



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
Nutrient Drug and Other Substance Interactions	1321102025		T=0	P=0	ECTS=0	3	July 17, 2024
AUTHORIZATION	SP Developer		Course Cluster Coordinator			Study Program Coordinator	
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Learning model	Case Studies
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Program Learning Outcomes (PLO)	PLO study program that is charged to the course																																																																																		
	PLO-8	Able to master the scientific basis of nutrition, food, biomedicine, humanities and public health sciences.																																																																																	
	PLO-9	Able to have an attitude of belief in the Almighty God, be ethical, disciplined, aware of the law, have a social and cultural insight, and behave professionally.																																																																																	
	PLO-11	Able to solve problems in the field of nutrition by applying scientific thinking concepts and cutting-edge approaches through research, scientific literacy and publications.																																																																																	
	Program Objectives (PO)																																																																																		
	PO - 1	Mastering knowledge about the basics of pharmacology in relation to the interactions of nutrients, drugs and other substances																																																																																	
	PO - 2	Able to carry out analysis and interpretation of nutritional problems related to drug interactions, nutrients and other substances																																																																																	
	PLO-PO Matrix																																																																																		
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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">P.O</td> <td colspan="16">Week</td> </tr> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td> </tr> <tr> <td>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> </tr> <tr> <td>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> </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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Short Course Description	Discussion of the basic mechanisms of interaction of nutrients with drugs, drugs with other drugs, drugs with food, drugs with drinks, and drugs with other substances. Student experience is gained through discussion activities, problem solving, and carrying out assignments.
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References	Main :
	<ol style="list-style-type: none"> 1. Boullata, J.I and Armenti, V.T. 2010. Handbook of Drug-Nutrient Interaction Second Ed. New York: Humana Press 2. Rodrigues, A.D. 2002. Drug-Drug Interactions. Marcell Dekker Inc. 3. Tatro, D.S., 2001, Drug Interaction Facts and Comparisons, St. Louis. 4. Griffin, T.P. and D 19arcy, P.F., 1997, A Manual of Adverse Drug Interaction, Elsevier 5. Buxter, K., 2008, Stockley 19s Drug Interaction, 8th ed. London: Pharmaceutical.
	Supporters:

Supporting lecturer	Dr. dr. Endang Sri Wahjuni, M.Kes. dr. Erick Tanara, Sp. An dr. Sonny Soebjanto, Sp. T.H.T.K.L. Cleonara Yanuar Dini, S.Gz., Dietisien, M.Sc. Dr. Salma Shafrina Aulia, S.Gz., M.Si.
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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 understand the terms and classification of drug and food interactions.	Explain the terms and classification of drug and food interactions with examples	Criteria: Students get maximum marks if they answer questions correctly	Lectures, discussions and questions and answers 2 X 50			0%
2	Students are able to explain the disposition and response to drugs	<ol style="list-style-type: none"> 1. Understand the basic principles of pharmacokinetics related to absorption, distribution, metabolism and elimination of drugs and food 2. Understand the influencing factors related to the drug absorption-elimination process 3. Understand the basic principles of pharmacodynamics and quantify the action of drugs and foods 4. Understand potential pharmacokinetics and pharmacodynamics related to drug and food interactions 	Criteria: Students get maximum marks if they answer correctly	Lectures, discussions and questions and answers 4 X 50			0%
3	Students are able to explain drug transporters	<ol style="list-style-type: none"> 1. Explain the importance of uptake and efflux transporters for drug disposition and maintenance of homeostasis 2. Explain the uptake and efflux transporters involved in absorption, tissue distribution and excretion of endobiotics and exobiotics 3. Explain the complexity of tissue-specific expression, overlap and distribution of transporters important for drug positioning 4. Explain the influence of genetics on drug disposition 	Criteria: Students get maximum marks if they answer questions correctly	Lectures, discussions and questions and answers 4 X 50			0%
4	Students are able to explain enzymes related to drug metabolism	<ol style="list-style-type: none"> 1. Describes various superfamilies, subfamilies of enzymes that influence individual drug metabolism 2. Explain the role of major drug-metabolizing enzymes in the disposition of medications and xenobiotics 3. Explain the potential interactions that can occur with the induction or inhibition of drug metabolizing enzymes 	Criteria: Students get maximum marks if they answer questions correctly	Face-to-face lectures, discussions, questions and answers and assignments 2 X 50			0%
5	Students are able to explain the absorption of drugs with food	<ol style="list-style-type: none"> 1. Explain the factors that influence oral drug absorption and the influence of various food-related variables on these factors 2. Explain how to predict the effect of food on the bioavailability of oral medications 3. Explain the determination of the effect of food on the bioavailability of oral drugs 4. Explain the main nutritional components that are known to alter drug metabolism 	Criteria: Students get maximum marks if they answer questions correctly	Lectures, discussions, questions and answers 2 X 50			0%

