



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

Module name	Genetics
Module level	Undergraduate Program
Code	PEP60006
Subtitle	-
Courses	-
Semester(s)	2
Person responsible for the module	
Lecturer	<ol style="list-style-type: none"> <li>1. Prof. Dr.Ir.Sucik Maylinda,MS.</li> <li>2. Prof.Dr.Ir.Luqman Hakim,MS.</li> <li>3. Prof. Dr.Ir.Sucik Maylinda,MS.</li> <li>4. Prof.Dr.Ir.V.M.Ani Nurgiartiningsih,MSc.</li> <li>5. Prof.Dr.Ir.Gatot Ciptadi,DESS. IPU, ASEAN Eng.</li> <li>6. Dr.Ir.Agus Budiarto,MS.</li> <li>7. Dr Ahmad Furqon, SPt.</li> </ol>
Language	Indonesian and English
Relation to curriculum	Compulsory/ <i>Elective</i>
Type of teaching, contact hours	Contact hours and class size separately for each teaching method: course, structured assignment, etc.
Workload	Course: 90.67 hours/semester
Credit points	2 SKS / 3.40 ECTS
Requirements according to the examination regulation	-
Recommended prerequisites	Biology, Animal Anatomy and Physiology, Biochemistry
Module objectives/intended learning	<p>ILO-4: Capability to develop knowledge and comprehensive mindset based on Animal science and industry</p> <p>ILO-6: Proficient in biology, physiology, animal nutrition, breeding, farm management, and implementation in Animal Science</p>
	<p>Objectives: This course consists of understanding the basics of inheritance, as well as exploring events in nature, especially in the field of animal science from a genetic aspect. Individual and group assignments will be given to practice the ability to solve problems of inheritance in animals. Topics that</p>

	will be discussed are: history and development of Genetics, Mendelian Law and Inheritance Patterns of Monohybrid and Dihybrid Traits, Deviations of Mendel's Law, Genetic Matter (Cells, Chromosomes, Genes, RNA and DNA), Abnormalities due to chromosomal abnormalities, Sex Determination, Sequencing and Cross Moving, Multiple Alleles, Probability theory, Basis of population genetics, Polygen, and Basis of Genetic engineering.
	Knowledge: able to explain and discuss various genetic science theories and genetic materials.
	Skills: Cognitive- able to explain the genetic science theories. Phsycomotoric- able to analyze and present the meaning of genetics theories, population genetics, and genetic manipulation.
	Competences: able to explain and apply genetic science the field of animal science.
Content	<p>Courses:</p> <ol style="list-style-type: none"> <li>1. Able to study and understand various theories of genetic science</li> <li>2. Able to understand and follow the development of genetic science and its application in the field of animal science</li> <li>3. The topics include:</li> <li>4. Introduction</li> <li>5. Mendel's Law (Inheritance of monohybrid and dihybrid)</li> <li>6. Mendel's Law Deviations</li> <li>7. Genetic Material (cells, chromosomes, genes, DNA, and RNA)</li> <li>8. Mutations</li> <li>9. Sex determination, sequencing, and crossing over</li> <li>10. Dual alleles</li> <li>11. Polygen, Qualitative and quantitative characteristics</li> <li>12. The theory of opportunity</li> <li>13. Introduction to population genetics</li> <li>14. Changes in gene frequency and Hardy Weinberg's Law</li> <li>15. Introduction to genetic manipulation</li> </ol>
Study and examination requirements and forms of examination	<ol style="list-style-type: none"> <li>1. Midterm exam</li> <li>2. Final term exam</li> <li>3. Structured assignment and quiz</li> <li>4. Group assignment</li> </ol> <p>How to score:</p> <ul style="list-style-type: none"> <li>- Midterm exam 35%</li> <li>- Final term exam 35%</li> <li>- Structured assignment and quiz 15%</li> <li>- Group assignments 15%</li> </ul> <p>A : 80 &lt; Final Score ≤ 100  B+ : 75 &lt; Final Score ≤ 80  B : 69 &lt; Final Score ≤ 75  C+ : 60 &lt; Final Score ≤ 69</p>

	<p>C : 55 &lt; Final Score ≤ 60</p> <p>D : 50 &lt; Final Score ≤ 55</p> <p>D+ : 44 &lt; Final Score ≤ 50</p> <p>E : 0 &lt; Final Score ≤ 44</p>
Media employed	Projector and screens, Zoom application, Google Classroom, e-book, WA Group
Reading list	<ol style="list-style-type: none"> <li>1. Gardner E.J. and D.P. Snustad. 1981. Principles of Genetics. 6<sup>th</sup> Ed. John Wiley &amp; Sons. Singapore.</li> <li>2. Gatot C., A. Budiarto, Aulanium, Y. Oktanela. 2019. Genetika, Pemuliaan dan Peternakan-Veteriner.</li> <li>3. Maylinda, S. 2011. Genetika dan Genetika Populasi. Diktat mata kuliah. Fakultas Peternakan, Universitas Brawijaya, Malang.</li> <li>4. Maylinda, S. 2011. Pengantar Pemuliaan Ternak. Buku Ajar, Penerbit: UB Press.</li> <li>5. Minkema, D. 1993. Dasar Genetika dalam Pembudidayaan Ternak. Cetakan Kedua. PT Bhratara Niaga Media, Jakarta.</li> </ol>