FACULTY OF AGRICULTURE

DEPARTMENT OF ANIMAL SCIENCE

UNDERGRADUATE PROGRAM **MODULE HANDBOOK**

Module designation	Livestock Breeding Technology (2030)
Semester(s) in which the module is taught	4th Semester
Person responsible for the module	Dr. Mohd. Agus Nashri Abdullah, S.Pt., M.Si
Language	Indonesian, English
Relation to curriculum	Compulsory module for area of interest in Animal Production
Teaching methods	Discussion, use of audio visuals, questions and answers, group assignments, individual assignments
Workload (incl. contact hours, self-study hours)	✓ 100 minutes lecture and discussion per week ✓ 120 minutes structured tasks per week ✓ 120 minutes learn to be independent per week
Credit points	2 SKS = 3.2 ECTS
Required and recommended prerequisites for joining the module	Genetic (SPTK2013)

Module objectives/intended learning outcomes	✓ Students have knowledge, understanding and are able to explain practical breeding, objectives and strategies; utilization of inherited traits; and characteristics of beef cattle, dairy cattle, buffalo, sheep, horses and poultry. ✓ Students have knowledge, understanding and are able to explain the inheritance and characteristics of production traits (inheritance of economically valuable traits in mammals and birds, genetic and environmental influences, genetic and environmental interactions, and phenotypic plasticity. ✓ Students have knowledge, understanding and are able to explain the diversity of traits in livestock populations (normal distribution analysis - range, mean, SD and KK, variance, simple regression and relationships between traits). ✓ Students have knowledge, understanding and are able to explain genetic parameters (heritability, repeatability, genetic correlation, and calculating genetic parameters and their use). ✓ Students have knowledge, understanding and are able to explain selection and selection effectiveness (selection of one trait, selection of more than one trait, estimating selection progress, selection differential, selection intensity, and generation interval)
Content	The Livestock Breeding Technology course aims to equip students with the concepts, methods, and applications of genetic improvement in livestock. Topics include principles of quantitative and molecular genetics, selection methods, mating systems, breeding program design, genetic evaluation, and the use of reproductive technologies to accelerate genetic progress. Students will also study data analysis for breeding decisions and case studies of breeding programs in various species. Upon completion, students are expected to be able to design and implement breeding strategies, apply genetic evaluation tools, and optimize livestock productivity through science-based genetic improvement programs.
Exams and assessment formats	Disciplined, able to work together in a team and be active in class discussion.
Study and examination requirements	✓ Participatory Activities (Attitude and Discussion): 20% ✓ Project Results (Posters, Reports and Presentations): 30% ✓ Cognitive/Knowledge: Homework/Assignments: 5% Quiz: 5% Exam 1 (From 2nd Lecturer): 20% Exam 2 (From 3rd Lecturer): 20%

Reading list	1. Bourdon, R. M. (2021). *Understanding animal breeding* (3rd ed.). Waveland Press. 2. Mrode, R. A., & Kizilkaya, K. (2020). *Linear models for the prediction of animal breeding values* (3rd ed.). CABI. https://doi.org/10.1079/9781786394670.0000 3. van der Werf, J., & de Haas, Y. (2019). *Animal breeding and genetics*. Wageningen Academic Publishers.