

## MODULE HANDBOOK

Module Name	Surface Chemistry
Module level	Bachelor
Abbreviation, if applicable	8420403168
Sub-heading, if applicable	-
Course included in the module, if applicable	-
Semester/term	6 <sup>th</sup> /Third Year
Module coordinator(s)	Prof. Dr. Suyono, M.Pd.
Lecturer(s)	1. Dr. Harun Nasrudin, M.S. 2. Bertha Yonata, S.Pd., M.Pd. 3. Dian Novita, S.T., M.Pd.
Language	Indonesian
Classification within the curriculum	Elective Course
Teaching format/class hours per week during the semester:	3 hours lecturers (50 min per hours)
Workload:	1 CU for bachelor degree equals to 3 workhours per week or 170 minutes (50' face to face learning, 60' structured learning, and 60' independent learning). In one semester, courses are conducted in 14 weeks (excluding mid and end-term exam). Thus, 1 CU equals to 39.67 workhours per semester. One CU equals to 1.59 ECTS.
Credit points:	3 CU = 3 x 1.59 = 4.77 ECTS
Prerequisite course(s):	-
Targeted learning outcomes:	<p>CLO 1 : Students have ability to communicate the analysis results of viscosity, surface tension, adsorption, and colloids so that they can develop a conceptual framework to formulate performance or alternative performance in solving chemical problems in life</p> <p>CLO 2 : Students have mastered to apply laboratory equipment for analyzing viscosity, surface tension, adsorption, and colloids</p> <p>CLO 3 : Students have knowledge on surface properties of capillary symptoms, surface thermodynamics, adsorption, surfactants, detergents, emulsions, bases and aerosols, chemisorption and catalysts.</p> <p>CLO 4 : Students have the ability to work in team and responsible for designing, implementing and reporting experiments results of viscosity, surface tension, adsorption, and colloids.</p>
Content:	<p><b>Introduction:</b> Exploring the surface properties of capillary symptoms, surface thermodynamics, adsorption, surfactants, detergents, emulsions, bases and aerosols, chemisorption and catalysts</p> <p><b>Fluid Viscosity:</b> Its definition and scope, types of viscometer, coefficient of viscosity, principle work of viscosity, how to measure viscosity, factors affecting viscosity</p>

	<p><b>Surface thermodynamics for surface tension:</b> surface properties of fluid, surface tension, surface properties of solid matter,</p> <p><b>Properties of surface thermodynamic for adsorption:</b> adsorption on the surface of the substance,</p> <p><b>Colloid systems and its usage in daily life:</b> the colloids states in terms of particle size, types of colloids and its properties, kinetic properties of colloids, optical properties of colloids, colloid stability, colloids usage in daily life</p>
Study / exam achievements:	<p>Students are considered to be competent and pass if at least get 55</p> <p>Final score is calculated as follows: 20% participation + 30% assignment + 20% middle exam (UTS) &amp; 30% final exam (UAS)</p> <p>Table index of graduation</p> <ul style="list-style-type: none"> <li>• A = 4 (85 ≤ - &lt; 100)</li> <li>• A- = 3,75 (80 ≤ - &lt; 85)</li> <li>• B+ = 3,5 (75 ≤ - &lt; 80)</li> <li>• B = 3 (70 ≤ - &lt; 75)</li> <li>• B- = 2,75 (65 ≤ - &lt; 75)</li> <li>• C+ = 2,5 (60 ≤ - &lt; 65)</li> <li>• C = 2 (55 ≤ - &lt; 60)</li> <li>• D = 1 (40 ≤ - &lt; 55)</li> <li>• E = 0 (0 ≤ - &lt; 40)</li> </ul>
Media:	Computer, LCD, White board
Learning Methods	Individuals assignment, group assignment, discussion, presentation, and practicum
Literature:	<ol style="list-style-type: none"> <li>1. Duncan J.S. 2004. <i>Introduction to Colloid and Surface Chemistry</i>. Butter Worths</li> <li>2. Adamson dan Gost AP, 1977, <i>Physical Chemistry of Surfaces 6<sup>th</sup> ed.</i> New York: Willey Inter Science.</li> </ol>