



Universitas Negeri Surabaya
Faculty of Sports and Health Sciences,
Undergraduate Nutrition Study Program

Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date																																																													
Micronutrient Metabolism	1321102035	Compulsory Study Program Subjects	T=0	P=0	ECTS=0	4	July 17, 2024																																																													
AUTHORIZATION	SP Developer		Course Cluster Coordinator			Study Program Coordinator																																																														
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Learning model	Case Studies																																																																			
Program Learning Outcomes (PLO)	PLO study program that is charged to the course																																																																			
	Program Objectives (PO)																																																																			
	PO - 1	Students understand knowledge about the metabolism of micronutrients in the body in order to support good nutritional status																																																																		
	PLO-PO Matrix																																																																			
		<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="width: 100px; height: 30px;">P.O</td> </tr> <tr> <td style="width: 100px; height: 30px;">PO-1</td> </tr> </table>						P.O	PO-1																																																											
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	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="width: 100px; height: 30px;">P.O</td> <td colspan="16" style="text-align: center;">Week</td> </tr> <tr> <td style="width: 20px;">1</td> <td style="width: 20px;">2</td> <td style="width: 20px;">3</td> <td style="width: 20px;">4</td> <td style="width: 20px;">5</td> <td style="width: 20px;">6</td> <td style="width: 20px;">7</td> <td style="width: 20px;">8</td> <td style="width: 20px;">9</td> <td style="width: 20px;">10</td> <td style="width: 20px;">11</td> <td style="width: 20px;">12</td> <td style="width: 20px;">13</td> <td style="width: 20px;">14</td> <td style="width: 20px;">15</td> <td style="width: 20px;">16</td> </tr> <tr> <td style="width: 100px; height: 30px;">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> </table>																P.O	Week																1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	PO-1																	
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Short Course Description	Study the basics of molecular biology and the relationship between nutrients and genes and their relationship to disease, which includes cell structure, chromosome molecular structure, DNA replication, transcription, translation, regulation of gene expression, and gene expression factors related to nutrients and disease. Learning implemented using a scientific approach. The lesson ends by making a report on the task of analyzing nutritional problems from a biomolecular perspective.																																																																			
References	Main :																																																																			
	<ol style="list-style-type: none"> 1. David A. Bender. 2004. Introduction to Nutrition and Metabolism 3rd Ed. Taylor and Francis. London UK. 2. Sareen S. Gropper, Jack L.Smith, James L.Groff. 2009. Advanced Nutrition: Macronutrients, Micronutrients, and Metabolism 5th Ed. Wadsworth. Canada. 3. Martha H. Stipanuk. 2006. Biochemical, Physiological, and Molecular Aspects of Human Nutrition 2nd Ed. Saunders-Elsevier. USA. 4. Gallagher, M. L. 2004. Ch 4 - Vitamins. In L K Mahan & S Escott-Stump (eds) Krause's Food, Nutrition & Diet Therapy 11th Edition. Pennsylvania, USA: Elsevier: 75 - 119. 5. Anderson, J. J. B. 2004. Ch 5 - Minerals. In L K Mahan & S Escott-Stump (eds) Krause's Food, Nutrition & Diet Therapy 11th Edition. Pennsylvania, USA: Elsevier: 120 - 163. 																																																																			
	Supporters:																																																																			
Supporting lecturer	Dra. Hj. Siti Sulandjari, M.Si. Noor Rohmah Mayasari, Ph.D. Lini Anisfatus Sholihah, S.Gz., M.Sc. Satwika Arya Pratama, S.Gz., M.Sc. Dr. Salma Shafrina Aulia, S.Gz., M.Si. Aulia Putri Srie Wardani, S.Gz., 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	Students can explain the importance of studying micronutrient metabolism	1.Explain the meaning of micronutrient metabolism 2.Explain the purpose of micronutrient metabolism 3.Explain the scope of micronutrient metabolism		Model: cooperative Method: Discussion, question and answer, 2 X 50			0%
2	Students can explain iron metabolism	1.Explain the absorption of iron in the body 2.Explain the transport of iron in the body 3.Explain the receptors in iron metabolism 4.Describes iron reserves in the body 5.Explain nutritional problems resulting from iron deficiency and excess	Criteria: 1.Very good score (more than 85) if all assignment items are completed according to the criteria 2.Good grades (75 - 80) are given if 75% of assignment items are completed according to the criteria 3.A sufficient score (60 - 70) is given if 60% to 70% of the assignment items are completed according to the criteria 4.Score 0 if you do not complete the task	Online learning via zoom Approach: Scientific Model: problem based learning Method: Discussion, question and answer, assignment 2 X 50			0%
3	Students can explain zinc metabolism	1.Explain the absorption of zinc in the body 2.Explain the transport of zinc in the body 3.Explain the receptors in zinc metabolism 4.Explain zinc reserves in the body 5.Explain nutritional problems caused by zinc deficiency and excess		Approach: Scientific Model: cooperative Method: Discussion, question and answer, 2 X 50 assignment			0%

