



**Universitas Negeri Surabaya**  
**Faculty of Mathematics and Natural Sciences Natural Sciences**  
**Education Undergraduate 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>																																																																					
Household Chemicals and Addictive Substances	8420102073		T=2	P=0	ECTS=3.18	6	July 17, 2024																																																																					
<b>AUTHORIZATION</b>		<b>SP Developer</b>	<b>Course Cluster Coordinator</b>			<b>Study Program Coordinator</b>																																																																						
		.....	.....			Prof. Dr. Erman, M.Pd.																																																																						
<b>Learning model</b>	Project Based Learning																																																																											
<b>Program Learning Outcomes (PLO)</b>	PLO study program which is charged to the course																																																																											
	Program Objectives (PO)																																																																											
	PO - 1	Master the theoretical concepts of household chemicals, additives in food, addictive substances (psychotropics) in depth and formulate them in procedural problem solving																																																																										
	PO - 2	Able to make decisions based on information and data analysis and provide guidance in choosing alternative solutions.																																																																										
	PLO-PO Matrix																																																																											
		<table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>P.O</td></tr> <tr><td>PO-1</td></tr> <tr><td>PO-2</td></tr> </table>	P.O	PO-1	PO-2																																																																							
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PO-2																																																																												
PO Matrix at the end of each learning stage (Sub-PO)																																																																												
	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td rowspan="2" style="text-align: center;">P.O</td> <td colspan="16" style="text-align: center;">Week</td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">4</td> <td style="text-align: center;">5</td> <td style="text-align: center;">6</td> <td style="text-align: center;">7</td> <td style="text-align: center;">8</td> <td style="text-align: center;">9</td> <td style="text-align: center;">10</td> <td style="text-align: center;">11</td> <td style="text-align: center;">12</td> <td style="text-align: center;">13</td> <td style="text-align: center;">14</td> <td style="text-align: center;">15</td> <td style="text-align: center;">16</td> </tr> <tr> <td style="text-align: center;">PO-1</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td style="text-align: center;">PO-2</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>	P.O	Week																1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	PO-1																		PO-2																							
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PO-1																																																																												
PO-2																																																																												
<b>Short Course Description</b>	Understanding of various household chemicals, additives in food, addictive substances (psychotropics), in terms of uses and side effects on the body and the environment.																																																																											
<b>References</b>	<b>Main :</b>																																																																											
	1. Helmprecht. H.L. and Friedman. L.T. 1997. basic Chemistry for The Life Sciences . New York : Mc Graw Book Company 2. Pusat Perbukuan. 2003. Ensiklopedia Sains dan Kehidupan . Jakarta : Depdiknas 3. Lucy T Pride. 2010. Environmental chemistry an intoduction. Cumming publishing company.																																																																											
	<b>Supporters:</b>																																																																											
<b>Supporting lecturer</b>	Dra. Martini, M.Pd. Dr. Siti Nurul Hidayati, S.Pd., M.Pd. Beni Setiawan, S.Pd., M.Pd., Ph.D. Wahyu Budi Sabtiawan, S.Si., M.Pd.,M.Sc. Ernita Vika Aulia, S.Pd., M.Pd.																																																																											
<b>Week-</b>	<b>Final abilities of each learning stage (Sub-PO)</b>	<b>Evaluation</b>		<b>Help Learning, Learning methods, Student Assignments, [ Estimated time]</b>		<b>Learning materials [ References ]</b>	<b>Assessment Weight (%)</b>																																																																					
		<b>Indicator</b>	<b>Criteria &amp; Form</b>	<b>Offline ( offline )</b>	<b>Online ( online )</b>																																																																							
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)																																																																					

