Module designation	Molecular Approach to Animal Breeding and Reproduction
Semester(s) in which the module is taught	Odd and even semesters
Person responsible for the module	Prof. Ir. Diah Tri Widayati, M.P., Ph.D., IPM. Dr. Ir. Sigit Bintara, M.Si., IPM. ASEAN Eng. Prof. Ir. Tety hartatik, S.Pt., Ph.D., IPM. Ir. Dyah Maharani, S.Pt, M.P., Ph.D, IPM.
Language	Bahasa and English
Relation to curriculum	Specialization's Compulsory
Teaching methods	Classical lecture and discussion
Workload (incl. contact hours, self-study hours)	Total workload: 79 hours Contact hours: – Lecture: 23 hours – Academic activity: 28 hours Private study: 28 hours
Credit points	2/0
Required and recommended prerequisites for joining the module	None
Module objectives/intended learning outcomes	Course Outcomes (CO): 1. Be able to comprehend the molecular concept in the animal breeding and reproduction field 2. Be able to describe the genetic transfer technology for animals and animal cell lines 3. Be able to describe the molecular contribution in the current animal reproduction biotechnology and in the future 4. Know about the current trend in the animal breeding and reproduction and design the breeding and reproduction strategy based on the needs Expected Learning Outcomes: – Mastery in Sciences: 1. Able to master scientific philosophy and develop new science and technology in animal science is useful, competitive, and environmentally sound research with a multidisciplinary approach. (CO1, CO3, CO4) 2. Able to develop new science and technology concepts to solve problems in the field of animal husbandry through research with multidisciplinary and transdisciplinary approaches. (CO1, CO2, CO3, CO4) – Special skills: 1. Able to develop science and technology through creative, original, and novelty research. (CO1, CO2, CO4) 2. Able to independently design and carry out inter-, multi-, and transdisciplinary research for the development of animal husbandry science and technology. (CO2) 3. Able to manage, lead and develop research in the field of animal husbandry, as well as communicate the results and get recognition at the national and international levels for the benefit of humankind. (CO2, CO3, CO4) – General skills: 1. Able to develop a research roadmap to compile scientific,

	technological, or artistic arguments and solutions based on a critical view of facts, concepts, principles, or theories with an interdisciplinary, multidisciplinary, or transdisciplinary approach, based on a study of the main objectives of the research and their constellation on broader targets. (CO1, CO2) 2. Able to communicate the result of reasoning and scientific research in the form of dissertation and scientific writing responsibly based on academic ethics. (CO3, CO4)
Content	Molecular Approach to Animal Breeding and Reproduction is a course that studies about the animal breeding and reproduction in molecular, not conventional anymore. Animal selection using performance and reproduction can be performed on the cellular level or molecular, and that use a certain gene marker that control production and reproduction traits.

Exams and assessment formats			
	Assessment Components	**Course Outcomes (CO)**	**Percentage (%)**
	1. Midterm exam (written test, paper assignment)	CO 1, CO 2, CO 3 & CO 4	30
	2. Final exam (written test, paper assignment)	CO 1, CO 3 & CO 4	30
	3. Discussion	CO 3 & CO 4	20
	4. Assigments	CO 1 & CO 3	20
	Grade and Score		
	Grade	**Score**	**Grade**	**Score**
	A	≥80	C+	45-49,9
	A-	75-79,9	C	40-44,9
	A/B	70-74,9	C-	35-39,9
	B+	65-69,9	C/D	30-34,9
	B	60-64,9	D+	25-29,9
	B-	55-59,9	D	20-24,9
	B/C	50-54,9	E	0-19,9

Study and examination requirements	The final grade in the module is composed of 30% performance on Midterm exam, 30% final exam, 20% discussion, 20% assignment. Students must have a final grade of 70% or higher to pass
Reading list	– Bearden, J. H. and J.W. Fuquay, 2004, Applied Animal Reproduction, Reston Publishing Company Inc., Virginia. – Hafez, E.S.E., 2003, Reproduction in Farm Animals, 7th edition, Lea and Febiger, Philadelphia. – Noakes, D.E., T.J. Parkinson, G.C.W. England, G. H. 2018. Veterinary Reproduction & Obstetrics. Saunders, Toronto. – Squires, J.E. 2010. Applied Animal Endocrinolog, 2nd. Edition. CABI, United Kingdoom – Jiang, Z and Ott TL. 2011. Reproductive Genomics in Domestic Animal. 1st ed. Wiley-Blackwell. United Kingdoom