	Universitas Negeri Surabaya Faculty of Mathematics and Natural Sciences Undergraduate Chemistry Education Study Program	Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
SURFACE CHEMISTRY	8420402322		T=2	P=0	ECTS=3.18	6	July 18, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	.....	.....	Prof. Dr. Utiya Azizah, M.Pd.

Learning model	**Project Based Learning**
Program Learning Outcomes (PLO)	**PLO study program that is charged to the course**
	Program Objectives (PO)
	PLO-PO Matrix

	P.O

PO Matrix at the end of each learning stage (Sub-PO)

P.O	Week															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Short Course Description	Study of surface properties, capillarity symptoms, surface thermodynamics, adsorption, surfactants, detergents, emulsions, bases and aerosols, chemisorption and catalysts
References	**Main :**
	1. Duncan J.S. 2004. I ntroduction to Colloid and Surface Chemistry . New York: Butter Worths. 2. Adamson and Gost AP. 1977. Physical Chemistry of Surfaces 6th ed. New York : Willey Inter Science.
	Supporters:
Supporting lecturer	Prof. Dr. Harun Nasrudin, M.S. Dian Novita, S.T., M.Pd. Bertha Yonata, S.Pd., M.Pd.

Week-	Final abilities of each learning stage (Sub-PO)	Evaluation		Help Learning, Learning methods, Student Assignments, [Estimated time]		Learning materials [References]	Assessment Weight (%)
		Indicator	Criteria & Form	Offline (*offline*)	Online (*online*)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Understand fluid viscosity	1.Explain the meaning and scope 2.Explain the various types of viscometers	**Criteria:** Participation%2 2 UTS%2 2 Assignments%2 3 UAS%2 3	Practice 2 X 50 presentation and discussion questions			0%

2	Understand fluid viscosity	1. Explain the viscosity coefficient 2. Explain the working principle of viscosity 3. Explain the various ways of measuring viscosity 4. Explain the factors that influence viscosity	**Criteria:** Participation%2 2 UTS%2 2 Assignments%2 3 UAS%2 3	Practice questions for presentations, practicums and discussions 2 X 50			0%
3	Understanding the thermodynamic properties of surfaces for surface tension studies	Explain the properties of surfaces in liquid matter	**Criteria:** Participation%2 2 UTS%2 2 Assignments%2 3 UAS%2 3	Discussion 2 X 50			0%
4	Understanding the thermodynamic properties of surfaces for surface tension studies	Explain surface tension	**Criteria:** Attached to UTS	Practice questions, practicals, presentations and discussions 2 X 50			0%
5	Understanding the thermodynamic properties of surfaces for adsorption studies	Explain the properties of surfaces in solid materials	**Criteria:** Participation%2 2 UTS%2 2 Assignments%2 3 UAS%2 3	Discussion 2 X 50			0%
6	Understanding the thermodynamic properties of surfaces for adsorption studies	Explain the properties of surfaces in solid materials	**Criteria:** Participation%2 2 UTS%2 2 Assignments%2 3 UAS%2 3	Discussion 2 X 50			0%
7	Understanding the thermodynamic properties of surfaces for adsorption studies	Explain the properties of surfaces in solid materials	**Criteria:** Participation%2 2 UTS%2 2 Assignments%2 3 UAS%2 3	Discussion 2 X 50			0%
8	Understanding fluid viscosity Understanding the thermodynamic properties of surfaces for surface tension studies	1. Explain the meaning and scope 2. Explain the various types of viscometer 3. Explain the viscosity coefficient 4. Explain the working principle of viscosity 5. Explain the various ways of measuring viscosity 6. Explain the factors that influence viscosity 7. Explain the surface properties of liquid materials 8. Explain surface tension	**Criteria:** Participation%2 2 UTS%2 2 Assignments%2 3 UAS%2 3	written test 2 X 50			0%
9	Understanding the thermodynamic properties of surfaces for adsorption studies	Explain about adsorption on the surface of substances	**Criteria:** Participation%2 2 UTS%2 2 Assignments%2 3 UAS%2 3	2 X 50 adsorption study			0%
10	Understanding the thermodynamic properties of surfaces for adsorption studies	Explain about adsorption on the surface of substances	**Criteria:** Participation%2 2 UTS%2 2 Assignments%2 3 UAS%2 3	2 X 50 adsorption study			0%
11	Understand the colloid system and its use in everyday life	Explain the state of colloids in terms of particle size, type of colloid and their properties. Explain the kinetic properties of colloids	**Criteria:** Participation%2 2 UTS%2 2 Assignments%2 3 UAS%2 3	Presentation and discussion 2 X 50			0%