4	Students can explain iodine metabolism	<ol style="list-style-type: none"> 1.Explain the absorption of iodine in the body 2.Explain iodine transport in the body 3.Explain the receptors in iodine metabolism 4.Explain the iodine reserves in the body 5.Explain nutritional problems caused by iodine deficiency and excess 		<p>Approach: Scientific Model: cooperative Method: Discussion, question and answer, 2 X 50 assignment</p>			0%
5	Students can explain selenium metabolism	<ol style="list-style-type: none"> 1.Explain the absorption of selenium in the body 2.Explain the transport of selenium in the body 3.Explain the receptors in selenium metabolism 4.Explain the selenium reserves in the body 5.Explain the nutritional problems caused by selenium deficiency and excess 		<p>Approach: Scientific Model: cooperative Method: Discussion, question and answer, 2 X 50 assignment</p>			0%
6	Students can explain chromium metabolism	<ol style="list-style-type: none"> 1.Explain the absorption of chromium in the body 2.Explain the transport of chromium in the body 3.Explain the receptors in chromium metabolism 4.Explain the chromium reserves in the body 5.Explain the nutritional problems caused by chromium deficiency and excess 		<p>Approach: Scientific Model: Cooperative Method: Discussion, question and answer, 2 X 50 assignments</p>			0%

7	Students can explain the metabolism of calcium, phosphorus and magnesium	<ol style="list-style-type: none"> 1.Explain the absorption of calcium, phosphorus and magnesium in the body 2.Explain the transport of calcium, phosphorus and magnesium in the body 3.Explain the receptors in calcium, phosphorus and magnesium metabolism 4.Explains the reserves of calcium, phosphorus and magnesium in the body 5.Explain nutritional problems resulting from deficiencies and excesses of calcium, phosphorus and magnesium 		Approach: Scientific Model: cooperative Method: Discussion, question and answer, 2 X 50 assignment			0%
8	UTS			2 X 50			0%
9	Students can explain the metabolism of sodium, potassium and chlorine	<ol style="list-style-type: none"> 1.Explain the absorption of sodium, potassium and chlorine in the body 2.Explain the transport of sodium, potassium and chlorine in the body 3.Explain the receptors in sodium, potassium and chlorine metabolism 4.Explains the reserves of sodium, potassium and chlorine in the body 5.Explain nutritional problems due to deficiencies and excesses of sodium, potassium and chlorine 		Approach: Scientific Model: cooperative Method: Discussion, question and answer, 2 X 50 assignment			0%

10	Students can explain the metabolism of vitamin A	<ol style="list-style-type: none"> 1.Explain the absorption of vitamin A in the body 2.Explain the transport of vitamin A in the body 3.Explain the receptors in vitamin A metabolism 4.Explain the reserves of vitamin A in the body 5.Explain nutritional problems resulting from vitamin A deficiency and excess 		<p>Approach: Scientific Model: cooperative Method: Discussion, question and answer, 2 X 50 assignment</p>			0%
11	Students can explain vitamin D metabolism	<ol style="list-style-type: none"> 1.Explain the absorption of vitamin D in the body 2.Explain the transport of vitamin D in the body 3.Explain the receptors in vitamin D metabolism 4.Explain the reserves of vitamin D in the body 5.Explain the nutritional problems caused by vitamin D deficiency and excess 		<p>Approach: Scientific Model: cooperative Method: Discussion, question and answer, 2 X 50 assignment</p>			0%
12	Students can explain the metabolism of vitamins E and K	<ol style="list-style-type: none"> 1.Explain the absorption of vitamins E and K in the body 2.Explain the transport of vitamins E and K in the body 3.Explain the receptors in vitamin E and K metabolism 4.Explain the reserves of vitamins E and K in the body 5.Explain nutritional problems resulting from deficiencies and excesses of vitamins E and K 		<p>Approach: Scientific Model: Cooperative Method: Discussion, Question and Answer, Assignment 2 X 50</p>			0%

13	Students can explain the metabolism of Vitamin C	<ol style="list-style-type: none"> 1.Explain the absorption of Vitamin C in the body 2.Explain the transport of Vitamin C in the body 3.Explain the receptors in Vitamin C metabolism 4.Explain the reserves of Vitamin C in the body 5.Explain nutritional problems due to deficiency and excess of Vitamin C 		<p>Approach: Scientific Model: Cooperative Method: Discussion, Question and Answer, Assignment 2 X 50</p>			0%
14	Students can explain the metabolism of vitamin B	<ol style="list-style-type: none"> 1.Explain the absorption of vitamin B in the body 2.Explain the transport of vitamin B in the body 3.Explain the receptors in vitamin B metabolism 4.Explain the reserves of vitamin B in the body 5.Explain nutritional problems resulting from deficiencies and excesses of vitamin B 		<p>Approach: Scientific Model: Cooperative Method: Discussion, Assignment 2 X 50</p>			0%
15	Students can explain the metabolism of Vitamin Like Compound	<ol style="list-style-type: none"> 1.Explain the absorption of Vitamin Like Compound in the body 2.Explain the transport of Vitamin Like Compound in the body 3.Explain the receptors in the metabolism of Vitamin Like Compound 4.Explain the reserves of Vitamin Like Compound in the body 5.Explain nutritional problems due to deficiencies and excesses of Vitamin Like Compound 		<p>Approach: Scientific Model: cooperative Method: Discussion, question and answer, 2 X 50 assignment</p>			0%

16							0%
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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.