1	Students explain various types of additives in food	1.Explain the outline of the lecture 2.Explain the various types of additives	<b>Criteria:</b> 1.Oral communication skills include: 2.1. Questioning skills 3.2. Skills in expressing opinions 4.3. Concept analysis skills 5.Written communication skills include: 6.1. The correctness of the concept from the results presented in the paper 7.2. Clarity of discussion for each concept 8.3. The sequence of information presented in the paper  <b>Form of Assessment :</b> Participatory Activities	1. Analyze and formulate the problem from the problems given to the LKM regarding sweeteners and obesity or the pros and cons of using preservatives 2. Make an initial hypothesis/claim from the problem presented in the case in the LKM 2 X 50	1. Access information from all information sources correctly 2. Select and organize information as warrant or rebuttal and prepare claims	<b>Material:</b> Additives in food <b>References:</b> <i>Reputable journal articles</i>	10%
2	Identifying additives in packaged foods.	1.1. Analyze and formulate the problem from the problems given to LKM regarding sweeteners and obesity or the pros and cons of using preservatives 2. Make an initial hypothesis/claim from the problem formulation 2.2. Make an initial hypothesis/claim from the problem formulation in the case given to the LKM	<b>Criteria:</b> 1.Oral communication skills include: 2.1. Questioning skills 3.2. Skills in expressing opinions 4.3. Concept analysis skills 5.Written communication skills include: 6.1. The correctness of the concept from the results presented in the paper 7.2. Clarity of discussion for each concept 8.3. The sequence of information presented in the paper  <b>Form of Assessment :</b> Participatory Activities, Portfolio Assessment	Discussion, question and answer and presentation 2 X 50	1. Access information from all information sources correctly 2. Select and organize information as warrant or rebuttal and prepare claims	<b>Material:</b> Sources from reputable journals <b>Reader:</b> <i>Lucy T Pride. 2010. Environmental chemistry and introduction. Cumming publishing company.</i>  <b>Material:</b> Additives in food <b>Library:</b> <i>Book Center. 2003. Encyclopedia of Science and Life. Jakarta: Ministry of National Education</i>	10%
3	Students explain various types of additives/additions to food		<b>Criteria:</b> 1.Oral communication skills include: 2.1. Questioning skills 3.2. Skills in expressing opinions 4.3. Concept analysis skills 5.Written communication skills include: 6.1. The correctness of the concept from the results presented in the paper 7.2. Clarity of discussion for each concept 8.3. The sequence of information presented in the paper  <b>Form of Assessment :</b> Participatory Activities, Project Results Assessment / Product Assessment	Discussion, question and answer and presentation 2 X 50	1. Access information from all information sources correctly 2. Select and organize information as warrant or rebuttal and prepare claims	<b>Material:</b> Reputable Scientific Journal <b>Reader:</b> <i>Lucy T Pride. 2010. Environmental chemistry and introduction. Cumming publishing company.</i>  <b>Material:</b> Additives in food <b>References:</b> <i>Reputable journal articles</i>	0%

4	Students explain various types of additives/additions to food	<p>1.1. Analyze the use of natural and artificial flavor enhancers and their impact on body health</p> <p>2.3. Analyze the use of natural and artificial dyes and their impact on body health</p>	<p><b>Criteria:</b></p> <ol style="list-style-type: none"> <li>1.Oral communication skills include:             <ol style="list-style-type: none"> <li>2.1. Questioning skills</li> <li>3.2. Skills in expressing opinions</li> <li>4.3. Concept analysis skills</li> </ol> </li> <li>5.Written communication skills include:             <ol style="list-style-type: none"> <li>6.1. The correctness of the concept from the results presented in the paper</li> <li>7.2. Clarity of discussion for each concept</li> <li>8.3. The sequence of information presented in the paper</li> </ol> </li> </ol> <p><b>Form of Assessment :</b> Participatory Activities</p>	Discussion, question and answer and presentation 2 X 50	<ol style="list-style-type: none"> <li>1. Access information from all information sources correctly</li> <li>2. Select and organize information as warrant or rebuttal and prepare claims</li> </ol>	<p><b>Material:</b> Additives in food</p> <p><b>References:</b> <i>Reputable journal articles</i></p>	10%
5	Students explain various types of additives/additions to food	<ol style="list-style-type: none"> <li>1.1. Analyze the use of natural and artificial dyes and their impact on body health</li> <li>2.2. Resolve problems related to the use of dyes</li> </ol>	<p><b>Criteria:</b></p> <ol style="list-style-type: none"> <li>1.Oral communication skills include:             <ol style="list-style-type: none"> <li>2.1. Questioning skills</li> <li>3.2. Skills in expressing opinions</li> <li>4.3. Concept analysis skills</li> </ol> </li> <li>5.Written communication skills include:             <ol style="list-style-type: none"> <li>6.1. The correctness of the concept from the results presented in the paper</li> <li>7.2. Clarity of discussion for each concept</li> <li>8.3. The sequence of information presented in the paper</li> </ol> </li> </ol> <p><b>Form of Assessment :</b> Participatory Activities</p>	Discussion, question and answer and presentation 2 X 50	<ol style="list-style-type: none"> <li>1. Access information from all information sources correctly</li> <li>2. Select and organize information as warrant or rebuttal and prepare claims</li> </ol>	<p><b>Material:</b> Reputable Scientific Journal</p> <p><b>Reader:</b> <i>Lucy T Pride. 2010. Environmental chemistry and introduction. Cumming publishing company.</i></p> <p><b>Material:</b> Food additives</p> <p><b>References:</b></p>	10%
6	Students explain various types of additives/additions to food	<ol style="list-style-type: none"> <li>1.1. Analyze the use of natural and artificial nutrients</li> <li>2.2. Resolving problems related to the use of artificial nutrients</li> </ol>	<p><b>Criteria:</b></p> <ol style="list-style-type: none"> <li>1.Oral communication skills include:             <ol style="list-style-type: none"> <li>2.1. Questioning skills</li> <li>3.2. Skills in expressing opinions</li> <li>4.3. Concept analysis skills</li> </ol> </li> <li>5.Written communication skills include:             <ol style="list-style-type: none"> <li>6.1. The correctness of the concept from the results presented in the paper</li> <li>7.2. Clarity of discussion for each concept</li> <li>8.3. The sequence of information presented in the paper</li> </ol> </li> </ol> <p><b>Form of Assessment :</b> Participatory Activities</p>	<ol style="list-style-type: none"> <li>1. Analyze and formulate problems from the problems given to LKM plus and minus additional nutrients in food or yogurt between healthy freshness and also the abundance of additives.</li> <li>2. Make an initial hypothesis/claim from the 2 X 50 problem formulation</li> </ol>	<ol style="list-style-type: none"> <li>1. Access information from all information sources correctly</li> <li>2. Select and organize information as warrant or rebuttal and prepare claims</li> </ol>	<p><b>Material:</b> Additives in food</p> <p><b>Reference:</b> <i>Lucy T Pride. 2010. Environmental chemistry and introduction. Cumming publishing company.</i></p>	10%

