

### FI360 Modern Physics

Module name:	Modern Physics	
Module level, if applicable:	Undergraduate	
Code:	FI360	
Sub-heading, if applicable:	-	
Classes, if applicable:	-	
Semester:	5 <sup>th</sup>	
Module coordinator:	Selly Feranie	
Lecturer(s):	Selly Feranie	
Language:	Bahasa Indonesia	
Classification within the curriculum:	Compulsory course	
Type of Teaching	Contact hours per week during the semester	Class Size
<ol style="list-style-type: none"> <li>1. Lecture (conceptual, contextual, and problem-solving approaches through expository, discussions and exercises).</li> <li>2. Structured activities (assignments based on conceptual, contextual, and problem-solving approaches)</li> <li>3. Self-study (reading literature)</li> </ol>	3 hour 20 minutes	35
Workload:	The total workload is 181 hours 20 minutes (6.4 ECTS) per semester, consisting of 40 hours/2400 minutes lectures (1.41 ECTS), 56 hours/3360 minutes structured activities (1.98 ECTS) and 56 hours/3360 minutes self-study (1.98 ECTS) per week for 12 weeks, 29 hour 11 minutes for four exams (1.03 ECTS)	
Credit points:	6.4 ECTS	
Pre-requisites course(s):	FI121 Basic Physics I, FI122 Basic Physics II, FI222 Mathematical Physics I, FI240 Mathematical Physics II	
Course Learning Outcomes (CLO):	<p>After taking this course the students have ability to:</p> <p>CLO1. Apply procedural knowledge and mathematics skills in solving problems of Relativity systematically and logically</p> <p>CLO2. Apply procedural knowledge and mathematics skills in solving problems of wave particle dualism systematically and logically</p> <p>CLO3. Apply procedural knowledge and mathematics skills in solving problems of atomic models systematically and logically</p> <p>CLO4. Apply procedural knowledge and mathematics skills in solving problems of quantum mechanics systematically and logically</p>	

	<p>CLO5. Apply procedural knowledge and mathematics skills in solving problems of Many Electron atoms systematically and logically</p> <p>CLO6. Apply procedural knowledge and mathematics skills in solving problems of Solid-State Physics systematically and logically</p> <p>CLO7. Apply procedural knowledge and mathematics skills in solving problems of Nuclear Structure and Radioactivity systematically and logically</p> <p>CLO8. Apply procedural knowledge and mathematics skills in solving problems of elementary particle systematically and logically</p>																																			
Content:	Relativity, wave particle dualism, atomic models, quantum mechanics, Many Electron atoms, Solid State Physics, Nuclear Structure and Radioactivity and elementary particles																																			
Study/exam achievements:	<p>The final mark will be weight as follow:</p> <table border="1"> <thead> <tr> <th>No</th> <th>CLO</th> <th>Assessment Object</th> <th>Assessment Techniques</th> <th>Weight</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>CLO1 – 8</td> <td>Subject specific competences: a. Individual assignment b. Exam</td> <td>Written</td> <td>20%</td> </tr> <tr> <td></td> <td>CLO1 - 2</td> <td>- Exam 1</td> <td>Written test</td> <td>20%</td> </tr> <tr> <td></td> <td>CLO3 - 4</td> <td>- Exam 2</td> <td>Written test</td> <td>20%</td> </tr> <tr> <td></td> <td>CLO5 - 6</td> <td>- Exam 3</td> <td>Written test</td> <td>20%</td> </tr> <tr> <td></td> <td>CLO7 - 8</td> <td>- Exam 4</td> <td>Written test</td> <td>20%</td> </tr> <tr> <td colspan="4">Total</td> <td>100%</td> </tr> </tbody> </table>	No	CLO	Assessment Object	Assessment Techniques	Weight	1	CLO1 – 8	Subject specific competences: a. Individual assignment b. Exam	Written	20%		CLO1 - 2	- Exam 1	Written test	20%		CLO3 - 4	- Exam 2	Written test	20%		CLO5 - 6	- Exam 3	Written test	20%		CLO7 - 8	- Exam 4	Written test	20%	Total				100%
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Forms of media:	Board, LCD Projector, Laptop/Computer, props for demonstrations																																			
Literature:	<ol style="list-style-type: none"> <li>Selly Feranie dan Arianto (2020) <i>Pengantar Fisika Partikel</i>, CV. Media Edukasi Indonesia - Tangerang</li> <li>Kenneth S Krane (2019) <i>Modern Physics - 4th-Asia Edition</i>, John Wiley &amp; Sons Inc, Newyork United states</li> <li>Arthur Beiser (1994), <i>Concepts of Modern Physics: 6th Edition</i>, McGraw-Hill Higher Education</li> <li>Peleg, Y., Pnini, R., Zaarur, E., &amp; Hecht, E. (2010). <i>Schaum's Outline of Quantum Mechanics, Second Edition</i>. McGraw-Hill Education.</li> </ol>																																			

### PLO and CLO mapping

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12
CLO1		√										
CLO2		√										
CLO3		√										
CLO4		√										
CLO5		√										
CLO6		√										
CLO7		√										
CLO8					√							

