
 Universitas Airlangga	SEMESTER LEARNING PLAN		Prepared by	Examined by	Approved by	Document Registration Number
	SLP		(Person in Charge)	(Head of Bachelor Program / Head of Department)	Vice Dean I	01/S1Kesmas/RPS/2019
			Revision - Date		Dr. Diah Indriani, S.Si., M.Si	
Faculty of Public Health	Valid on Semester (odd/even) / Academic Year	Odd Semester 2019/2020	(sign)	(sign)	(sign)	

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A. DETAILS OF COURSE


1. Course Name	Food and Nutrition Technology
2. Course Code	NUM 304
3. Credits (SKS)	2 (two) SKS
4. Semester / Term	VII (seventh)
5. Study Program	Bachelor of Public Health
6. Student Learning Achievement	After attending this course, students are able to explain the impacts of the principles of food processing (high temperature/heat, low temperature, drying, fermentation, BTM), the characteristics of food, packaging and storage on nutrition so that it can increase the use value and value added of food, and students can understand the most current issues of food.
7. Course Learning Achievement	<ol style="list-style-type: none"> 1. Make relevant decision pertaining to the problems faced 2. Lead and participate in group to formulate specific public health issues 3. Apply the public health knowledge, including social and behavioral knowledge, chronic disease, infection, and accident 4. Oversee program's performance 5. Identify internal and external issues that may affect the implementation of public health's essential service (compose strategic plans)
8. Course description	The course of Food and Nutrition Technology discusses: Processing principles with high temperature/heat; The principles of low temperature processing; The principles of processing by drying; Principles of processing by fermentation; The principles of processing with BTM; Processing and storing various types of food (cereals, tubers, and nuts, meat, fish, eggs, milk, vegetables and fruit) which include preparation, processing and effects on nutritional content; irradiation storage/preservation; Packaging of various food products; Current issues of food.
9. Course Prerequisites (if any)	None
10. Instructor	
11. Teaching Assistants	

B. TEACHING PROGRAM

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1	2	3	4	5	6	7	8	9	10
1	Students are able to provide description about the course of food technology and nutrition	Explanation of course outline, introduction, and syllabus: a. Explanation on food technology and nutrition course b. Explanation on syllabus c. Explanation on course outline and course schedule	1. Lectures 2. Discussions.	LCD and Whiteboard	2x50 minutes		1. Discipline 2. Communication skill 3. Critical thinking		1, 3
2	Students are able to explain Diversification of Processed Foods	1. General Condition of Agribusiness in Indonesia:	1. Lectures 2. Discussions.	LCD and Whiteboard	2x50 minutes		1. Discipline 2. Communication skill 3. Critical thinking		3, 1

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1	2	3	4	5	6	7	8	9	10
		a. Description on food industry b. Competitiveness of agricultural processed products 2. Innovation and Diversification on business process: a. Definition of product diversification b. Aim of product diversification c. Understand consumer's behavioral change							

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1	2	3	4	5	6	7	8	9	10
		3. Impact of innovation and diversification: a. Improvement of agroindustry's competitiveness b. Basic pattern of competitive agroindustry development c. Competitiveness of agro industry and business mindset							
3	Students are able to explain food characteristic (physical, chemistry, biology)	1. Preface: a. Definition of Food	1. Lectures 2. Discussions.	LCD and Whiteboard	2x50 minutes		1. Discipline 2. Communication skill		1, 3

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1	2	3	4	5	6	7	8	9	10
		b. Definition of Food Science c. Food Categorization 2. Food Ingredient Characteristics: a. Physical b. Chemical c. Biology 3. Main components of food ingredient: a. Carbohydrate characteristic in food b. Fat characteristic in food c. Protein in food					3. Critical thinking		

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1	2	3	4	5	6	7	8	9	10
4	Students are able to explain processing by high temperature/thermal	1. Preface: <ol style="list-style-type: none"> Main factors in food spoilage Aim of food processing Principles of processing 2. Processing by thermal: <ol style="list-style-type: none"> Aim of thermal Examples of application of thermal in processing Occurrences during thermal process Thermal source Changes taking place 	1. Lectures 2. Discussions.	LCD and Whiteboard	2x50 minutes		1. Discipline 2. Communication skill 3. Critical thinking		3, 2

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1	2	3	4	5	6	7	8	9	10
		f. Factors influencing cooking process g. Impact of thermal on nutrients h. Use of thermal to prolong storage span i. Optimization of cooking process							
5	Students are able to explain processing by low temperature	1. Preface: a. Aim of chilling 2. Incorrect Chilling: a. Chilling Injury b. Surface pitting c. Discoloration d. Internal breakdown	1. Lectures 2. Discussions.	LCD and Whiteboard	2x50 minutes		1. Discipline 2. Communication skill 3. Critical thinking		1, 3

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1	2	3	4	5	6	7	8	9	10
		e. Ripening failures							
6	Students are able to explain processing by drying	Drying: a. Preface b. Drying method c. Types of drying d. Factors influencing drying process e. Impact of drying on characteristic and nutritional value of food product	1. Lectures 2. Discussions.	LCD and Whiteboard	2x50 minutes		1. Discipline 2. Communication skill 3. Critical thinking		1, 3
7	Students are able to explain processing by fermentation	1. Preface: a. Fermentation product	1. Lectures 2. Discussions.	LCD and Whiteboard	2x50 minutes		1. Discipline 2. Communication skill		3, 1