7	Students explain various types of additives/additions to food	<p>1.1. Analyze the use of natural and artificial nutrients</p> <p>2.2. Resolving problems related to the use of artificial nutrients</p>	<p><b>Criteria:</b></p> <ol style="list-style-type: none"> <li>1.Oral communication skills include: <ol style="list-style-type: none"> <li>2.1. Questioning skills</li> <li>3.2. Skills in expressing opinions</li> <li>4.3. Concept analysis skills</li> </ol> </li> <li>5.Written communication skills include: <ol style="list-style-type: none"> <li>6.1. The correctness of the concept from the results presented in the paper</li> <li>7.2. Clarity of discussion for each concept</li> <li>8.3. The sequence of information presented in the paper</li> </ol> </li> </ol> <p><b>Form of Assessment :</b> Participatory Activities, Tests</p>	<p>1. Analyze and formulate problems from the problems given to LKM plus and minus additional nutrients in food or yogurt between healthy freshness and also the abundance of additives.</p> <p>2. Make an initial hypothesis/claim from the 2 X 50 problem formulation</p>	<p>1. Access information from all information sources correctly</p> <p>2. Select and organize information as warrant or rebuttal and prepare claims</p>	<p><b>Material:</b> Additives in food</p> <p><b>References:</b> <i>Reputable journal articles</i></p>	15%
8	Students explain various types of additives/additions to food	<p>1.1. Analyze the use of natural and artificial nutrients</p> <p>2.2. Resolving problems related to the use of artificial nutrients</p>	<p><b>Criteria:</b></p> <ol style="list-style-type: none"> <li>1.Oral communication skills include: <ol style="list-style-type: none"> <li>2.1. Questioning skills</li> <li>3.2. Skills in expressing opinions</li> <li>4.3. Concept analysis skills</li> </ol> </li> <li>5.Written communication skills include: <ol style="list-style-type: none"> <li>6.1. The correctness of the concept from the results presented in the paper</li> <li>7.2. Clarity of discussion for each concept</li> <li>8.3. The sequence of information presented in the paper</li> </ol> </li> </ol> <p><b>Form of Assessment :</b> Participatory Activities, Tests</p>	<p>1. Analyze and formulate problems from the problems given to LKM plus and minus additional nutrients in food or yogurt between healthy freshness and also the abundance of additives.</p> <p>2. Make an initial hypothesis/claim from the 2 X 50 problem formulation</p>	<p>1. Access information from all information sources correctly</p> <p>2. Select and organize information as warrant or rebuttal and prepare claims</p>	<p><b>Material:</b> Additives in food</p> <p><b>References:</b> <i>Reputable journal articles</i></p> <hr/> <p><b>Material:</b> Addictive and Psychotropic Substances</p> <p><b>References:</b></p>	15%
9	Explain the difference between addictive substances and psychotropic substances	Identify dangerous substances in cosmetics	<p><b>Criteria:</b></p> <ol style="list-style-type: none"> <li>1.Oral communication skills include: <ol style="list-style-type: none"> <li>2.1. Questioning skills</li> <li>3.2. Skills in expressing opinions</li> <li>4.3. Concept analysis skills</li> </ol> </li> <li>5.Written communication skills include: <ol style="list-style-type: none"> <li>6.1. The correctness of the concept from the results presented in the paper</li> <li>7.2. Clarity of discussion for each concept</li> <li>8.3. The sequence of information presented in the paper</li> </ol> </li> </ol> <p><b>Form of Assessment :</b> Participatory Activities</p>	<p>1. Analyze and formulate problems from the problems given to MFIs based on problems related to narcotics and psychotropic abuse</p> <p>2. Make initial hypotheses/claims from the problem formulation created, presentation and discussion 2 X 50</p>	<p>1. Access information from all information sources correctly</p> <p>2. Select and organize information as warrant or rebuttal and prepare claims</p>	<p><b>Material:</b> Addictive and psychotropic substances</p> <p><b>References:</b> <i>Reputable journal articles</i></p>	10%

