



**Universitas Negeri Surabaya**  
**Faculty of Mathematics and Natural Sciences**  
**Undergraduate Chemistry Study Program**

Document Code

### SEMESTER LEARNING PLAN

<b>Courses</b>	<b>CODE</b>	<b>Course Family</b>	<b>Credit Weight</b>	<b>SEMESTER</b>	<b>Compilation Date</b>																																	
Chemical industry	4720102101		T=2 P=0 ECTS=3.18	4	July 17, 2024																																	
<b>AUTHORIZATION</b>	<b>SP Developer</b>		<b>Course Cluster Coordinator</b>		<b>Study Program Coordinator</b>																																	
	.....		.....		Dr. Amaria, M.Si.																																	
<b>Learning model</b>	Project Based Learning																																					
<b>Program Learning Outcomes (PLO)</b>	PLO study program that is charged to the course																																					
	Program Objectives (PO)																																					
	PLO-PO Matrix																																					
		<table border="1" style="margin: auto;"> <tr><td style="width: 10%;">P.O</td></tr> </table>					P.O																															
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	PO Matrix at the end of each learning stage (Sub-PO)																																					
	<table border="1" style="margin: auto;"> <tr> <td rowspan="2" style="width: 5%;">P.O</td> <td colspan="16" style="text-align: center;">Week</td> </tr> <tr> <td style="width: 2%;">1</td><td style="width: 2%;">2</td><td style="width: 2%;">3</td><td style="width: 2%;">4</td><td style="width: 2%;">5</td><td style="width: 2%;">6</td><td style="width: 2%;">7</td><td style="width: 2%;">8</td><td style="width: 2%;">9</td><td style="width: 2%;">10</td><td style="width: 2%;">11</td><td style="width: 2%;">12</td><td style="width: 2%;">13</td><td style="width: 2%;">14</td><td style="width: 2%;">15</td><td style="width: 2%;">16</td> </tr> </table>					P.O	Week																1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
P.O	Week																																					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16																						
<b>Short Course Description</b>	Study of chemical processes in industry: oil, fermentation, soap, shampoo, detergent, paper, carbon and cosmetics through theoretical studies from textbooks and journals and practice.																																					
<b>References</b>	<b>Main :</b>																																					
	1. Austin.G. 1986. The Chemical Proses Industries. New York : Mc Graw-Hill. 2. Journal-journal terkini yang terkait dengan masing-masing topik.																																					
	<b>Supporters:</b>																																					
<b>Supporting lecturer</b>	Prof. Dr. Titik Taufikurohmah, S.Si., M.Si. Prof. Dr. Nuniek Herdyastuti, M.Si. Dian Novita, S.T., 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 learning contracts and assessment systems. Understand chemical processes in the petrochemical industry	Understand learning contracts and assessment systems. Understand processes in the petrochemical industry	<b>Criteria:</b> Task Participation  <b>Form of Assessment :</b> Participatory Activities	Lecture, question and answer 2 X 50			5%																															

2	Understand chemical processes in the oil industry	Understand the process of refining essential oils. Understand the process of isolating seed oils including soxhlet extraction, pressing, fermentation and dissolution	<b>Criteria:</b> Participation, assignments  <b>Form of Assessment :</b> Participatory Activities	2 X 50 interactive lectures and discussions			5%
3	Understand chemical processes in the fermentation industry	Understand how to make tempeh, soy sauce, yoghurt, wine	<b>Criteria:</b> Tasks, participation  <b>Form of Assessment :</b> Project Results Assessment / Product Assessment	2 X 50 interactive lectures and discussions			10%
4	Understand chemical processes in the soap and detergent industry	Understand the process of making soap, detergent.	<b>Criteria:</b> Participation, assignments  <b>Form of Assessment :</b> Project Results Assessment / Product Assessment	Lecture and demonstration on the introduction of materials in front of the 2 X 50 class			5%
5	Understand chemical processes in the paper industry	Understand the paper making process	<b>Criteria:</b> Participation, assignments  <b>Form of Assessment :</b> Project Results Assessment / Product Assessment	Journal review discussion 1 X 50			5%
6	Understand chemical processes in the carbon industry	Understand the process of making carbon	<b>Criteria:</b> Participation, assignments	Theoretical discussions from textbooks and journals 2 X 50			5%
7	Understand chemical processes in the cosmetics industry.	Understand the cosmetic manufacturing process	<b>Criteria:</b> Participation, assignments  <b>Form of Assessment :</b> Project Results Assessment / Product Assessment	Theoretical discussions from textbooks and journals 2 X 50			0%
8	Covers meetings 1-7	Covers meetings 1-7	<b>Criteria:</b> UTS  <b>Form of Assessment :</b> Test	Written test 2 X 50			10%
9	Understand the process and practical results of making oil.	Understand the practical results of making oil.	<b>Criteria:</b> Participation, assignments  <b>Form of Assessment :</b> Project Results Assessment / Product Assessment	Practical, Discussion 6 X 50			0%
10	Understand the process and results of fermentation practices for making tempeh, soy sauce, wine, yoghurt	Understand the practical results of fermentation in making tempeh, soy sauce, wine, yoghurt	<b>Criteria:</b> Participation, assignments  <b>Form of Assessment :</b> Project Results Assessment / Product Assessment	Practical, Discussion 6 X 50			5%

11	Understand the process and results of fermentation practices for making tempeh, soy sauce, wine, yoghurt	Understand the practical results of fermentation in making tempeh, soy sauce, wine, yoghurt	<b>Criteria:</b> Participation, assignments  <b>Form of Assessment :</b> Project Results Assessment / Product Assessment	Practical, Discussion 6 X 50			0%
12	Understand the process and practical results of making soap and detergent	Understand the results of fermentation practice in making soap and detergent	<b>Criteria:</b> Participation, assignments  <b>Form of Assessment :</b> Project Results Assessment / Product Assessment	Practical, Discussion 6 X 50			5%
13	Understand the process and results of paper practicum	Understand the results of paper making practicum	<b>Criteria:</b> Participation, assignments  <b>Form of Assessment :</b> Project Results Assessment / Product Assessment	Practical, Discussion 6 X 50			5%
14	Understand the process and practical results of fermentation making carbon	Understand the practical results of carbon-making fermentation	<b>Criteria:</b> Participation, assignments  <b>Form of Assessment :</b> Project Results Assessment / Product Assessment	Practical, Discussion 6 X 50			5%
15	Understand the process and practical results of making cosmetics.	Understand the results of fermentation practicum for making cosmetics	<b>Criteria:</b> Participation, assignments  <b>Form of Assessment :</b> Participatory Activities, Practical Assessment	Practical, Discussion 6 X 50			10%
16	Covers meetings 9-15	Covers meetings 9-15	<b>Criteria:</b> UAS questions and presentation skills  <b>Form of Assessment :</b> Test	Written test and presentation 2 X 50			10%

#### Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	15%
2.	Project Results Assessment / Product Assessment	40%
3.	Practical Assessment	5%
4.	Test	20%
		80%

#### Notes

- 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.
- 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.
- 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.
- 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.
- Indicators for assessing** abilities in the process and student learning outcomes are specific and measurable statements that identify the abilities 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.