



**Diponegoro University**  
**Faculty of Science and Mathematics**  
**Undergraduate Program Of Chemistry**

Module designation	<b>General Chemistry 2 (KD2)</b>
Semester(s) in which the module is taught	2
Person responsible for the module	Dr. Parsaoran S, MS; Drs. Abdul Haris, M.Si; Dr. Dwi Hudyanti, M.Sc; Dra. Taslimah, M.Si; Dr. M. Asyari, M.Si; Drs. WH Rahmanto, M.Si
Language	Indonesian
Relation to curriculum	Compulsory <del>/elective/</del> specialisation
Teaching methods	Lecture
Workload (incl. contact hours, self-study hours)	Face to face : 1 x (3 x 50 min); Structured study: 1 x (3 x 60 min); Self study: 1 x (3 x 60 min)
Credit points	3
Required and recommended prerequisites for joining the module	No requirement

<p>Module objectives/intended learning outcomes</p>	<ol style="list-style-type: none"> <li>1. Demonstrate an attitude of being responsible for work in the field of expertise independently.</li> <li>2. Able to apply logical, critical, systematic, and innovative thinking in the context of the development or implementation of science and technology that pays attention to and applies humanities values in accordance with their field of expertise.</li> <li>3. Able to demonstrate independent, quality, and measurable performance.</li> <li>4. Able to make decisions on a regular basis in the context of solving problems in their area of expertise, based on the results of analysis of information and data.</li> <li>5. Able to produce appropriate conclusions based on the results of identification, analysis, isolation, transformation and synthesis of chemicals that have been carried out.</li> <li>6. Mastering the theoretical concepts of structure, properties, changes, kinetics, and energetics of molecules and chemical systems, identification, separation, characterization, transformation, synthesis of micromolecular chemicals and their application.</li> </ol>
<p>Content</p>	<ol style="list-style-type: none"> <li>1. Physical properties of solutions and colloids (part 1)</li> <li>2. Physical properties of solutions and colloids (part 2)</li> <li>3. Redox reactions and Electrochemistry (section 1): 1. Definitions, 2. How to balance redox reactions, 3. Conduction in metals and electrolytes, 4. Galvanic cells, 5. Reduction potential.</li> <li>4. Redox reactions and electrochemistry (section 2): 6. Spontaneity of redox reactions, 7. Relationship between thermodynamic equilibrium constants and cell potential, 8. Effects of concentration on cell potential, 9. Electrolysis of cells, 10. Quantitative aspects of electrolysis, and 11. Corrosion .</li> <li>5. Chemical kinetics (section 1): 1. Understanding the rate of chemical reactions, 2. Reaction rates and their measurement, 3. The law of rate.</li> <li>6. Chemical kinetics (section 2): 3. Mechanism of reaction, 4. Effect of temperature on reaction rate, 5. Energy of activation.</li> <li>7. Chemical kinetics (section 3): 6. General understanding of catalysts, 7. Definition of radical reactions and chain reactions.</li> <li>8. Reactivity of elements &amp; compounds / Properties of elements</li> <li>9. General Knowledge of Chemistry, Elements and Compounds / Introduction to Material Chemistry: Types of functional groups and general formulas of organic compounds "Carbon compounds: alkanes, alkenes, alkynes, linear, branched, cyclic, aromatic; Functional groups: alcohols, aldehydes, carboxylates, ketones."</li> <li>10. General Knowledge of Chemistry, Elements and Compounds / Introduction to Material Chemistry: Types of functional groups and general formulas of organic compounds "Understanding Polymers; Understanding Biomolecules."</li> </ol>

Exams and assessment formats	Mid-Semester Exam and Final Exam
Study and examination requirements	Participatory Activities 20% Project Results 30% Task 10% Quiz 10% Mid-semester 15% Final exams 15%
Reading list	<ol style="list-style-type: none"> <li>1. Chang, R., 2005, "Chemistry", 8th ed., Random House, Inc., New York.</li> <li>2. Brady, J.E., 1990, "General Chemistry : Principles and Structure", 7th ed., John Wiley &amp; Sons, Inc. New York.</li> <li>3. <a href="http://wine1.sb.fsu.edu/chm1045">http://wine1.sb.fsu.edu/chm1045</a></li> <li>4. Siahaan, P., 2010, Kimia Dasar II: Konsep-Konsep Dasar Ilmu Kimia, Buku Ajar, Jurusan Kimia, Universitas Diponegoro, Semarang</li> </ol>