10	Explain the difference between addictive substances and psychotropic substances	Identify dangerous substances in cosmetics	<p><b>Criteria:</b></p> <ol style="list-style-type: none"> <li>1.Oral communication skills include:</li> <li>2.1. Questioning skills</li> <li>3.2. Skills in expressing opinions</li> <li>4.3. Concept analysis skills</li> <li>5.Written communication skills include:</li> <li>6.1. The correctness of the concept from the results presented in the paper</li> <li>7.2. Clarity of discussion for each concept</li> <li>8.3. The sequence of information presented in the paper</li> </ol> <p><b>Form of Assessment :</b> Participatory Activities</p>	<ol style="list-style-type: none"> <li>1. Analyze and formulate problems from the problems given to MFIs based on problems related to narcotics and psychotropic abuse</li> <li>2. Make initial hypotheses/claims from the problem formulation created, presentation and discussion</li> </ol> <p>2 X 50</p>	<ol style="list-style-type: none"> <li>1. Access information from all information sources correctly</li> <li>2. Select and organize information as warrant or rebuttal and prepare claims</li> </ol>		0%
11	Explain the difference between addictive substances and psychotropic substances	Identify dangerous substances in cosmetics	<p><b>Criteria:</b></p> <ol style="list-style-type: none"> <li>1.Oral communication skills include:</li> <li>2.1. Questioning skills</li> <li>3.2. Skills in expressing opinions</li> <li>4.3. Concept analysis skills</li> <li>5.Written communication skills include:</li> <li>6.1. The correctness of the concept from the results presented in the paper</li> <li>7.2. Clarity of discussion for each concept</li> <li>8.3. The sequence of information presented in the paper</li> </ol> <p><b>Form of Assessment :</b> Participatory Activities</p>	<ol style="list-style-type: none"> <li>1. Analyze and formulate problems from the problems given to MFIs based on problems related to narcotics and psychotropic abuse</li> <li>2. Make initial hypotheses/claims from the problem formulation created, presentation and discussion</li> </ol> <p>2 X 50</p>	<ol style="list-style-type: none"> <li>1. Access information from all information sources correctly</li> <li>2. Select and organize information as warrant or rebuttal and prepare claims</li> </ol>		0%
12		<ol style="list-style-type: none"> <li>1.1. Explain cleansers and bleaches in cosmetics</li> <li>2.2. Explain how cleaners and bleach work</li> <li>3.3. Identify dangerous substances in cosmetics and analyze the impact of using dangerous cosmetics on the skin and body</li> </ol>	<p><b>Criteria:</b></p> <ol style="list-style-type: none"> <li>1.Oral communication skills include:</li> <li>2.1. Questioning skills</li> <li>3.2. Skills in expressing opinions</li> <li>4.3. Concept analysis skills</li> <li>5.Written communication skills include:</li> <li>6.1. The correctness of the concept from the results presented in the paper</li> <li>7.2. Clarity of discussion for each concept</li> <li>8.3. The sequence of information presented in the paper</li> </ol> <p><b>Form of Assessment :</b> Participatory Activities</p>	<p>Discussion, questions and answers and presentations</p> <p>Analyzing and formulating problems from the problems given to LKM based on problems related to cleaners, bleaches including cosmetics</p> <p>Making initial hypotheses/claims from the problem formulation created</p> <p>2 X 50</p>	<ol style="list-style-type: none"> <li>1. Access information from all information sources correctly</li> <li>2. Select and organize information as warrant or rebuttal and prepare claims</li> </ol>		0%

