Course: Functional Food of Animal Products

1. **Type** **:** Specialization's Elective
2. **Code** **:** PTH 6407
3. **Credit** **:** 2/0
4. **Semester** **:** Odd
5. **Description** **:**

Functional food or known as nutraceuticals is the food (or food material) that gives specific non-nutrition physiological benefit that can increase the health. The consumer interest which keeps increasing on functional food alters food industry to re-formulate and re-define the relationship between food, nutrition, food and health. Health food can be produced by natural functional component introduction which comes from plant or animal. The natural functional component that comes from the plant protein and animal protein have been quite isolated and the effect has been tested towards the health i.e. anti-hypertension, antioxidant, anti-bacteria, etc. This course will support other courses i.e. Tropical Animal Food Technology, Animal Food Quality Control and Assurance, Meat processing and Industry and Advanced milk technology, and Advanced egg technology.

6. **Course Outcomes (CO)**

CO 1 : Able to comprehend the natural functional component on meat, milk, egg and also by-product and the functional components from processed result on meat, egg, milk ,and by-products.

CO 2 : Able to understand the functional components roles on meat product, milk product, egg product, and by product on health and processed food.

7. **The Alignment Between CO and ELO**

CO*	ELO**																	
	A				B			C				D					
	1	2	3	4	1	2	3	1	2	3	4	1	2	3	4	5	6
CO 1						✓					✓						
CO 2						✓					✓						

*CO refers to point 6.

**Expected Learning Outcomes (ELO) are written below,

A. Attitudes and Behaviors	
The graduates are able to behave well, correctly, and culturally as the result of internalization and actualization of values and norms, which is reflected in a spiritual and social life through learning process, experience, research, and/or community development in the animal husbandry.	
1	Piety to God and be able to show religious attitude and maintain the humanity values in carrying the task, which is based on religion, moral, and ethics.
2	Be proud and love the homeland show nationalism, and contribute to the improvement of the life quality in the community, nation and country, and the advancement of civilization according to Pancasila.
3	Showing the social sensitivity and attention to the community and environment by respecting the culture diversity, view, religious, beliefs, and other people's opinion, and also obey the rules.

4	Be accountable in carrying the professional practice that includes ability to accept accountability towards decision and professional action. It shall be according to the scope of the practice under their responsibility and laws.
B. Mastery in Sciences Master the theory of the current science in the animal husbandry and its application.	
1	Able to master the current animal science and its application theory.
2	Able to master the livestock production science, animal nutrition and fed science, animal products technology, and the livestock social economics in relation to food security and environment.
3	Able to master the design, management, and development of livestock research.
C. Special Skills The graduates are able to develop science, technology, and arts in the animal husbandry through interdisciplinary/multidisciplinary innovative and tested research.	
1	Able to make innovation in the animal husbandry based on the development of science and technology.
2	Able to design interdisciplinary and multidisciplinary research in the animal husbandry.
3	Able to formulate and solve problems in the national development especially in terms of animal husbandry.
4	Able to solve problems and anticipate issues in the development of animal science and industry.
D. General Skills The graduates are able to manage resources by utilizing science, technology, and arts to solve problems in the animal husbandry with current science and also conduct research with accountability and full responsibility.	
1	Able to develop logical, critical, systematic, and creative thought through scientific research, creation of design in the science and technology, which pays attention and applies humanity values according to their expertise. The graduates are able to arrange scientific concept and the study result based on the principles, procedures, and scientific ethics.
2	Able to identify the science that becomes their research object and position it to a research map by using information technology in the context of science development and expertise implementation developed through interdisciplinary or multidisciplinary approaches.
3	Able to make a decision in the context of solving problems in the development of science and technology, which pays attention and applies humanity values based on analysis study or experiment towards information and data.
4	Able to communicate the result of reasoning and scientific research in form of thesis and scientific writing responsibly based on academic ethics in the accredited national journal.
5	Able to maintain the academic integrity generally and avoid the plagiarism practice.
6	Able to communicate spoken and written English effectively by using the information technology for the development of animal science and its implementation.

8. Course Content

Week	CO	Topic/Subtopic	Learning Activity	Assessment Tools	Allocated Time	Lecturer
1	CO 1	Functional food: Overview	Tutorial class, discussion	Midterm, final exam, participation	2 x 50 minutes	Edi Suryanto
2	CO 1	Polyphenols	Tutorial class, discussion	Midterm, final exam, participation	2 x 50 minutes	Edi Suryanto

3	CO 1	Carotenoids	Tutorial class, discussion	Midterm, final exam, participation	2 x 50 minutes	Edi Suryanto
4	CO 1	Functional compounds in milk	Tutorial class, discussion	Midterm, final exam, participation	2 x 50 minutes	Nurliyani
5	CO 1	Functional compounds in egg	Tutorial class, discussion	Midterm, final exam, participation	2 x 50 minutes	Nurliyani
6	CO 1	Probiotics and prebiotics	Tutorial class, discussion	Midterm, final exam, participation	2 x 50 minutes	Nurliyani
7	CO 1	Functional compounds in meat	Tutorial class, discussion	Midterm, final exam, participation	2 x 50 minutes	Jamhari
Midterm Examination						
8	CO 2	Production of bioactive peptide	Tutorial class, discussion	Midterm, final exam, participation	2 x 50 minutes	Jamhari
9	CO 2	Peptide bioactivity	Tutorial class, discussion	Midterm, final exam, participation	2 x 50 minutes	Jamhari
10	CO 2	Bioactive fibre	Tutorial class, discussion	Midterm, final exam, participation	2 x 50 minutes	Yuny Erwanto
11	CO 2	Bioactive Vitamins	Tutorial class, discussion	Midterm, final exam, participation	2 x 50 minutes	Yuny Erwanto
12	CO 2	Bioactive Minerals	Tutorial class, discussion	Midterm, final exam, participation	2 x 50 minutes	Yuny Erwanto
13	CO 1; CO 2	Paper presentation	Student presentation, discussion	Midterm, final exam, participation	2 x 50 minutes	Team
14	CO 1; CO 2	Paper presentation	Student presentation, discussion	Midterm, final exam, participation	2 x 50 minutes	Team
Final Examination						

9. Assessment

Component	CO	Percentage (%) for final grade	Minimum Satisfactory Level
Midterm	CO 1; CO 2	30	70
Quiz	CO 1; CO 2	10	70
Presentation	CO 1; CO 2	10	70
Paper	CO 1; CO 2	20	70
Final exam	CO 1; CO 2	30	70
Total		100	

10. Lecturer

1. Dr. Ir. Jamhari, S.Pt., M.Agr.Sc., IPM.
2. Ir. Edi Suryanto, S.Pt., M.Sc., Ph.D., IPU.
3. Prof. Dr. Ir. Nurliyanti, S.Pt., M.S., IPM.
4. Ir. Yuny Erwanto, S.Pt., M.P., Ph.D., IPM.

11. Reference

1. Mine, Y., E. Li-Chan, and B. Jiang (Eds). 2010. Bioactive Proteins and Peptides as Functional Foods amd Nutraceuticals. A John Wiley & Sons., Inc., Publ., Iowa, USA.
2. Martirosyan, D.M., 2014. Introduction to Functional Food Science. 3rd ed. Food Science Publisher, Dallas, Texas.
3. Maria Saarela, 2011. Functional Foods, 2nd ed. Woodhead Publishing Series in Food Science, Technology and Nutrition, Elsevier.
4. Aluko and E. Rotimi, 2012. . Functional Foods and Nutraceuticals, Springer