	Universitas Negeri Surabaya Faculty of Mathematics and Natural Sciences Bachelor of Science Education Study Program	Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Food Ingredient Chemistry	8420102070		T=2	P=0	ECTS=3.18	8	July 18, 2024

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

Learning model	**Case Studies**
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	This course discusses the chemical components in food ingredients and the physical and chemical changes that occur during the processing, storage and handling of food ingredients. Lectures are carried out with modeling, presentations and discussions.
References	**Main :**
	1. De Man, J.M. 1990. Principle of Food Chemistry. New York : Van Nostrand Reinhole 2. Graves, Jeanne H.F. and Gladys, C.P. 1987. Foundations of Food Preparation. Fifth ed. New York: Macmillan Pub. Co..
	Supporters:
Supporting lecturer	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.

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	Able to utilize science and technology in the field of chemical components in food ingredients. Able to explain macro and micro components in food. Able to explain sources of carbohydrates in food.	1. Explain the chemical components of food. 2. Understand the chemical structure of carbohydrates from food components and the chemical reactions that occur.	**Criteria:** Students can explain the chemical components of food. Students can understand the chemical structure of carbohydrates from food components and the chemical reactions that occur.	Student-centered learning approach (student-centered learning) Deductive learning method Strategy Lectures, discussions, presentations 2 X 50			0%
2	Able to utilize science and technology in the field of chemical components in food. Able to explain macro and micro components in food. Able to explain sources of carbohydrates in food	1. Explain the chemical components of food. 2. Understand the chemical structure of carbohydrates from food components and the chemical reactions that occur.	**Criteria:** Students can explain the chemical components of food. Students can understand the chemical structure of carbohydrates from food components and the chemical reactions that occur.	Student-centered learning approach (student-centered learning) Deductive learning method Strategy Lectures, discussions, presentations 2 X 50			0%
3	Able to utilize science and technology in the field of chemical components in food ingredients. Able to explain macro and micro components in food. Able to explain sources of carbohydrates in food.	1. Explain the chemical components of food. 2. Understand the chemical structure of carbohydrates from food components and the chemical reactions that occur.	**Criteria:** Students can explain the chemical components of food. Students can understand the chemical structure of carbohydrates from food components and the chemical reactions that occur.	Student-centered learning approach (student-centered learning) Deductive learning method Strategy Lectures, discussions, presentations 2 X 50			0%
4	Able to utilize science and technology in the field of chemical components in food ingredients. Able to explain macro and micro components in food. Able to explain sources of carbohydrates in food.	1. Explain the chemical components of food. 2. Understand the chemical structure of carbohydrates from food components and the chemical reactions that occur.	**Criteria:** Students can explain the chemical components of food. Students can understand the chemical structure of carbohydrates from food components and the chemical reactions that occur.	Student-centered learning approach (student-centered learning) Deductive learning method Strategy Lectures, discussions, presentations 2 X 50			0%
5	Able to explain the sources of protein in food. Can explain physical & chemical changes in protein. Explain the influence of processing, presentation and storage and be able to adapt to the situation faced in solving problems.	1. Explain sources of protein in food. 2. explain physical & chemical changes in proteins. 3. Explain the influence of the serving and storage processing processes on protein composition.	**Criteria:** Students can explain the sources of protein in food. Students can explain the physical & chemical changes in protein. Students can explain the effect of processing, serving and storage on protein composition.	Student-centered learning approach (student-centered learning) Deductive learning method Strategy Lectures, discussions, presentations 2 X 50			0%

