UNIVERSITAS NEGERI YOGYAKARTA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
DEPARTMENT OF PHYSICS EDUCATION
PHYSICS STUDY PROGRAM
Colombo St. Number 1 Yogyakarta 55281
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Module name:	Atomics Physics
Module level, if applicable:	Undergraduate
Code:	FSK6225
Sub-heading, if applicable:	-
Classes, if applicable:	-
Semester:	3rd
Module coordinator:	Drs. Yusman Wiyatmo, M.Si..
Lecturer(s):	Drs. Yusman Wiyatmo, M.Si.
Language:	Bahasa Indonesia
Classification within the curriculum:	Compulsory Course
Teaching format / class hours per week during the semester:	100 minutes lectures and 120 minutes structured activities per week.
Workload:	Total workload is 91 hours per semester which consists of 100 minutes lectures, 120 minutes structured activities, and 120 minutes individual study per week for 16 weeks.
Credit points:	2 SKS (3.25 ECTS)
Prerequisites course(s):	-
Course Outcomes	After taking this course the students have ability to: CO1. Analyze the development of atomics theory CO2. Analyze the atomics structure CO3. Analyze the atomics spectrum of hydrogen CO4. Analyze the effect of magnetics field in hydrogen atom CO5. Analyze the Zeeman effect CO6. Analyze cathode ray CO7. Analyze the Millikan oil drop experiment

<table>
<tr><td>Content:</td><td>This course discusses the basic concepts of development of atomics theory, atomics structure, atomics spectrum of hydrogen, the effect of magnetics field in atom, Zeeman effect, cathode ray, Millikan oil drop experiment.</td></tr>
<tr><td>Study / exam achievements:</td><td>Attitude assessment is carried out at each meeting by observation and / or self-assessment techniques using the assumption that basically every student has a good attitude. The student is given a value of very good or not good attitude if they show it significantly compared to other students in general. The result of attitude assessment is not a component of the final grades, but as one of the requirements to pass the course. Students will pass from this course if at least have a good attitude.

The final mark will be weight as follow:

<table>
<tr><th>No</th><th>CO</th><th>Assessment Object</th><th>Assessment Technique</th><th>Weight</th></tr>
<tr><td>1</td><td>CO2,
CO3
CO4
CO4
CO5
CO6
CO7</td><td>a. Individual Assignment
b. Group Assignment
c. Quiz
d. Mid
e. Final Exam</td><td>Presentation / written test</td><td>15%
15%

15%
25%
30%</td></tr>
<tr><td colspan="4">Total</td><td>100%</td></tr>
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</td></tr>
<tr><td>Forms of media:</td><td>Board, LCD Projector, Laptop/Computer</td></tr>
<tr><td>Literature:</td><td>A. Yusman Wiyatmo, 2016. Fisika Atom dalam Perspektif Klasik, Semiklasik dan Kuantum. Yogyakarta: Pustaka Pelajar
B. Edmond. 1970. The Theory of The Quadratic Zeeman Effect. Journal DL PHYSIQUL. Tome 3 Noc.-Dec. 1970, page C4-71.
C. Helbron, J. 1981. Rutherford-Bohr Atom. American Journal of Physics. 49(3):223-231.
D. Heering, P & Klassen, S. 2010. Doing it differently: attempts to improve Millikan’s oil-drop experiment. Physics Education 2010, 45 (4) , 382-393. https://doi.org/10.1088/0031-9120/45/4/010.
E. Barrete, J. 2021. Nucleus-nucleus scattering and the Rutherford experiment. Journal of the Royal Society of New Zeland. Volume 51, 2021 - Issue 3-4: Special issue: 150th</td></tr>
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PLO and CO mapping

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
CO1	✓	✓			✓			
CO2	✓	✓			✓			
CO3	✓	✓			✓			
CO4	✓	✓			✓			
CO5	✓	✓			✓			
CO6	✓	✓			✓			
CO7	✓	✓			✓			