactivity, Radioactive Decay, Radioactive Series, Determination Radiometric Lifetime, Natural Radioactivity, Alpha Decay, Beta Decay, Gamma Decay, Nuclear Reactions, Classification and Reaction Mechanisms, Reaction Threshold Energy, Reaction Rates and Cross Sections, Nuclear Fission, Fusion Reactions, Particle Accelerators, Nuclear Reactors, Radiation Detectors.

UIN SUNAN KALIJAGA YOGYAKARTA
FACULTY OF SCIENCE AND TECHNOLOGY
Jl. Marsda Adisucipto Yogyakarta 55281, Telp:+62274519739, Fax:+62274540971,
E-mail: fst@uin-suka.ac.id, website: http://saintek.uin-suka.ac.id/

Study and examination requirements and forms of examination

The final mark will be weighted as follows:

NO	Assessment methods (components, activities)	Weight (percentage)
1	Final Examination	30%
2	Mid-Term Examination	30%
3	Class Activities : Quiz, Homework, etc.	20%
4	Project Based Learning (PBL)	20%

The final assessment is expressed in the form of a letter value converted from a number value with the following categories:

NO	Number Value	Letter Value	NO	Number Value	Letter Value
1	≥ 95	A	7	65-69.99	B/C
2	90-94.99	A-	8	60-64.99	C+
3	85-89.99	A/B	9	55-59.99	C
4	80-84.99	B+	10	50-54.99	C-
5	75-79.99	B	11	55-34.99	D
6	70-74.99	B-	12	<35	E

Media employed: White-board, LCD Projector, e-learning (https://daring.uin-suka.ac.id/)

Reading list

1. Atam P. Arya, Fundamentals of Nuclear Physics, Allyn and Bacon, Inc., Boston, 1996
2. Krane, K.S., *Introductory Nuclear Physics*, John Wley & Sons, 1988
3. Bernard L. Cohen, *Concepts of Nuclear Physics*, McGraw-Hill Book Company, 1971
4. Cottingham, W.N., Greenwood, D.A., *An Introduction to Nuclear Physics*, Cambridge University Press, 1986

PLO and CO Mapping

	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9
CO 1		√							
CO 2				√					
CO 3							√		