Module Handbook

Courses	Quantum Physics
Programme	S1 Physics Education
Code	
Semester	5
Group of Course Coordinator	Dr. Z. A. Imam Supardi, M.Si
Courses	1. Tjipto Prastowo, Ph.D 2. Endah Rahmawati, S.T.,M.Si 3. Utama Alan Deta, M.Pd., M.Si
The language used	Indonesian
Classification in the curriculum	Compulsory Courses
Learning format / number of class hours per week	Per-week consists of: 4 hours face to face (1 hour face to face = 50 minutes)
Load	4 hours face to face, 4 hours structured assignments, 4 learn to be independent per-week, for 15 weeks = a total of 180 hours face-to-face / semester
credit	4
Precondition	
Course Learning Outcome	1. Demonstrate their knowledge of classical and modern physics by identifying the physical properties of a physical system 2. Have the ability to increase their knowledge and be able to continue their studies 3. Formulate a standard physical system into a physical model using mathematics 4. Solve standard physical system problems comprehensively using mathematics and computational toolsKemampuan Umum: 5. Analyze physical systems by applying mathematics and computing / ICT tools
Courses content	This course examines: 1. The scope of the study of Quantum Physics, 2. The study of quantum concepts (reviews from physical phenomena to theoretical approaches), 3. Formulation of Schrodinger wave mechanics to solve the problem of microscopic particle physics without and in the presence of simple potential fields (anharmonics and harmonics), 4. An overview of the theory of the hydrogen atom related to the complete solution of the Schrodinger equation of radial components and spherical harmonics, 5. Orbital, electron transition, and Pauli's rule 6. Zeeman effect and Stark effect 7. The role of spin-orbit interactions in fine and super fine structure phenomena, Lectures are carried out with the "Student Centered Learning Method" assisted by references, ICT, and academic services. The assessment emphasizes the use of "Performance Assessment and Projects".
Attributed soft skill	Effective work, Teamwork, dan Autentic Performance

<table>
<tr><td>Pencapaian pembelajaran/ujian</td><td>Students are considered competent and pass if they get at least a minimum test score of 68 for mid test (SS) and final exam (S), assignments (A), and participation (P), where the final grade (FG) is calculated following the formula:
Final Grade of the course (FG) = 20% P + 30% A + 20% SS + 30%S

Convert the 0-100 scale value to a 0-4 scale and the letters are arranged as follows:
<table>
<tr><th>Letter</th><th>Number</th><th>Interval</th></tr>
<tr><td>A</td><td>4,00</td><td>85 ≤ A < 100</td></tr>
<tr><td>A-</td><td>3,75</td><td>80 ≤ A- < 85</td></tr>
<tr><td>B+</td><td>3,50</td><td>75 ≤ B+ < 80</td></tr>
<tr><td>B</td><td>3,00</td><td>70 ≤ B < 75</td></tr>
<tr><td>B-</td><td>2,75</td><td>65 ≤ B- < 70</td></tr>
<tr><td>C+</td><td>2,50</td><td>60 ≤ C+ < 65</td></tr>
<tr><td>C</td><td>2,00</td><td>55 ≤ C < 60</td></tr>
<tr><td>D</td><td>1,00</td><td>40 ≤ D < 55</td></tr>
<tr><td>E</td><td>0,00</td><td>0 ≤ E < 40</td></tr>
</table>
</td></tr>
<tr><td>Bentuk media</td><td>Handout, e-book, and relevant web links</td></tr>
<tr><td>Referensi</td><td>1. Prastowo, T. and Rahmawati, E. Lecture Notes on Quantum Physics. Unpublished work, 2014
2. Malcom Longair, Quantum Concepts in Physics an Alternative Approach to the Understanding of Quantum Mechanics, Cambridge University Press, 2014
3. Eric D’Hoker, Quantum Physics, Department of Physics and Astronomy, University of California, Los Angeles, CA 90095, USA, 2012</td></tr>
<tr><td>Catatan</td><td></td></tr>
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