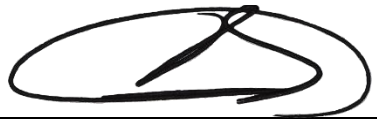
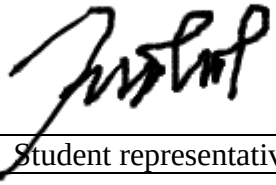
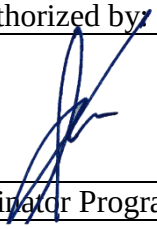
<table>
<tr><td colspan="2">  </td><td colspan="4">Faculty of Natural Sciences and Mathematics
Chemistry Department
Chemistry Education Study Program</td></tr>
<tr><td colspan="2">Module name</td><td colspan="4">General Chemistry Labwork</td></tr>
<tr><td colspan="2">Module level, if applicable</td><td colspan="4">1st Year</td></tr>
<tr><td colspan="2">Code, if applicable</td><td colspan="4">SPK-106</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
Beta Wulan Febriana, M.Pd.</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 45 hours</td></tr>
<tr><td rowspan="2">Practice</td><td rowspan="2">20-25</td><td rowspan="2">Laboratory work, discussion</td><td>Laboratory work: 170 (min) x 10 (meeting)</td><td>28 hours</td></tr>
<tr><td>Preparations: 60 (min) x 10 (meeting) + 200 (min) Exam: 120 (min) x 100 (meeting)</td><td>17 hours</td></tr>
<tr><td colspan="2">ECTS Credits</td><td colspan="4">1.61</td></tr>
<tr><td colspan="2">Credit points</td><td colspan="4">1 SCU</td></tr>
<tr><td colspan="2">Requirements according to the examination regulations</td><td colspan="4">Student must follow all the series of practicum activities. Violation of this will result in giving an E value (failing practicum).
Student who do not participate in the practicum for 3 (three) times without justified reasons may not attend the next practicum and are considered to have resigned from the practicum.
Student who for some reason cannot follow the practicum according to the predetermined schedule can apply for inhal practicum. Inhal costs are determined by the laboratory.
Student who inhal allowed for a student a maximum of 3 (three) times.
Student who have not completed laboratory expenses such as tools, materials or tasks (if any) within a certain time will be given a K or F value.</td></tr>
<tr><td colspan="2">Recommended prerequisites</td><td colspan="4">Safety Laboratory Workshop</td></tr>
</table>

<table>
<tr><td>Related course</td><td>General Chemistry</td></tr>
<tr><td>Module objectives/intended learning outcomes</td><td>On successful completion of the course students should be able to:
1. Conduct practical activities by paying attention to aspects of work safety and security (K3)
2. Evaluate practical activities
3. Explain basic theoretical chemistry concepts</td></tr>
<tr><td>Content</td><td>• Introduction to tools and techniques laboratory,
• Preparation of silver chloride and barium chromate compounds with the stoichiometry theory of precipitation reaction,
• Soap making by ester saponification reaction with NaOH base,
• Purification of kitchen salt by precipitation method,
• Formalin analysis,
• Neutralization of acidic and basic industrial wastes,
• Metal plating using electroplating technique and
• Making batteries from fruit</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>35</td><td>Non test: performance observation</td></tr>
<tr><td>2</td><td>30</td><td>Non test: lab work report</td></tr>
<tr><td>3</td><td>35</td><td>Written test (pretest, posttest)</td></tr>
</table></td></tr>
<tr><td>Media employed</td><td>Chemistry laboratory equipment</td></tr>
<tr><td>Reading list</td><td>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.</td></tr>
</table>

	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