6	Students are able to explain the positive interactions of drugs, natural products (active compounds) and food	<ol style="list-style-type: none"> 1.Explain the main nutritional components that are known to alter drug metabolism 2.Explain the magnitude of changes in drug metabolism due to drug induction 3.Explain the consumption of supplements regarding potential interactions with drugs 4.Explain why drug interactions are difficult to find in patients. 	Criteria: Students get maximum marks if they answer correctly	Lectures, discussions, questions and answers 2 X 50			0%
7	Students are able to explain the effect of nutritional status on drug absorption	<ol style="list-style-type: none"> 1.Explain how malnutrition status and CED affect absorption, distribution, clearance and drug effects 2.Explain the impact of malnutrition on specific medications 3.Explain how nutritional status influences absorption, distribution, clearance and drug effects 4.Explain the impact of nutritional status on specific drugs 	Criteria: Students get maximum marks if they answer questions correctly	Lectures, discussions and questions and answers 2 X 50			0%
8	UTS	UTS		UTS 2 X 50			0%
9	Students are able to explain drug and food interactions in babies, children of pregnant and breastfeeding mothers	<ol style="list-style-type: none"> 1.Explain the impact of nutritional status on children's growth and development 2.Explain medication administration and drug absorption in children 3.Explain common drug and food/vitamin/supplement interactions 4.Explain the management of drug and food interactions in children 5.Explain changes in the physiology of pregnant women and their influence on drug disposition 6.Explain changes in the physiology of breastfeeding mothers and their influence on drug disposition 	Criteria: Students get maximum marks if they can answer questions correctly	Lectures, discussions and questions and answers 2 X 50			0%
10	Students are able to explain drug and food interactions that affect mineral status	<ol style="list-style-type: none"> 1.Explains how minerals can alter certain medications 2.Describes certain minerals that can alter drug activity 3.Explain how drug compounds can change mineral status 	Criteria: Students get maximum marks if they answer questions correctly	Lectures, discussions and questions and answers 2 X 50			0%
11	Students are able to explain the interaction of drugs and food with immune function	<ol style="list-style-type: none"> 1.Explain the human immune system and immune-related diseases 2.Explain the nutritional components that can affect the immune system 3.Explain drug and food interactions that can occur when experiencing infectious and autoimmune diseases 	Criteria: Students get maximum marks if they answer questions correctly	Lectures, discussions and questions and answers 2 X 50			0%
12	Students are able to explain drug and food interactions in cancer and diabetes mellitus patients	<ol style="list-style-type: none"> 1.Explain the nutritional status of cancer and diabetes mellitus patients 2.Explain the effect of treatment on cancer and diabetes mellitus patients 3.Explain drugs that cause changes in the nutritional status of cancer and diabetes mellitus patients 	Criteria: Students get maximum marks if they answer questions correctly	Lectures, discussions and questions and answers 2 X 50			0%

13	Students are able to explain drug and food interactions in patients with chronic infections	<ol style="list-style-type: none"> 1.Explain the effect of food on drugs used to treat chronic infections 2.Explain the various drug and food interactions used in HIV treatment 3.Explain the interactions of drugs and foods used to treat tuberculosis and chronic hepatitis 	Criteria: Students get maximum marks if they answer questions correctly	Lectures, discussions and questions and answers 2 X 50			0%
14	Students are able to explain the interaction of drugs and food for cardiovascular and neurological patients with nutritional status	<ol style="list-style-type: none"> 1.Explain the effects of food on the absorption of cardiovascular medications 2.Explain the interaction of cardiovascular medication on nutrients 3.Explain the impact of cardiovascular treatment on nutritional status or specific nutrients 4.Explain the nutritional risks associated with antiepileptic drug therapy 5.Explain the possibility of nutrient interactions · in critical patients who require aggressive pharmacological therapy 6.Describes potential therapies to prevent the adverse effects of drug and food interactions in patients with neurological disorders 	Criteria: Students get maximum marks if they answer questions correctly	Lectures, discussions and questions and answers 2 X 50			0%
15	Students are able to explain patient drug and food interactions with enteral and parenteral nutrition	<ol style="list-style-type: none"> 1.Explain again the indications/contraindications, methods, routes of enteral and parenteral feeding 2.Explain the different classes of interactions that can occur between enteral nutrition and medication 3.Explain the appropriate administration of treatment for patients on enteral nutrition 4.Explain the stability and compatibility of drugs and parenteral nutrients 5.Describes guidelines for the safe administration of medications in patients on parenteral nutrition 	Criteria: Students get maximum marks if they answer questions correctly	Lectures, discussions and questions and answers 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.