# MODULE HANDBOOK

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| Module Name | Surface Chemistry |
| Module level | Bachelor |
| Abbreviation, if applicable | 8420403168 |
| Sub-heading, if applicable | - |
| Course included in the module, if applicable | - |
| Semester/term | 6th/Third Year |
| Module coordinator(s) | Prof. Dr. Suyono, M.Pd. |
| Lecturer(s) | 1. Dr. Harun Nasrudin, M.S.<br>2. Bertha Yonata, S.Pd., M.Pd.<br>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: | 3 x 50 minutes lectures, 3 x 60 minutes structured activity,<br>3 x 60 minutes individual activity, 14 weeks per semester,<br>119 total hours per semester ~ 4.77 ECTS** |
| Credit points: | 3 CU = 3 x 1.59 = 4.77 ECTS |
| Prerequisite course(s): | - |
| Targeted learning outcomes: | 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<br>CLO 2 : Students have mastered to apply laboratory equipment for analyzing viscosity, surface tension, adsorption, and colloids<br>CLO 3 : Students have knowledge on surface properties of capillary symptoms, surface thermodynamics, adsorption, surfactants, detergents, emulsions, bases and aerosols, chemisorption and catalysts.<br>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. |
| Content: | **Introduction**:<br>Exploring the surface properties of capillary symptoms, surface thermodynamics, adsorption, surfactants, detergents, emulsions, bases and aerosols, chemisorption and catalysts<br>**Fluid Viscosity:** Its definition and scope, types of viscometer, coefficient of viscosity, principle work of viscosity, how to measure viscosity, factors affecting viscosity |

<table>
<tr><td></td><td>Surface thermodynamics for surface tension: surface properties of fluid, surface tension, surface properties of solid matter,<br>Properties of surface thermodynamic for adsorption: adsorption on the surface of the substance,<br>Colloid systems and its usage in daily life: 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</td></tr>
<tr><td>Study / exam achievements:</td><td>Students are considered to complete the course and pass if they obtain at least 40% of maximum final grade. The final grade (NA) is calculated based on the following ratio:
<table>
<tr><td>Assessment Components</td><td>Percentage of contribution</td></tr>
<tr><td>Participation</td><td>20%</td></tr>
<tr><td>Assignment</td><td>30%</td></tr>
<tr><td>Mid-semester test</td><td>20%</td></tr>
<tr><td>Final semester test</td><td>30%</td></tr>
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<tr><td>Media:</td><td>Computer, LCD, White board</td></tr>
<tr><td>Learning Methods</td><td>Individuals assignment, group assignment, discussion, presentation, and practicum</td></tr>
<tr><td>Literature:</td><td>1. Duncan J.S. 2004. Introduction to Colloid and Surface Chemistry. Butter Worths<br>2. Adamson dan Gost AP, 1977, Physical Chemistry of Surfaces 6<sup>th</sup> ed. New York: Willey Inter Science.</td></tr>
<tr><td>Notes:</td><td>*1 CU in learning process = three periods consist of: (a) scheduled instruction in a classroom or laboratory (50 minutes); (b) structured activity (60 minutes); and (c) individual activity (60 minutes) according to the Regulation of Indonesia Ministry of Research, Technology, and Higher Education No. 44 Year 2015 jo. the Regulation of Indonesia Ministry of Research, Technology, and Higher Education No. 50 Year 2018.</td></tr>
<tr><td></td><td>**1 CU = 1,59 ECTS according to Rector Decree Of Universitas Negeri Surabaya No. 598/Un38/Hk/Ak/2019</td></tr>
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