



**UNIVERSITAS NEGERI YOGYAKARTA**  
 FACULTY OF MATHEMATICS AND NATURAL SCIENCES  
 DEPARTMENT OF CHEMISTRY EDUCATION  
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**Bachelor of Education in Chemistry**

**MODULE HANDBOOK**

Module name:	<b>Physic for Chemistry</b>
Module level, if applicable:	Undergraduate
Code:	KIM 6302
Sub-heading, if applicable:	-
Classes, if applicable:	2
Semester:	1 <sup>st</sup>
Module coordinator:	Prof. Dr. Endang Widjajanti
Lecturer(s):	Prof. Dr. Jumadi, M.Pd.
Language:	Bahasa Indonesia
Classification within the curriculum:	Compulsory Course
Teaching format / class hours per week during the semester:	<ul style="list-style-type: none"> <li>• Lectures: 100 minutes lectures, 120 minutes structured activities and 120 minutes individual study per week</li> <li>• Laboratory Work: 170 minutes includes the laboratory work and it's report per week.</li> </ul>
Workload:	Total workload of the activity is 136 hours per semester which consist of 100 minutes lectures, 120 minutes structured activities, 120 minutes individual study per week, and 170 minutes include laboratory work and it's report.
Credit points:	2SKS (3.28 ECTS) lectures, and 1SKS (1,64 ECTS) laboratory Work
Prerequisites course(s):	-
Course Outcome:	<p>After taking this course, the students are expected to be able to:</p> <p>CO1. be able to conduct experiments related to mechanics, heat, sound, electricity, magnetism and optics.</p> <p>CO2. be able to explain the concepts of kinetics, motion dynamics by studying classical physics, sound and its properties, electricity, physical and geometric optics and their applications</p> <p>CO3. be able to solve problems related to kinetics, motion dynamics by studying classical physics, sound and its properties, static and dynamic electricity, physical and geometric optics and their applications</p>
Content:	In this course, the theory and practice of physical-phenomena related to mechanics (kinematics, motion, displacement, distance, speed, speed, acceleration, GLB, GLBB, GMB, force and effort, energy and impulse, fluid), heat (temperature and heat, calorimeter, heat type, heat transfer), sound (sound source, sound properties, sound intensity level, resonance, string sound on string, organa pipe), electricity (static and dynamic electricity), magnetism ( magnetic material, magnetic induction, transformer, induction, Lorentz force) and optics

	(geometric optics and physical optics) will be briefly examined.															
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 marked very good or not good attitude if they show it significantly compared to other students in general. The result of attitude assessment is not taken into account in 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>1</td> <td>CO1, CO2, CO3.</td> <td>Assignments Mid-term Semester Final Exam Activities Labwork</td> <td>Presentation / written test</td> <td>30% 15% 20% 10% 25%</td> </tr> <tr> <td colspan="4">Total</td> <td>100%</td> </tr> </tbody> </table>	No	CO	Assessment Object	Assessment Technique	Weight	1	CO1, CO2, CO3.	Assignments Mid-term Semester Final Exam Activities Labwork	Presentation / written test	30% 15% 20% 10% 25%	Total				100%
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Total				100%												
Forms of media:	Physics experiment tools and materials, Board, LCD Projector, Laptop/Computer, Module															
References:	<p>Mehta, V. 2019. Wiley's Physical Chemistry for JEE. Wiley.</p> <p>Dick-Perez, M., Luxford, C. J., Windus, T. L., &amp; Holme, T. (2016). A Quantum Chemistry Concept Inventory for Physical Chemistry Classes. <i>Journal of Chemical Education</i>, 93(4). <a href="https://doi.org/10.1021/acs.jchemed.5b00781">https://doi.org/10.1021/acs.jchemed.5b00781</a></p> <p>Fudholi, A., Musthafa, M. F., Ridwan, A., Yendra, R., Desvina, A. P., Rahmadeni, R., Suyono, T., &amp; Sopian, K. (2019). Energy and exergy analysis of air based photovoltaic thermal (PVT) collector: a review. <i>International Journal of Electrical and Computer Engineering (IJECE)</i>, 9(1). <a href="https://doi.org/10.11591/ijece.v9i1.pp109-117">https://doi.org/10.11591/ijece.v9i1.pp109-117</a></p> <p>Peter Atkins, J. de P., Jonathan Clayden Stuart Warren, N. G., Park, J. P., Lee, J., Kim, S.-W., Björk, E. M., Busch, A. W. U., WareJoncas, Z., Montgomery, B. L., Romadhan, M. F., Suyatma, N. E., Taqi, F. M., Shaikh, A. M., Sharma, B. K., Chacko, S., Kamble, R. M., David L. Michael M. Cox, N., &amp; Gary L. Miessler Donald A. Tarr, P. J. F. (2016). Physical chemistry: Thermodynamics, structure, and Change 10th edition. In <i>Indonesia Journal of Chemistry</i> (Vol. 16, Issue 2015).</p> <p>Trasatti, S. (2007). Atkins' Physical Chemistry. <i>Electrochimica Acta</i>, 52(7). <a href="https://doi.org/10.1016/j.electacta.2006.09.003">https://doi.org/10.1016/j.electacta.2006.09.003</a></p> <p>Giancoli, DC. 2001. <i>Fisika Jilid 1 Edisi Kelima</i>. Jakarta: Erlangga.</p> <p>Giancoli, DC. 2001. <i>Fisika Jilid 2 Edisi Kelima</i>. Jakarta: Erlangga.</p>															

### PLO and CO mapping

	<b>PLO</b>
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	Attitude		Knowledge	Specific Skill	General Skill	
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
<b>CO1</b>			√			
<b>CO2</b>			√			
<b>CO3</b>				√		