

Module Course

	UNIVERSITAS JEMBER FACULTY OF AGRICULTURAL TECHNOLOGY DEPARTMENT OF AGRICULTURAL PRODUCT TECHNOLOGY		KODE DOKUMEN F1.03.05
Module Course			
COURSE	Name	Knowledge of Postharvest Materials and Physiology	
	Kode	TPU 1205	
	Credit (SKS)	2 SKS Face to Face; 0 SKS Practice	
	Semester	4	
Person(s) Teaching			
- Prof. Dr. Yuli Witono, S.TP., M.P. - Dr. Ir. Sih Yuwanti, M.P. - Nurud Diniyah, S.TP., MP., Ph.D.			
DESCRIPTION OF COURSE			
This course discusses the structure, composition, anatomy, morphology, physical, mechanical, hydration and chemical properties of food/agricultural products, which include fruits and vegetables, tubers, nuts, seeds, spices, and fresheners. , essential oils, eggs, milk, meat, fish and other potential food/agricultural products. Physiological activities and post-harvest handling technology, the changes that occur and the factors that influence them, and the technology for handling food/fresh agricultural products.			
LO – Programme Learning Outcome			
No LO	Statement of Learning Outcome (LO)		
LO-7	Able to evaluate chemical, enzymatic, microbiological, physical changes, technical functional properties and functional properties Health of food and agricultural products		
Course Learning Outcome (CLO)			
No CLO	Statement of CLO		
CLO-1	Describe the characteristics of agricultural food ingredients (vegetables and fruit, meat, eggs, fish, seeds, tubers, nuts, spices and fresheners, essential oils and other potential food/agricultural products)		
CLO-2	Describe changes in the characteristics of food and agricultural products (vegetables and fruit, meat, eggs, fish, seeds, tubers, nuts, spices and fresheners, essential oils and other potential food/agricultural products) during processing and storage		
SUB COURSE LEARNING OUTCOME (Sub-CLO)			
No Sub-CLO	Statement of Sub-CLO		
1	Students can explain the characteristics of vegetables and fruits		
2	Students can explain the characteristics of animal products		
3	Students can explain the characteristics of vegetable products		

4	Students can explain physiological changes, post-harvest handling and functional properties of vegetables and fruit during processing and storage
5	Students can explain physiological changes, post-harvest handling and functional properties of animal products during processing
6	Students can explain physiological changes, post-harvest handling and functional vegetable products during processing and storage
LEARNING TOPIC	
- Urgency and scope - Post-harvest physical characteristics of fruits and vegetables - Ingredients composition and changes during development - Post-harvest handling technology for fruits and vegetables (in class) - Post-harvest handling technology for fruits and vegetables (in case of method) - Changes in physiology, functional properties and post-harvest handling of vegetables - Changes in physiology, functional properties and post-harvest handling of fruit and other horticultural materials - Characteristics and post-harvest handling of meat, as well as functional properties of eggs during processing - Characteristics and post-harvest handling of fish, as well as the functional properties of milk during processing - Characteristics and post-harvest handling of milk, as well as functional properties of meat during processing - Characteristics and post-harvest handling of eggs, as well as the functional properties of fish during processing - Physical, morphological, thermic, hydration, chemical and nutritional characteristics of grains - Physical, morphological, thermic, hydration, chemical and nutritional characteristics of tubers - Physical, morphological, thermic, hydration, chemical and nutritional characteristics of legumes - Physical, morphological, thermic, hydration, chemical and nutritional characteristics of spices and fresheners, essential oils and other potential food ingredients/agricultural products - Changes in physiology, functional properties and post-harvest handling of grains, tubers, nuts, spices and fresheners, essential oils and other potential food/agricultural products	
MAIN REFERENCES	
1. Muchtadi, D. 1991. Fisiologi Pasca Panen Sayuran dan Buah-buahan. IPB Press. 2. Pantastico, Er. B. 1975. Postharvest Physiology, Handling, and Utilization of Tropical and Subtropical Fruits and Vegetables. Avi Publishing Company 3. Widjanarko, S. B. 2012. Fisiologi dan Teknologi Pasca Panen. UB Press. Malang. 4. Wills, R. B. H. and Golding, J. B. 2016. Postharvest: an introduction to the physiology and handling of fruit and vegetables. School of Environmental and Life Sciences, University of Newcastle, University Dr, Callaghan NSW 2308, Australia.	

5. Jeantet, R., et. al, 2016. Handbook of Food Science and Technology 3: Food Biochemistry and Technology. John Wiley & Sons, Inc, Canada 6. Guerrero-Legarreta, I., 2010 Handbook of Poultry Science and Technology. Volume 1: Primary Processing, John Wiley & Sons, Inc. Canada 7. Walstra et al., 1999. Dairy Technology: Principles of Milk Properties and Processes. Marcel Dekker, Inc, New York 8. Toldra, F. 2017. Lawrie's Meat Science. 8th Ed. Woodhead Publishing,Cambridge. 9. Love, R. M. 2006. Fish Biology and Food Science, In: Hui, Y. H. (Ed). Handbook of Food Science, Technology, and Engineering. Vol 1, CRC Press, Boca Raton 10. Stathers, T. et.al. 2018. Harvest and Post Harvest Management of Sweet Potato. International Potato Center, Lima, Peru. 11. Ikegwu, T.M., Ezegbe, C.E., Okolo, C.A, Ofoedu, C.E. 2022. Postharvest Preservation Technology of Cereal and Legumes. Intechopen. 12. Katzin, C. 2017. Spices and Nutrition. UCLA Center for Interactive Oncology.		
ADDITIONAL REFERENCES		
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PREREQUISITES COURSE (If any)		
- Basic Physics - Mathematics - Basic Chemistry 1		
TIMELINE		
WEEK(s)	Components	Person(s)
1	Contract, RPS, motivational video, Definition and scope	Prof. Dr. Yuli Witono, S.TP., M.P.
2	Characteristics of vegetables	Prof. Dr. Yuli Witono, S.TP., M.P.
3	Vegetable physiological changes	Prof. Dr. Yuli Witono, S.TP., M.P.
4	Characteristics of fruit	Prof. Dr. Yuli Witono, S.TP., M.P.
5	Physiological changes of fruit during processing and storage	Prof. Dr. Yuli Witono, S.TP., M.P.
6	UTS	Prof. Dr. Yuli Witono, S.TP., M.P.
7	Animal foodstuffs (Eggs)	Dr. Ir. Sih Yuwanti, M.P.
8	Animal food ingredients (Milk)	Dr. Ir. Sih Yuwanti, M.P.
9	Animal foodstuffs (Meat)	Dr. Ir. Sih Yuwanti, M.P.
10	Animal foodstuffs (Fish)	Dr. Ir. Sih Yuwanti, M.P.
11	Case method meat	Dr. Ir. Sih Yuwanti, M.P.
12	Grain characteristics (Literature: case studies from articles)	Nurud Diniyah, S.TP., MP., Ph.D.
13	Characteristics of tubers (Literature: case studies from articles)	Nurud Diniyah, S.TP., MP., Ph.D.

14	Characteristics and changes of nuts during processing and storage (Literature: summaries of articles)	Nurud Diniyah, S.TP., MP., Ph.D.
15	Characteristics and changes of spices and fresheners during processing and storage (Literature: case studies from articles)	Nurud Diniyah, S.TP., MP., Ph.D.
16	Characteristics and changes of essential oils and other potential food/agricultural products during processing and storage (Literature: case studies from articles)	Nurud Diniyah, S.TP., MP., Ph.D.

Jember, October 2022

Chief of Department

Person(s) coordinator

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