12	Understand the colloid system and its use in everyday life	Explain the optical properties of colloids	**Criteria:** Participation%2 2 UTS%2 2 Assignments%2 3 UAS%2 3	Presentation and discussion 2 X 50			0%
13	Understand the colloid system and its use in everyday life	Explain the stability of colloids	**Criteria:** Participation%2 2 UTS%2 2 Assignments%2 3 UAS%2 3	Presentation and discussion 2 X 50			0%
14	Understand the colloid system and its use in everyday life	Mention the uses of colloids in everyday life	**Criteria:** Participation%2 2 UTS%2 2 Assignments%2 3 UAS%2 3	Presentation and discussion 2 X 50			0%
15	Understand the colloid system and its use in everyday life	Mention the uses of colloids in everyday life	**Criteria:** Participation%2 2 UTS%2 2 Assignments%2 3 UAS%2 3	Presentation, practicum and discussion 2 X 50			0%
16	UASUnderstanding the thermodynamic properties of surfaces for adsorption studiesUnderstanding colloidal systems and their use in everyday life	Explaining adsorption on the surface of substances. Explaining the state of colloids in terms of particle size, type of colloid and their properties. Explaining the kinetic properties of colloids. Explaining the optical properties of colloids. Explaining the stability properties of colloids. Mentioning the uses of colloids in everyday life.	**Criteria:** Participation%2 2 UTS%2 2 Assignments%2 3 UAS%2 3	Written Test 3 X 50			0%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
		0%

Notes

1. **Learning Outcomes of Study Program Graduates (PLO - Study Program)** are the abilities possessed by each Study Program graduate which are the internalization of attitudes, mastery of knowledge and skills according to the level of their study program obtained through the learning process.
2. **The PLO imposed on courses** are several learning outcomes of study program graduates (CPL-Study Program) which are used for the formation/development of a course consisting of aspects of attitude, general skills, special skills and knowledge.
3. **Program Objectives (PO)** are abilities that are specifically described from the PLO assigned to a course, and are specific to the study material or learning materials for that course.
4. **Subject Sub-PO (Sub-PO)** is a capability that is specifically described from the PO that can be measured or observed and is the final ability that is planned at each learning stage, and is specific to the learning material of the course.
5. **Indicators for assessing** ability in the process and student learning outcomes are specific and measurable statements that identify the ability or performance of student learning outcomes accompanied by evidence.
6. **Assessment Criteria** are benchmarks used as a measure or measure of learning achievement in assessments based on predetermined indicators. Assessment criteria are guidelines for assessors so that assessments are consistent and unbiased. Criteria can be quantitative or qualitative.
7. **Forms of assessment:** test and non-test.
8. **Forms of learning:** Lecture, Response, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning.
9. **Learning Methods:** Small Group Discussion, Role-Play & Simulation, Discovery Learning, Self-Directed Learning, Cooperative Learning, Collaborative Learning, Contextual Learning, Project Based Learning, and other equivalent methods.
10. **Learning materials** are details or descriptions of study materials which can be presented in the form of several main points and sub-topics.
11. **The assessment weight** is the percentage of assessment of each sub-PO achievement whose size is proportional to the level of difficulty of achieving that sub-PO, and the total is 100%.
12. TM=Face to face, PT=Structured assignments, BM=Independent study.