



UNIVERSITAS NEGERI YOGYAKARTA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
DEPARTMENT OF PHYSICS EDUCATION
PHYSICS STUDY PROGRAM

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Bachelor of Physics

MODULE HANDBOOK

Module name:	Atomics Physics
Module level, if applicable:	Undergraduate
Code:	FSK6225
Sub-heading, if applicable:	-
Classes, if applicable:	-
Semester:	3 rd
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:

	<p>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</p>																																	
Content:	<p>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.</p>																																	
Study / exam achievements:	<p>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.</p> <p>The final mark will be weight as follow:</p> <table border="1"> <thead> <tr> <th>No</th> <th>CO</th> <th>Assessment Object</th> <th>Assessment Technique</th> <th>Weight</th> </tr> </thead> <tbody> <tr> <td rowspan="5">1</td> <td>CO2,</td> <td rowspan="2">a. Individual Assignment</td> <td rowspan="5">Presentation / written test</td> <td>15%</td> </tr> <tr> <td>CO3</td> <td>15%</td> </tr> <tr> <td>CO4</td> <td rowspan="2">b. Group Assignment</td> <td>15%</td> </tr> <tr> <td>CO4</td> <td>15%</td> </tr> <tr> <td>CO5</td> <td>c. Quiz</td> <td>25%</td> </tr> <tr> <td>CO6</td> <td>d. Mid</td> <td>30%</td> </tr> <tr> <td></td> <td>CO7</td> <td>e. Final Exam</td> <td></td> <td></td> </tr> <tr> <td colspan="4">Total</td> <td>100%</td> </tr> </tbody> </table>	No	CO	Assessment Object	Assessment Technique	Weight	1	CO2,	a. Individual Assignment	Presentation / written test	15%	CO3	15%	CO4	b. Group Assignment	15%	CO4	15%	CO5	c. Quiz	25%	CO6	d. Mid	30%		CO7	e. Final Exam			Total				100%
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CO6	d. Mid	30%																																
	CO7	e. Final Exam																																
Total				100%																														
Forms of media:	Board, LCD Projector, Laptop/Computer																																	
Literature:	<p>A. Yusman Wiyatmo, 2016. Fisika Atom dalam Perspektif Klasik, Semiklasik dan Kuantum. Yogyakarta: Pustaka Pelajar</p> <p>B. Edmond. 1970. The Theory of The Quadratic Zeeman Effect. <i>Journal DL PHYSIQUL</i>. Tome 3 Noc.-Dec. 1970, page C4-71.</p> <p>C. Helbron, J. 1981. Rutherford-Bohr Atom. <i>American Journal of Physics</i>. 49(3):223-231.</p> <p>D. Heering, P & Klassen, S. 2010. Doing it differently: attempts to improve Millikan's oil-drop experiment. <i>Physics</i></p>																																	

	<p><i>Education</i> 2010, <i>45</i> (4) , 382-393. https://doi.org/10.1088/0031-9120/45/4/010.</p> <p>E. Barrete, J. 2021. Nucleus-nucleus scattering and the Rutherford experiment. <i>Journal of the Royal Society of New Zeland</i>. Volume 51, 2021 - Issue 3-4: Special issue: 150th</p>
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PLO and CO mapping

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