Course Module
Department of Animal Science
Faculty of Animal Science
Universitas Brawijaya

Module Name	Science and Technology of Feed Stuff
Module Level	Undergraduate Study Program of Animal Science
Code	PEN60005
Subtitle	-
Course	Science and Technology of Feed Stuff
Semester (s)	4 (four)
Person Responsible for the module	Dr. Ir. Eko Widodo, M.Agr.Sc.M.Sc.
Lecturer	1. Dr.Ir. Eko Widodo, M.Agr.Sc. M.Sc. (Koordinator) 2. Prof. Dr.Ir. Siti Chuzaemi, MS. IPU ASEAN Eng 3. Prof. Dr.Ir. Hartutik, MP. IPU. ASEAN Eng 4. Prof. Dr.Ir. Kusmartono 5. Dr. Ir. Osfar Sjofjan, M.Sc. IPU. ASEAN Eng 6. Dr.Ir. Irfan H. Djunaidi, MP. IPM. ASEAN Eng 7. Dr.Ir. M. Halim Natsir, MP. IPM. ASEAN Eng 8. Artharini Irsyammawati, SPt.MP 9. Yuli Frita Nuningtyas, SPt.M.Sc.MP 10. Poespitasari Hasanah N, SPt. MP.
Language	Combination (Indonesian language and English)
Relation to curriculum	Study Program: Animal Science Specialization: Animal Nutrition and Food Type: Compulsory/~~Non-Compulsory~~
Type of teaching, contact hours	1) Lecture/Meeting/Tutorial: 60 minutes/week/semester 2) Structured Assignments: 60 minutes/week/semester 3) Independent Study: 50 minutes/week/semester 4) Practicum: 100 minutes/week/semester
Workload	a. Lecture: 14 meetings*100 minutes b. Practicum: 14 meetings*150 minutes c. Independent learning: 16 times*150 minutes Course 90.67 hours/semester, practical 42,50 hours/semester
Credit points	3 credits / 5.10 ects
Requirements according to the examination	-

regulations	
Recommended prerequisites	Introduction to Animal Nutrition and Forage
Module objectives/int ended learning outcomes	**ILO**: ILO 5-Capability to analyse the development and implementation of technology through humanities, ethical and scientific value as to provide appropriate solutions and ideas ILO 11-Demonstrating good capability to be independent and to work in team as to identify and analyse problems ILO 12-Capability to ethically design and perform experiments, analyze and interpret data as to provide sustainable problem solving in Animal Science
	Objetives: This course discusses Characteristics and structure of animal feed materials, agricultural waste and concentrates, physical, chemical, and biological animal feed processing technology, as well as the use of industrial by-product and biotechnology, as well as feed additive manufacturing technology
	Knowledge: Able to understand and explain the animal feed processing technology, agricultural waste and concentrates.
	Skills Cognitive: Able to apply the animal feed processing technology and physical, chemical, and biological agricultural waste. Phsycomotoric: Able to apply physical, chemical, and biological concentrate feed ingredients processing technology.
	Competences: Able to evaluate the physical, chemical, and biological results of the application of animal feed processing technology
Content	1. Characteristics and Technology of Forage and Agricultural Waste Processing 2. Physical Feed Material Processing Technology for Forage and Agricultural Waste 3. Chemical Forage and Agricultural Waste Processing Technology (Treatment with acids (SO 2 and Cl) and alkalis (NaOH, KOH, Ca (OH) 2, NH 3, NH 4 (OH), and Urea) 4. Biological Forage and Agricultural Waste Processing Technology (Fungi, Enzymes, Bacteria, Mold) 5. Combination of Forage and Agricultural Waste Processing Technology

	6. Forage and Agricultural Waste Supplementation Technology (UMB and Complete Feed) 7. Mechanical Processing Technology of Concentrated Feed Materials (seed structure, mechanical processing, and nutrient changes) 8. Physical Processing Technology of Concentrated Feed Materials 9. Processing technology and utilization of concentrated feed materials from the by-product industry 10. Biological Processing Technology of Concentrated Feed 11. Concentrated Feed Additive Technology for Non-Ruminant Animal Applications 12. Damage to concentrated feed materials during storage
Study and examination requirements and forms of examination	Attendance >80% The final score of all the components of the PBM evaluation >44 The final score component: 35% Midterm Exam 35% Final Exam 20% Practicum 5% Structured Assignments 5% Quiz A : 80 < Final Score ≤ 100 B+ : 75 < Final Score ≤ 80 B : 69 < Final Score ≤ 75 C+ : 60 < Final Score ≤ 69 C : 55 < Final Score ≤ 60 D : 50 < Final Score ≤ 55 D+ : 44 < Final Score ≤ 50 E : 0 < Final Score ≤ 44
Media employed	Projector and screen, Zoom application, Google Classroom, e-book, WA Group
Reading list	1. Buku Teknologi Pengolahan Bahan Pakan, UB Press. 2019 (M. Halim Natsir et al.). 2. Chemistry and Technology of Cereals as Food and Feed. Avi Book. 1991 (Samuel A Matz). 3. Tropical Forage Plants: Development and Use CRC Press. 2000. (W.D. Pitman and A. Sotomayor-Rios). 4. Forage Crops of the World, Volume 1: Major Forage Crops. Apple Academic Press. 2019. (Md Hedayetullah and P. Zaman).