<table>
<tr><td colspan="2">  </td><td colspan="4">Faculty of Natural Sciences and Mathematics
Chemistry Department
Chemistry Education Study Program</td></tr>
<tr><td colspan="2">Module name</td><td colspan="4">General Chemistry</td></tr>
<tr><td colspan="2">Module level, if applicable</td><td colspan="4">1st Year</td></tr>
<tr><td colspan="2">Code, if applicable</td><td colspan="4">SPK-103</td></tr>
<tr><td colspan="2">Semester(s) in which the module is taught</td><td colspan="4">1st semester</td></tr>
<tr><td colspan="2">Person responsible for the module</td><td colspan="4">Prof. Riyanto, Ph.D</td></tr>
<tr><td colspan="2">Lecturer</td><td colspan="4">Prof. Riyanto, Ph.D</td></tr>
<tr><td colspan="2">Language</td><td colspan="4">Bahasa Indonesia</td></tr>
<tr><td colspan="2">Relation to curriculum</td><td colspan="4">Compulsory</td></tr>
<tr><td>Teaching methods</td><td>Class size</td><td>Forms of active participation</td><td colspan="3">Workload 136 hours</td></tr>
<tr><td rowspan="3">Theory</td><td rowspan="3">50-60</td><td rowspan="3">Discussion</td><td>Lecture: 150 (min) x 16 (meeting)</td><td colspan="2">40hours</td></tr>
<tr><td>Assignment: 180 (min) x 16 (week)</td><td colspan="2">48 hours</td></tr>
<tr><td>Independent study: 180 (min) x 16 (week)</td><td colspan="2">48 hours</td></tr>
<tr><td colspan="2">ECTS Credit</td><td colspan="4">4.86</td></tr>
<tr><td colspan="2">Credit points</td><td colspan="4">3 SCU</td></tr>
<tr><td colspan="2">Requirements according to the examination regulations</td><td colspan="4">Minimum attendance at lectures is 75% (according to UII regulation)</td></tr>
<tr><td colspan="2">Recommended prerequisites</td><td colspan="4">N/A</td></tr>
<tr><td colspan="2">Related course</td><td colspan="4">General Chemistry Labwork</td></tr>
<tr><td colspan="2">Module objectives/intended learning outcomes</td><td colspan="4">On successful completion of the course students should be able to:
1. Explain the concepts of atomic theory, elements and periodicity, as well as chemical knowledge of some important elements
2. Explain the basic concepts of elements, atomic structure, molecules, molecular formation and molecular structure
3. Explain the concept of stoichiometry</td></tr>
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<tr><td></td><td>4. Explain the concept of chemical bonds, types of chemical bonds and bond theory
5. Explain gases and their properties
6. Explain the concept of solutions: ideal and non-ideal solutions, colligative properties of solutions students understand the concepts of reaction kinetics and thermodynamics, thermochemistry and determining the enthalpy of reactions/physical changes
7. Explain the concept of acid-base and the concept of reduction-oxidation
8. Explain the concept of equilibrium including homogeneous and heterogeneous equilibrium
9. Explain the basics of organic chemistry
10. Explain the concept of chemical development in industrial and environmental applications</td></tr>
<tr><td>Content</td><td>• Atom and atomic theory,
• Molecular and molecular structure,
• Stoichiometry,
• Chemical bonds,
• Gas equations, solutions,
• Thermodynamics,
• Chemical kinetics,
• Acid-base,
• Reduction-oxidation,
• Equilibrium reactions,
• Organic chemistry,
• Industrial chemistry and the environment</td></tr>
<tr><td>Study and examination requirements and forms of examination</td><td>Final score (NA) is calculated as follows:
<table>
<tr><th>Intended learning outcomes</th><th>Weight (%)</th><th>Technique of assessment</th></tr>
<tr><td>1</td><td>10</td><td>Written test (midterm)</td></tr>
<tr><td>2</td><td>10</td><td>Written test (midterm)</td></tr>
<tr><td>3</td><td>10</td><td>Written test (midterm)</td></tr>
<tr><td>4</td><td>10</td><td>Written test (midterm)</td></tr>
<tr><td>5</td><td>10</td><td>Written test (midterm)</td></tr>
<tr><td>6</td><td>10</td><td>Written test (Final Examination)</td></tr>
<tr><td>7</td><td>10</td><td>Written test (Final Examination)</td></tr>
<tr><td>8</td><td>10</td><td>Written test (Final Examination)</td></tr>
<tr><td>9</td><td>10</td><td>Written test (Final Examination)</td></tr>
</table></td></tr>
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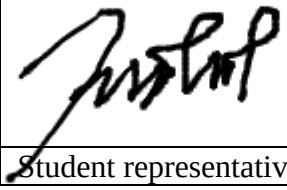
	10	10	Written test (Final Examination)
Media employed	Power point slide presentation, video, Google classroom		
Reading list	Ebbing, D., and Gammon, S.D., 2009, General Chemistry, Enhanced 9th ed., Houghton Mifflin Company. McQuarrie, D.A., Rock, P.A., and Gallogly, E.B., 2010, General Chemistry, University Science Books. Chang, R., and Overby, J., 2010, General Chemistry: The Essential Concepts, McGraw-Hill Companies. Hill, J.W., Petrucci, R.H., McCreary, T.W., and Perry, S.S., General Chemistry, 4th ed., 2004, John Welly and Sons Inc., New York. Brown, T.L., LeMay, H.E., Bursten, B.E. & Murphy, C.J. 2006. Chemistry the Central Science. Tenth edition. Pearson Education Inc. United State of America. Ebbing, D., and Gammon, S.D., 2009, *General Chemistry, Enhanced 9th ed, (with Enhanced WebAssign with eBook Printed Access Card)*, Houghton Mifflin Company. McQuarrie, D.A., Rock, P.A., and Gallogly, E.B., 2010, *General Chemistry*, University Science Books. Chang, R., and Overby, J., 2010, *General Chemistry: The Essential Concepts*,The McGraw-Hill Companies. Hill, J.W., Petrucci, R.H., McCreary, T.W., and Perry, S.S., *General Chemistry, 4th ed.*, 2004, John Welly and Sons Inc., New York. Brady, J.E., 1990, *General Chemistry, Principles & Structure*, 5th ed, John Willy & Sons, New York. Petrucci, H.R., 1997, Gen*eral Chemistry Principle and Modern Apliccations*, Prentice Hall International, New Jersey		

Prepared by:	Verified by:	Authorized by:
		
Person responsible for the module	Student representative	Coordinator Program