13		<p>1.1. Explain cleansers and bleaches in cosmetics</p> <p>2.2. Explain how cleaners and bleach work</p> <p>3.3. Identify dangerous substances in cosmetics and analyze the impact of using dangerous cosmetics on the skin and body</p>	<p><b>Criteria:</b></p> <ol style="list-style-type: none"> <li>1.Oral communication skills include:</li> <li>2.1. Questioning skills</li> <li>3.2. Skills in expressing opinions</li> <li>4.3. Concept analysis skills</li> <li>5.Written communication skills include:</li> <li>6.1. The correctness of the concept from the results presented in the paper</li> <li>7.2. Clarity of discussion for each concept</li> <li>8.3. The sequence of information presented in the paper</li> </ol> <p><b>Form of Assessment :</b> Participatory Activities, Tests</p>	<p>Discussion, questions and answers and presentations</p> <p>Analyzing and formulating problems from the problems given to LKM based on problems related to cleaners, bleaches including cosmetics</p> <p>Making initial hypotheses/claims from the problem formulation created</p> <p>2 X 50</p>	<ol style="list-style-type: none"> <li>1. Access information from all information sources correctly</li> <li>2. Select and organize information as warrant or rebuttal and prepare claims</li> </ol>		0%
14		<p>1. Explain the use of polymers and plastics in the household</p>	<p><b>Criteria:</b></p> <ol style="list-style-type: none"> <li>1.Oral communication skills include:</li> <li>2.1. Questioning skills</li> <li>3.2. Skills in expressing opinions</li> <li>4.3. Concept analysis skills</li> <li>5.Written communication skills include:</li> <li>6.1. The correctness of the concept from the results presented in the paper</li> <li>7.2. Clarity of discussion for each concept</li> <li>8.3. The sequence of information presented in the paper</li> </ol> <p><b>Form of Assessment :</b> Participatory Activities</p>	<p>1. Discussion, questions and answers and presentations</p> <p>2. Analyzing and formulating problems from the problems given to LKM based on problems related to polymers and plastics</p> <p>3.2. Making initial hypotheses/claims from problem formulations according to the cases given</p> <p>2 X 50</p>	<ol style="list-style-type: none"> <li>1. Access information from all information sources correctly</li> <li>2. Select and organize information as warrant or rebuttal and prepare claims</li> </ol>		0%
15		<p>1. Explain the use of polymers and plastics in the household</p>	<p><b>Criteria:</b></p> <ol style="list-style-type: none"> <li>1.Oral communication skills include:</li> <li>2.1. Questioning skills</li> <li>3.2. Skills in expressing opinions</li> <li>4.3. Concept analysis skills</li> <li>5.Written communication skills include:</li> <li>6.1. The correctness of the concept from the results presented in the paper</li> <li>7.2. Clarity of discussion for each concept</li> <li>8.3. The sequence of information presented in the paper</li> </ol> <p><b>Form of Assessment :</b> Participatory Activities, Tests</p>	<p>1. Discussion, questions and answers and presentations</p> <p>2. Analyzing and formulating problems from the problems given to LKM based on problems related to polymers and plastics</p> <p>3.2. Making initial hypotheses/claims from problem formulations according to the cases given</p> <p>2 X 50</p>	<ol style="list-style-type: none"> <li>1. Access information from all information sources correctly</li> <li>2. Select and organize information as warrant or rebuttal and prepare claims</li> </ol>		0%

16	In accordance with final abilities at the 8th Meeting to the 15th Meeting	In accordance with the indicators at the 8th Meeting to the 15th Meeting	<b>Criteria:</b> Achievement of indicators from the 8th Meeting to the 15th Meeting.	2 X 50			0%
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**Evaluation Percentage Recap: Project Based Learning**

No	Evaluation	Percentage
1.	Participatory Activities	70%
2.	Portfolio Assessment	5%
3.	Test	15%
		90%

**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.**