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1	2	3	4	5	6	7	8	9	10
		b. Advantages of fermented products 2. Fermented final product: a. Fermentation on carbohydrate b. Fermentation on protein					3. Critical thinking		
MID-TERM TEST									
8	Visiting/ guest lecture	Role and challenges of food science in improving nutritional status and public health: a. Food function b. Functional food c. Change in food from traditional to functional d. Food security	1. Lectures 2. Discussions.	LCD and Whiteboard	2x50 minutes		1. Discipline 2. Communication skill 3. Critical thinking		1, 3

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1	2	3	4	5	6	7	8	9	10
		e. Food diversification f. Rainbow food g. Innovation based on people's preference							
9	Students are able to explain processing by BTP	1. Preface: a. Aim of food preservation b. Fundamentals of food preservation 2. Food preservation: a. Drying b. Canning c. Radiation d. Impact on food 3. Additional food ingredient : a. Definition	1. Lectures 2. Discussions.	LCD and Whiteboard	2x50 minutes		1. Discipline 2. Communication skill 3. Critical thinking		1, 6

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1	2	3	4	5	6	7	8	9	10
		b. Deviation of BTM c. Requirements of BTM d. Categorization of BTM e. Setting of BTM f. Forbidden BTM							
10	Students are able to explain food irradiation	1. Preface: a. Definition of food irradiation b. Principles of food irradiation basics c. Effect of irradiation on object 2. Food Radiation:	1. Lectures 2. Discussions.	LCD and Whiteboard	2x50 minutes		1. Discipline 2. Communication skill 3. Critical thinking		3

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1	2	3	4	5	6	7	8	9	10
		a. Application of nuclear science and technology on agriculture and animal husbandry b. Application of radiation on plant breeding c. Logo and irradiated food label d. Method of irradiation on food 3. Example of food treatment on irradiation: a. Irradiation on fish							

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1	2	3	4	5	6	7	8	9	10
		b. Irradiation on seeds							
11	Students are able to explain Food Storage	1. Preface: a. History of food storage b. Function of food storage c. Aim of food storage 2. Food loss and spoilage during storage: a. Types of loss b. Quantitative spoilage	1. Lectures 2. Discussions.	LCD and Whiteboard	2x50 minutes		1. Discipline 2. Communication skill 3. Critical thinking		3, 5
12	Students are able to explain food packaging	1. Packaging: a. Definition of packaging b. Difference between packaging and container	1. Lectures 2. Discussions.	LCD and Whiteboard	2x50 minutes		1. Discipline 2. Communication skill 3. Critical thinking		3, 5, 2

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1	2	3	4	5	6	7	8	9	10
		c. Function of packaging d. Requirements of packaging 2. Types of packaging: a. Primary packaging b. Secondary packaging c. Tertiary packaging 3. Types of packaging: a. Based on material b. Based on construction c. Based on form d. Based on function							

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1	2	3	4	5	6	7	8	9	10
		4. Function and risk of packaging: a. Traditional packaging b. Modern packaging 5. Packaging problems in Indonesia: a. Causes of haphazard packaging b. Potential health hazard source of plastic packaging from some sources c. Interaction between chemical							

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1	2	3	4	5	6	7	8	9	10
		packaging material and food d. Method of minimizing hazard							
13.	Students are able to explain current food science and technology issues	1. Preface: a. Development of nutritional science b. Development of food technology science 2. Improvement on food quality: a. Fortification b. Supplementati on c. Restoration d. Complementat ion 3. Functional food:	1. Lectures 2. Discussions.	LCD and Whiteboard	2x50 minutes		1. Discipline 2. Communicati on skill 3. Critical thinking		3, 1

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1	2	3	4	5	6	7	8	9	10
		a. Definition b. Requirement of functional food c. Example of functional food 4. Genetically modified products: a. Nutrition improvement via genetic modification on food b. Nutrition improvement on conventional breeding							

FINAL TERM TEST

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C. DAFTAR REFERENSI

Required Readings :

1. JAG Ress and J. Bettison. 1991. Processing and Packaging of Heat Preserved Food. Blackie, Glasgow and London
2. Estiasih, Teti dan Ahmadi. 2008. Teknologi Pengolahan Pangan. Bumi Aksara
3. Rizal Syarif dan Hariyadi H. 1993. Teknologi Penyimpangan Pangan. Arcan dan PAU Pangan dan Gizi. IPB

Additional Readings:

1. Credland, P.F., Armitage, D.M., Bell, C.H., Cogan, P.M., and Highley, E. 2003. Advances in Stored Product Protection. Proceedings of the 8th International Working Conference on Stored Product Protection. CAB International, Wallingford and Cambridge.
2. Miller GD, et al. 2006. Dairy Foods and Nutrition. 3th ed. National Dairy Council
3. Cahyadi, Wisnu Dr, Ir. 2006. Bahan Tambahan Pangan. PT. Bumi Aksara