

**Course: Feed Quality Control**

1. **Type** : Specialization's Elective
2. **Code** : PTN 6106
3. **Credit** : 1/1
4. **Semester** : Odd
5. **Description** :

Indonesia is a tropical land with two seasons: rainy and dry season. This condition caused fluctuation in the food supply. The supply of concentrated feed derived from grains and agricultural by-products are strongly influenced by harvesting season. The supply of feed tends to be abundant during harvesting season and far less available on post-harvest and planting season.

Both abundant and lack of supply will have problems. When the supply is abundant, there are lot of low-quality feed, but when it is lack of supply, there are a lot forged fed. As a result of this forgery, the nutrient content of feed material can exceed the actual (overestimated). And the result is, livestock do not get the expected nutrients, and cause declined in productivity.

Feed Quality Control course is designed to equip students with competencies in determining and controlling the quality of feed by looking at the authenticity of feed ingredients. It is because the quality of feedstuffs strongly determines the quality of finished feed product.

In addition to theory, students also perform assessment to feedstuffs macroscopically, microscopically, and chemically. Microscopic assessment is carried out by using a three-dimensional microscope, while the chemical assessment is carried out by using chemistry that fits to the purpose of the assessment.

**6. Course Outcomes (CO)**

- CO 1 : Understand the importance of feedstuffs quality control during the processing and finishing stage of finished feed production.
- CO 2 : Understand the conditions of damaged feed, physically and chemically, the conditions of contaminated feed, the conditions of forged feed and its consequences.
- CO 3 : Understand mechanism of forged feed to perform preventive action and feed quality control.

**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 3																		
CO 4																		
CO 5																		

\*CO refers to point 6.

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

<b>A. Attitudes and Behaviors</b>	
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>B. Mastery in Sciences</b>	
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.
<b>C. Special Skills</b>	
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.
<b>D. General Skills</b>	
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 Guideline on the feedstuffs quality	Lecture and discussion	Exam	1	Ali Agus
2	CO 1	Monitoring and evaluation on feed stuffs quality	Lecture and discussion	Exam	1	Ali Agus
3	CO 2	Physical control (macro and micro)	Lecture and discussion	Exam	1	Cuk Tri Noviandi
4	CO 2	Quality control of feed additives and supplements	Lecture and discussion	Exam	1	Cuk Tri Noviandi
5	CO 2	Mycotoxin control	Lecture and discussion	Exam	1	Cuk Tri Noviandi
6	CO 2; CO 3	Sample terminology and sampling method (1)	Lecture and discussion	Exam	1	Cuk Tri Noviandi
7	CO2/ CO 3	Sample terminology and sampling method (2)	Lecture and discussion	Exam	1	Cuk Tri Noviandi
<b>Midterm Examination</b>						
8	CO 2/ CO 3	Macroscopic feed identification	Lecture and discussion	Exam	1	Ristiano Utomo
9	CO 2/ CO 3	Impurity test (microscopic and chemical)	Lecture and discussion	Exam	1	Ristiano Utomo
10	CO 2	Microscopic control	Lecture and discussion	Exam	1	Ristiano Utomo
11	CO 2	Chemical control	Lecture and discussion	Exam	1	Ristiano Utomo
12	CO 2/ CO 3	Homogeneity test	Lecture and discussion	Exam	1	Andriyani Astuti
13	CO 2/ CO 3	Quality control on production process	Lecture and discussion	Exam	1	Andriyani Astuti
14	CO 2/ CO 3	Feed quality control	Lecture and discussion	Exam	1	Andriyani Astuti

<b>Final Examination</b>
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**9. Practicum**

Week	Activity	Methods	Total Hours
1	Bulk density test	Testing bulk density of some feedstuffs	2
2	Urea molasses block	Making 2 urea molasses block (2 methods)	3
3	Husk content test	Testing husk content on some rice bran samples	2
4	Salt content test	Testing homogeneity and slat content on some samples	2

**10. Assessment**

Component	CO	Percentage (%) for final grade	Minimum Satisfactory Level
Class participation	CO 1; CO 2; CO 3	20	Participation is assessed based on the presence, consistency, and quality of student's participation in class
Discussion	CO 3	10	
Midterm	CO 1; CO 2	30	
Final Exam	CO 1; CO 2	40	
<b>Total</b>		100	

**11. Lecturer**

1. Prof. Dr. Ir. Ali Agus, DAA., DEA., IPU.
2. Prof. Dr. Ir. Ristiano Utomo, S.U., IPM.
3. Ir. Cuk Tri Noviandi, S.Pt., M.Anim.St., Ph.D., IPM.
4. Ir. Andriyani Astuti, S.Pt., M.Sc., Ph.D., IPM.
5. Prof. Dr. Ir. Ali Agus, DAA., DEA., IPU.
6. Prof. Dr. Ir. Ristiano Utomo, S.U., IPM.
7. Ir. Cuk Tri Noviandi, S.Pt., M.Anim.St., Ph.D., IPM.
8. Ir. Andriyani Astuti, S.Pt., M.Sc., Ph.D., IPM.

## 12. Reference

1. American Feed Industry Association, 1985. Feed Manufacturing Technology III. R.R.McElhiney Ed., 1701 North Fort Myer Drive, Alington, Virginia USA 22209.
2. American Soybean Association, 2000. Feed Technology and Nutrition Workshop. R.A.
3. Ensminger, M.E. and C.G. Oletine, 1978. Feeds and Nutrition : Complete. First Edition The Ensminger Publishing Company, 3699 East Sierra Avenue, Clovis, California 93612
4. Snelson G.P. 1987. Grain Protectants. Australian Center for International Agricultural Research (ACIAR). Canberra.
5. Hasil-hasil penelitian dan jurnal yang berkaitan dengan konservasi hijauan pakan dan pengolahan konsentrat.