



UNIVERSITAS NEGERI JAKARTA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
CHEMISTRY STUDY PROGRAM

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Bachelor in Chemistry

MODULE HANDBOOK

Module name:	Practicum of Physical chemistry	
Module level, if applicable:	Undergraduate	
Code:		
Sub-heading, if applicable:	-	
Classes, if applicable:	-	
Semester:		
Module coordinator:	Dr. Fera Kurniadewi, M.Si	
Lecturer(s):	Dr. Yusmaniar, M.Si Dr. Maria Paristiowati, M.Si. Dr. Afrizal, M.Si Dr. Darsef, M.Si	
Language:	Bahasa Indonesia	
Classification within the curriculum:	Compulsory course	
Type of Teaching	Contact hours per week during the semester	Class Size
Lecture (Expository, discussion, exercise)	100 minutes	40
Workload:	Total workload is 170 minutes (1.5 ECTS) per semester which consists of 170 minutes (1.5 ECTS) laboratory practices per week for 16 weeks	
Credit points:	1.5 ECTS	
Prerequisite course(s):	None	
Course Outcomes:	After taking this course the students have ability to: CLO1. Students can determine the heat of reaction or the heat of dissolution using a calorimeter CLO2. Students can determine the solubility of substances at various temperatures and determine the heat of differential dissolution	

	<p>CLO3. Students can make a curve of the relationship between solubility and temperature in a phase diagram</p> <p>CLO4. Students can make a solubility curve of a liquid contained in a mixture of two certain liquids</p> <p>CLO5. Students can determine the Freundlich adsorption isotherm constants for the adsorption process of acetic acid/hydrochloric acid on charcoal.</p>															
Content:	<ol style="list-style-type: none"> 1. Thermodynamics 2. Chemical Equilibrium 3. Phase Equilibrium 4. Electrochemistry 5. Kinetics 															
Study/exam achievements:	<p>Examinations are conducted as Unit Tests. There are two-unit tests, each covers 4-5 chapters. The final marks are derived from unit tests (60%) and structured tasks (40%).</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">No</th> <th style="width: 15%;">CO</th> <th style="width: 30%;">Assesment Object</th> <th style="width: 25%;">Assessment Techniques</th> <th style="width: 20%;">Weight</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">CO 1-5</td> <td> <ol style="list-style-type: none"> a. Pre-test b. Report c. Process d. UAP </td> <td style="text-align: center;">Written test</td> <td style="text-align: center;"> 15% 25% 30% 30% </td> </tr> <tr> <td colspan="4" style="text-align: right;">Total</td> <td style="text-align: center;">100%</td> </tr> </tbody> </table>	No	CO	Assesment Object	Assessment Techniques	Weight	1	CO 1-5	<ol style="list-style-type: none"> a. Pre-test b. Report c. Process d. UAP 	Written test	15% 25% 30% 30%	Total				100%
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1	CO 1-5	<ol style="list-style-type: none"> a. Pre-test b. Report c. Process d. UAP 	Written test	15% 25% 30% 30%												
Total				100%												
Media	Zoom meeting, Google Meet, ALKANA, Ms. Team															

Literatures	<ol style="list-style-type: none"> 1. F. Daniells, et. al. 1970. Experimental Physical Chemistry, 7th, editions. Mc. Graw Hills, New York. 2. PARR bulletin on Bomb Calorimetry. 3. G. W. Castellan. 1975. Physical Chemistry, 7th editions. Adisson Wesley, Massachusets. 4. A. W. Francis. 1963. Liquid-liquid Equilibrium, 2nd editions. Pergamon Press. 5. J. M. Wilson, et. al. 1968. Experiment in Physical Chemistry. Alih Bahasa: Thenawidjaya, M, jilid 2, Erlangga, Jakarta. 6. R. A. Alberty, dan F. Daniells. 1983. Kimia Fisika. Erlangga, Jakarta. 7. S. H. Maron, and C. F. Prutton. 1964. Principle Physical Chemistry, 7th editions. 8. Stein Bach, King. Experiment in Physical Chemistry. 9. Crowe,T., Bradshaw, P. 2006. Chemistry for the Biosciences, The essential concepts. Oxford University Press. 10. Massey, B. S. 1983. Mechanics of Fluids. Van Nostrand Reinhold (UK). ISBN 0-442-30552-4. 11. Cornwell, J. E and Harriman. 1970. Experimental Physical Chemistry, 7th Ed. Mc. Graw-Hill, New York. 12. Albert,A., Serjeant, E.P. 1971. The Determination of Ionization Constants: A Laboratory Manual. Chapman and Hall: London. 13. Ikhazuangbe, Ohien, P.M, Babalola, A. 2015. "Reaction Rate and Rate Constant of The Hydrolisis of Ethyl Acetate With Sodium Hydroxide". American Journal of Scientific and Industrial Research,Vol. 6, pp. 1-4. 14. Vonderbrink, S.A. 2004. Determination of the Rate of a Reaction, Its Order, and Its Activation Energy. 15. P. W. Atkins. 2014. Kimia Fisik Jilid 2 Edisi Terjemahan. Erlangga, Jakarta.
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PLO and CO mapping

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12
CO1			v			v						
CO2			v			v						
CO3			v			v						
CO4			v			v						
CO5			v			v						