



UNIVERSITAS NEGERI YOGYAKARTA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
DEPARTMENT OF CHEMISTRY
1 Colombo Street Yogyakarta 55281
Phone (0274) 565411, Ext. 1398, Fax (0274)548203
Website: <http://kimia.fmipa.uny.ac.id>, E-mail: kimia@uny.ac.id

Bachelor of Science in Chemistry

MODULE HANDBOOK

Module name:	General Chemistry
Module level, if applicable:	Undergraduate
Code:	KIM6401
Sub-heading, if applicable:	-
Classes, if applicable:	2
Semester:	1 st
Module coordinator:	Heru Pratomo Al., M.Si.
Lecturer(s):	1. Heru Pratomo Al., M.Si. 2. Karim Theresih, SU 3. Dr. Dyah Purwaningsih
Language:	Bahasa Indonesia and English
Classification within the curriculum:	Compulsory Course
Teaching format / class hours per week during the semester:	<ul style="list-style-type: none">• Lectures: 150 minutes lectures, 180 structured activities and 180 individual study per week• Laboratory work: 170 minutes includes the laboratory work and it's reporting per week
Workload:	Total workload of the activity is 181,33 hours per semester which consists of 150 minutes lectures, 180 structured activities and 180 individual study and also 170 minutes laboratory work with it's reporting per week for 16 weeks
Credit points:	4 SKS (7 ECTS) with the details of 3 SKS (5 ECTS) lectures and 1 SKS (2 ECTS)
Prerequisites course(s):	-
Course Outcomes	After taking this course, the students have ability to: CO1. Demonstrate an independent and responsible attitude in carrying out lab work and lecture assignments CO2. Understand the basic laws of chemistry, the concept of moles, concentration of solutions and use these concepts to solve problems in chemical calculations CO3. Using the laws of thermodynamics and their application to complete experiments in the laboratory CO4. Use various strategies to solve kinetics and chemical equilibrium problems CO5. Using the properties of acid-base solutions, acid-base titration, redox and electrochemistry and their application to solve problems both theoretically or experimentally CO6. Able to analyze atomic theory concepts and the relationship between electron configurations CO7. Able to use chemical thought patterns to understand the chemical bonds and molecular forms of compounds

	CO8. Able to analyze the concept of colligative properties of non-electrolyte and electrolyte solutions																								
Content:	This course discusses atomic theory, periodic table elements, bonding (general concepts and orbital), stoichiometry, spontaneity, entropy, and free energy, chemical kinetics, chemical equilibrium, acid-base, colligative properties of solutions, and redox and electrochemical reactions. Lectures also study the application of basic chemical concepts in everyday life, as well as laboratory activities																								
Study / exam achievements:	The final mark will be weight as follow: <table border="1" data-bbox="628 591 1422 1003"> <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="4">1</td> <td rowspan="4">CO1, CO2, CO3, CO4, CO5, CO6, CO7, CO8, CO9</td> <td>Laboratory work</td> <td>Pretest, Laboratory work report, post-test</td> <td>30%</td> </tr> <tr> <td>Mid-term exam</td> <td>Written test</td> <td>30%</td> </tr> <tr> <td>Final exam</td> <td>Written test</td> <td>30%</td> </tr> <tr> <td>Attitude</td> <td>Observation</td> <td>10%</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, CO4, CO5, CO6, CO7, CO8, CO9	Laboratory work	Pretest, Laboratory work report, post-test	30%	Mid-term exam	Written test	30%	Final exam	Written test	30%	Attitude	Observation	10%	Total				100%
No	CO	Assessment Object	Assessment Technique	Weight																					
1	CO1, CO2, CO3, CO4, CO5, CO6, CO7, CO8, CO9	Laboratory work	Pretest, Laboratory work report, post-test	30%																					
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		Final exam	Written test	30%																					
		Attitude	Observation	10%																					
Total				100%																					
Forms of media:	Board, LCD Projector, handouts, PPT slides, and stationaries																								
Reference:	<p>Chang, Raymond. (2007). <i>Chemistry 10th Ed.</i> New York: McGraw-Hill</p> <p>Zumdahl. (2007). <i>Chemistry. 7thed.</i> Boston, Houghton Mifflin Company.</p> <p>Jespersen, ND and Brady, JE. (2004). <i>Chemistry: The Molecular Nature of Matter.</i> New York: John Wiley and Sons.</p> <p>Oxtoby, David W et.all. (2008). <i>Principles of Modern Chemistry 6th Ed.</i> Belmont: Thomson Brook/Cole.</p> <p>I Made Sukarna. (2002). <i>Common Text Book Kimia Dasar 1.</i> Yogyakarta: UNY dan JICA</p> <p>Crys Fajar Partana dkk. (2002). <i>Common Text Book Kimia Dasar 2.</i> Yogyakarta: UNY dan JIC</p> <p><i>Suggested Reading</i></p> <p>Kavita Gaur. (2020). Exploring the pH Dependent Aqueous Speciation of Metal Complexes through UV-Vis Spectroscopy. <i>J. Chem. Educ</i></p> <p>Molly B. Atkinson. (2020). Development of the Reaction Coordinate Diagram Inventory: Measuring Student Thinking and Confidence. <i>J. Chem. Educ</i></p> <p>Jessica L Andrews. (2020). Experimenting with At-Home General Chemistry Laboratories During the COVID-19 Pandemic. <i>J. Chem. Educ</i></p>																								

PLO and CO mapping

CO	PLO									
	Attitude	Generic Skills		Knowledge				Specific Skills		
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
CO1		✓								
CO2							✓			
CO3							✓			
CO4							✓			
CO5							✓			
CO6										✓
CO7										✓
CO8										✓