6	Able to explain the sources of protein in food. Can explain physical & chemical changes in protein. Explain the influence of processing, presentation and storage and be able to adapt to the situation faced in solving problems.	1. Explain sources of protein in food. 2. explain physical & chemical changes in proteins. 3. Explain the influence of the serving and storage processing processes on protein composition.	**Criteria:** Students can explain the sources of protein in food. Students can explain the physical & chemical changes in protein. Students can explain the effect of processing, serving and storage on protein composition.	Student-centered learning approach (student-centered learning) Deductive learning method Strategy Lectures, discussions, presentations 2 X 50			0%
7	Able to explain the sources of protein in food. Can explain physical & chemical changes in protein. Explain the influence of processing, presentation and storage and be able to adapt to the situation faced in solving problems.	1. Explain sources of protein in food. 2. explain physical & chemical changes in proteins. 3. Explain the influence of the serving and storage processing processes on protein composition.	**Criteria:** Students can explain the sources of protein in food. Students can explain the physical & chemical changes in protein. Students can explain the effect of processing, serving and storage on protein composition.	Student-centered learning approach (student-centered learning) Deductive learning method Strategy Lectures, discussions, presentations 2 X 50			0%
8	Midterm exam	Indicators to be achieved starting from the 1st to 7th Meeting	**Criteria:** In accordance with the assessment criteria starting from the 1st to the 7th meeting	Written Test 2 X 50			0%
9	Able to explain the sources of fat in food. Can explain physical & chemical changes in fat. Explain the influence of processing, presentation and storage of food with fat content and be able to adapt to the situation faced in solving problems.	1. Explain the sources of fat in food. 2. Explain the physical & chemical changes in fat. 3. Explain the effect of serving processing and storage on fat composition.	**Criteria:** Students can explain the sources of fat in food. Students can explain the physical & chemical changes in fat. Students can explain the effect of serving processing and storage on the composition of fat.	Student-centered learning approach (student-centered learning) Deductive learning method Strategy Lectures, discussions, presentations 2 X 50			0%
10	Able to explain the sources of fat in food. Can explain physical & chemical changes in fat. Explain the influence of processing, presentation and storage of food with fat content and be able to adapt to the situation faced in solving problems.	1. Explain the sources of fat in food. 2. Explain the physical & chemical changes in fat. 3. Explain the effect of serving processing and storage on fat composition.	**Criteria:** Students can explain the sources of fat in food. Students can explain the physical & chemical changes in fat. Students can explain the effect of serving processing and storage on the composition of fat.	Student-centered learning approach (student-centered learning) Deductive learning method Strategy Lectures, discussions, presentations 2 X 50			0%

11	Able to classify vitamins and their sources in food. Able to explain the role of vitamins for the body. Able to explain the factors that cause vitamin damage and efforts to resolve them.	1. Classifying vitamins and their sources in food. 2. Explain the role of vitamins in the body. 3. Explain the factors that cause vitamin damage and efforts to resolve them.	**Criteria:** Students can classify vitamins and their sources in food. Students can explain the role of vitamins for the body. Students can explain the factors that cause vitamin damage and efforts to resolve them.	Student-centered learning approach (student-centered learning) Deductive learning method Strategy Lectures, discussions, presentations 2 X 50			0%
12	Able to classify vitamins and their sources in food. Able to explain the role of vitamins for the body. Able to explain the factors that cause vitamin damage and efforts to resolve them.	1. Classifying vitamins and their sources in food. 2. Explain the role of vitamins in the body. 3. Explain the factors that cause vitamin damage and efforts to resolve them.	**Criteria:** Students can classify vitamins and their sources in food. Students can explain the role of vitamins for the body. Students can explain the factors that cause vitamin damage and efforts to resolve them.	Student-centered learning approach (student-centered learning) Deductive learning method Strategy Lectures, discussions, presentations 2 X 50			0%
13	Able to classify minerals and their sources in food. Able to explain the role of minerals for the body. Able to explain the factors that cause mineral damage and efforts to resolve them.	1. Classifying minerals and their sources in food. 2. Explain the role of minerals in the body. 3. Explain the factors that cause mineral damage and efforts to resolve them.	**Criteria:** Students can classify minerals and their sources in food. Students can explain the role of minerals for the body. Students can explain the factors that cause mineral damage and efforts to resolve them.	Student-centered learning approach (student-centered learning) Deductive learning method Strategy Lectures, discussions, presentations 2 X 50			0%
14	Able to classify minerals and their sources in food. Able to explain the role of minerals for the body. Able to explain the factors that cause mineral damage and efforts to resolve them.	1. Classifying minerals and their sources in food. 2. Explain the role of minerals in the body. 3. Explain the factors that cause mineral damage and efforts to resolve them.	**Criteria:** Students can classify minerals and their sources in food. Students can explain the role of minerals for the body. Students can explain the factors that cause mineral damage and efforts to resolve them.	Student-centered learning approach (student-centered learning) Deductive learning method Strategy Lectures, discussions, presentations 2 X 50			0%
15	Able to explain toxic compounds in food. Able to solve problems related to the presence of toxic compounds in food.	1. Explain toxic compounds in food. 2. Determine efforts to reduce the presence of toxic compounds in food.	**Criteria:** Students can explain toxic compounds in food. Students can determine efforts to reduce the presence of toxic compounds in food.	Student-centered learning approach (student-centered learning) Deductive learning method Strategy Lectures, discussions, presentations 2 X 50			0%
16							0%

Evaluation Percentage Recap: Case Study

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** 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.