






Faculty of Natural Sciences and Mathematics  
Chemistry Department  
Chemistry Education Study Program

Module Name		Analytical Chemistry Lab work		
Module level, if applicable		2 <sup>nd</sup> year		
Code, if applicable		SPK-321		
Semester (s) in which the module is taught		3 <sup>rd</sup> semester		
Person responsible for the module		Prof. Riyanto, M.Si., Ph.D		
Lecturer(s)		Prof. Riyanto, M.Si., Ph.D Muhaimin, M.Sc.		
Language		English- Indonesia		
Relation to curriculum		Compulsory		
Teaching methods	Class size	Forms of active participation	Workload 45 hours	
Practicum	20-25	Laboratory work, discussion	Laboratory work: 170 (min) x 10 (meeting)	28 hours
			Preparation: 60 (min) x 10 + 200 (min) Exam: 120 (min) + 100 (min)	17 hours
ECTS credit		1.61		
Credit points		1 SCU		
Requirements according to examination regulations		<p>Students must follow all the series of practicum activities. Violation of this will result in giving an E value (failing practicum). Students 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.</p> <p>Students 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.</p> <p>Students who inhal allowed for a maximum of 3 (three) times.</p> <p>Students 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.</p>		
Recommended prerequisites		N/A		

Related course	Analytical Chemistry I and Analytical Chemistry II		
Module objectives/intended learning	<p>On successful completion of the course students should be able to:</p> <ol style="list-style-type: none"> <li>1. Identify and analyze chemicals correctly</li> <li>2. Produce correct conclusions based on the identification/analysis of chemical compounds</li> <li>3. Present analytical conclusions correctly to make decisions</li> <li>4. Analyze information and data in the chemical field and apply the principles of occupational health and safety while in the chemical laboratory</li> </ol>		
Content	<ul style="list-style-type: none"> <li>● Preparation of the reagent solution,</li> <li>● Determination of the concentration of standard solutions titrimetrically,</li> <li>● Preparation and determination of pH buffer solutions with pH-meter,</li> <li>● Reaction of Iron (III) Thiocyanate Equilibrium, Determination of Solubility Product Constants,</li> <li>● Determination of Monoprotic Acid Dissociation Constants Using pH-Meter,</li> <li>● Qualitative Analysis of Cations,</li> <li>● Anion Qualitative Analysis,</li> <li>● Qualitative Analysis Application.</li> </ul>		
Study and examination requirements and forms of examination	Final score (NA) is calculated as follows:		
	Intended learning outcomes	Weight (%)	Technique of assessment
	1	20	Test: pretest
	2	30	Non test: performance observation
	3	30	Non test: lab work report
	4	20	Test: posttest
Media employed	Analytical chemistry laboratory equipment		
Reading lists	<ol style="list-style-type: none"> <li>1. Eubanks, L.P., Middlecamp, C.H., Heltzel, C.E., dan Keller, S.W., 2006, Chemistry in context: Applying chemistry to society, 6th ed., McGraw-Hill Higher Educ, Boston.</li> <li>2. Fernando, Q and Ryan M.D., 1982, Calculations in Analytical Chemistry, Harcourt Brace Jovanovich, Inc.</li> <li>3. Fifield, F.W., dan Kealey, D., 2000, Principles and practice of analytical chemistry, 5th ed., Blackwell Science Ltd., USA.</li> <li>4. Garcia-Domenech, R., et al, 1996, Determination of the dissociation constant for a monoprotic acid by simple pH measurement, J. Chem. Edu. Vol.73, No.8.p.792.</li> <li>5. Green, D.B., Rechtsteiner, G. Dan Honodel, A., 1996, Determination of the Thermodynamic solubility of <math>PbI_2</math> assuming nonideal behavior, J.Chem.Educ., vol.73 N0.8</li> <li>6. Tim dosen FMIPA UII, Petunjuk Praktikum Kimia Analitik I, FMIPA-UII, Yogyakarta</li> </ol>		

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