

Course: Advanced Egg Science and Technology

1. **Type** : Specialization's Elective
2. **Code** : PTH 6408
3. **Credit** : 2/0
4. **Semester** : Even
5. **Description** :

This course of Advanced Egg Science and Technology is elective course of animal product technology for graduate students. This course is basically an advanced course from the undergraduate degree that provides egg science and technology. An advanced egg science and technology will discuss protein component, carbohydrate and good fat seeing from physical structure, chemistry, and its characteristics. Next, it will elaborate physico-chemistry, functional, and egg nutritional value. The characteristics of physico-chemistry of egg protein will discuss viscosity, surface activity, and egg pH alteration. The egg functional characteristics discusses clumping, fertilization, emulsification process and type, and its influencing factors. Besides, it also explains egg microbiology and egg application in the industry both food and non-food. The egg microbiology discusses the egg damage which is caused by microbiology and the type of its damage. The discussion is expected to open the student's knowledge about the egg potency for being able to develop the knowledge and apply them in the egg processing technology. Hence, students are expected to be able to produce the research or technology that is useful for human by utilizing egg commodity.

6. Course Outcomes (CO)

- CO 1 : Increase knowledge and the comprehension of basic science of component and egg structures, egg processing principles and the instrument development which is used for egg processing both food and non-food.
- CO 2 : Increase the intellectual ability in evaluating the nutritional value of egg product and processed egg, able to identify the egg component for being developed into various product which is useful for humans.

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.

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|---|---|
| 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 feed 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	Introduction: <ul style="list-style-type: none"> Physical and chemical 	Classical lecture	Midterm	100	Prof. Dr. Ir. Nurliyani, MS., IPM

		structure of egg • Chemical composition of egg				
2	CO 1	Egg protein: Structure and characteristic of egg protein	Classical lecture	Midterm	100	Prof. Dr. Ir. Nurliyani, MS., IPM
3	CO 1	Lipid and carbohydrate of egg: characteristics	Classical lecture	Midterm	100	Prof. Dr. Ir. Nurliyani, MS., IPM
4	CO 1	Physico-chemical characteristics of egg protein: viscosity, surface activity, pH	Classical lecture	Midterm	100	Prof. Dr. Ir. Nurliyani, MS., IPM
5	CO 1	Functional characteristics of egg: coagulation, foaming	Classical lecture	Midterm	100	Prof. Dr. Ir. Nurliyani, MS., IPM
6	CO 1	Functional characteristic of egg: Emulsion type; emulsification and affecting factors	Classical lecture	Midterm	100	Prof. Dr. Ir. Nurliyani, MS., IPM
Midterm Examination						
7	CO 2	Nutrient value of egg: The importance of egg nutrient Egg nutrient value from various poultries	Classical lecture	Final exam	100	Prof. Dr. Ir. Nurliyani, MS., IPM
8	CO 2	Designer eggs	Classical lecture	Final exam	100	Prof. Dr. Ir. Nurliyani, MS., IPM

9	CO 1	Egg microbiology	Classical lecture	Final exam	100	Widodo, SP.,M.Sc., Ph.D
10	CO 2	Egg application on food and non-food industry: <ul style="list-style-type: none"> • Egg-based food industry • Egg application n non-food industry 	Classical lecture	Final exam	100	Prof. Dr. Ir. Nurliyani, MS., IPM
11	CO 2	Review on egg research progress	Discussion	Presentation	100	Prof. Dr. Ir. Nurliyani, MS., IPM Widodo, SP.,M.Sc., Ph.D
12-14	CO 2	Student presentation	Discussion	Presentation	100	Prof. Dr. Ir. Nurliyani, MS., IPM
Final Examination						

9. Assessment

Component	CO	Percentage (%) for final grade	Minimum Satisfactory Level
Midterm	CO 1	35	70
Presentation	CO 2	15	70
Paper	CO 2	15	70
Final exam	CO 1	35	70
Total		100	

10. Lecturer

1. Prof. Dr. Ir. Nurliyani, MS., IPM.
2. Widodo, SP., M.Sc., Ph.D.

11. Reference

- ^{1.} Romanoff, AL. and AJ. Romanoff. 1949. The Avian Egg. John Wiley & Sons, Inc, New York.
- ^{2.} Stadelman, WJ. 1995. Egg Science and Technology. 4th ed. Binghamton New York.