



UNIVERSITAS NEGERI YOGYAKARTA
 FACULTY OF MATHEMATICS AND NATURAL SCIENCES
 DEPARTMENT OF CHEMISTRY
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Bachelor of Science in Chemistry

MODULE HANDBOOK

Module name:	Surfactants and Additives Materials						
Module level, if applicable:	Undergraduate						
Code:	KMA 6247						
Sub-heading, if applicable:	-						
Classes, if applicable:	-						
Semester:	7 th						
Module coordinator:	Prof. Dr. Endang Widjajanti						
Lecturer(s):	Prof. Dr. Endang Widjajanti						
Language:	Bahasa Indonesia and English						
Classification within the curriculum:	Elective Course						
Teaching format / class hours per week during the semester:	100 minutes lectures, 120 structured activities and 120 individual study per week						
Workload:	Total workload is 90,67 hours per semester which consists of 100 minutes lectures, 120 structured activities and 120 individual study per week for 16 weeks						
Credit points:	2 SKS (3 ECTS)						
Prerequisites course(s):	Chemical Equilibrium, Molecular Dynamics						
Course Outcomes:	<p>After taking this course the students are expected to be able to:</p> <table border="1" style="width: 100%;"> <tr> <td style="width: 15%;">CO1</td> <td>review various theories and ways of working surfactants and additives and their applications</td> </tr> <tr> <td>CO2</td> <td>Assess the effect of surfactants and additives on the environment</td> </tr> <tr> <td>CO3</td> <td>Integrate theories and concepts to analyze surfactants and additives in commercial products</td> </tr> </table>	CO1	review various theories and ways of working surfactants and additives and their applications	CO2	Assess the effect of surfactants and additives on the environment	CO3	Integrate theories and concepts to analyze surfactants and additives in commercial products
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CO2	Assess the effect of surfactants and additives on the environment						
CO3	Integrate theories and concepts to analyze surfactants and additives in commercial products						
Content:	<p>Application of the structure of surfactants and their additives relationship with the mechanism process. Students also describe the properties of interface surfactants, as well as the factors that influence their work processes, and apply these concepts in some cases.</p> <ol style="list-style-type: none"> 1. Definition, type of surfactant and example in commercial product. 2. Effect of surfactants on the environment. 3. Theory of micellar formation 4. Surfactant adsorption and association models 						

	<ol style="list-style-type: none"> 5. Surfactants and the theory of solid-liquid interfaces, wetting 6. Application of surfactants in the food and drug industry 7. Application of surfactants in the polymer industry 8. Definition, Types of additives and examples in commercial products 9. Effect of additives and toxicity 10. Various types of additives in food, polymer industry, lubricants and pharmaceuticals 11. Techniques for analyzing additives in other foods and products 																								
Study/exam achievements:	<p>Attitude assessment is carried out at each meeting by observation and / or self-assessment techniques using the assumption that basically every student has a good attitude. The student is given a value of very good or not good attitude if they show it significantly compared to other students in general. The result of attitude assessment is not a component of the final grades, but as one of the requirements to pass the course. Students will pass this course if at least they show a good attitude.</p> <p>The final mark will be weighted as follows:</p> <table border="1"> <thead> <tr> <th>No</th> <th>CO</th> <th>Assessment Object</th> <th>Assessment Technique</th> <th>Weight</th> </tr> </thead> <tbody> <tr> <td rowspan="4">1</td> <td rowspan="4">CO1, CO2, CO3</td> <td>a. Performance</td> <td>Observation</td> <td>15%</td> </tr> <tr> <td>b. Individual and Group Assignment</td> <td>Presentation / written assignment</td> <td>45%</td> </tr> <tr> <td>c. Mid-term Exam</td> <td>Written test</td> <td>20%</td> </tr> <tr> <td>d. Final Exam</td> <td></td> <td>20%</td> </tr> <tr> <td colspan="3">Total</td> <td></td> <td>100%</td> </tr> </tbody> </table>	No	CO	Assessment Object	Assessment Technique	Weight	1	CO1, CO2, CO3	a. Performance	Observation	15%	b. Individual and Group Assignment	Presentation / written assignment	45%	c. Mid-term Exam	Written test	20%	d. Final Exam		20%	Total				100%
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		d. Final Exam		20%																					
Total				100%																					
Forms of media:	LCD Projector, Laptop/Computer, Learning Video, <i>Power Point Slides</i>																								
References:	<ol style="list-style-type: none"> 1. Aveyard, B. (2019). <i>Surfactants: In Solution, at Interfaces and in Colloidal Dispersions</i>. Oxford: Oxford University Press 2. Romsted, L. S. (2014). <i>Surfactant Science and Technology</i>, Taylor and Francis Group Pub, USA 3. Rosen M.J. (2004). <i>Surfactant and Interfacial phenomena</i>, John Willey and Sons Pub, USA 4. Taddros, T.F.(2010) <i>Self-Organized Surfactant</i>. Madrid: Wiley 5. Farn, R.J. (2006) <i>Chemistry and Technology of Surfactant</i>. Victoria: Blackwell Publishing 6. Kronberg, B. et. Al. (2014). <i>Surface Chemistry of Surfactant and Polymer</i>. United Kingdom: John Wiley and Sons 																								

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PLO and CO mapping

	PLO									
	Attitude	General Skill			Knowledge			Specific Skill		
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
CO1						√				
CO2								√		
CO3									√	