



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

Module name	Biochemistry
Module Level	Undergraduate Study Program of Animal Science
Code	PEF61001
Subtitle	-
Courses	Biochemistry
Semester(s)	1
Person responsible for the module	Dr. Ir. Osfar Sjojfan, M.Sc.IPU. ASEAN Eng.
Lecturer	<ol style="list-style-type: none"> 1. Osfar Sjojfan, Dr. Ir. M.Sc. IPU. ASEAN Eng. 2. Siti Chuzaemi, Prof. Dr. Ir., MP. IPU. ASEAN Eng. 3. Hartutik, Prof. Dr. Ir., MP. IPU. ASEAN Eng. 4. Kusmartono, Prof. Dr. Ir. 5. Herni Sudarwati, Dr. Ir. MS. 6. Mustakim, Dr. Ir. MP.IPM 7. Eko Widodo, Dr. Ir. M.Agr.Sc., MSc. 8. Siti Nurul Kamaliyah, Dr. Ir. MP 9. Marjuki, Dr. Ir., M.Sc 10. Abdul Manab, Dr. S.Pt. MP 11. Khotibul Umam, A. Dr. S.Pt. MP 12. Herly Evanuarini, Dr. S.Pt. MP
Language	Combination (Indonesian language and English)
Relation to Curriculum	Study Program: Animal Science Specialization: Animal Science Type: Compulsory/ Non-Compulsory
Type of Teaching, Contact Hours	<ol style="list-style-type: none"> 1. Lecture/Meeting/Tutorial/Structural assignment: 100 minutes/week/semester 2. Independent Study: 50 minutes/week/semester 3. Practicum: 100 minutes/week/semester
Workload	Lecture : 2 credits or 90.67 hours/semester; Practical : 1 credits or 42.50 hours/semester
Credit points	3 credits (Lecture : 3.40 ECTS and Practical : 1.70 ECTS = Total 5.10 ECTS)
Requirements According to the Examination Regulations	-
Recommended Prerequisite	-
Module Objectives / Intended Learning Outcomes	Learning Outcomes: <ol style="list-style-type: none"> 1. Capability to develop knowledge and comprehensive mindset based on Animal science and industry (LO 4)



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	<p>2. Capability to analyse the development and implementation of technology through humanities, ethical and scientific value as to provide appropriate solutions and ideas (LO 5)</p> <p>3. Proficient in biology, physiology, animal nutrition, breeding, farm management, and implementation in Animal Science (LO 6)</p>
	<p>Objectives: The Biochemistry course explain biochemistry and cells including structure, system, function and mechanism of action of cells. The course also explain and identify qualitatively water, acid-base, enzymes and their procedure, carbohydrate biochemistry, protein, amino acids, fats and fatty acids as well as vitamins and minerals and their metabolic processes in plants, animals, and animal products. Beside that it also learn about the process and procedure of bio-energetics in plants, animals, and animal products.</p>
	<p>Knowledge: Build their knowledge and comprehensive mindset about biochemistry related to applying in Animal science and industry.</p>
	<p>Skills</p> <p>Cognitive Implementing basic biochemistry including structure, system, function and mechanism of action of cells on Animal Science.</p> <p>Phsycomotoric Applying the principles of biochemistry in conducting research in the field of Animal Science related to carbohydrate, protein, lipid, mineral and vitamin metabolisms.</p>
	<p>Competences Improving their capability to analyse the development and implementation of biochemistry through humanities, ethical and scientific value as to provide appropriate solutions and ideas.</p>



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<p>Content</p>	<ol style="list-style-type: none"> 1. Learning plan, lecture contracts, biochemical history, structure, function, and differences in cells in plants, animals, and animal products 2. Structure, function of water and acid-base (pH) 3. Type, structure, function, and work mechanism of enzymes 4. Carbohydrate biochemistry (type, structure, function, and work mechanism of carbohydrates) 5. The process of carbohydrate metabolism 6. Protein Biochemistry (type, structure, function, and work mechanism of proteins and amino acids) 7. Metabolism processes of protein and amino acid 8. Fat biochemistry (type, structure, function, and work mechanism of fats and fatty acids) 9. The metabolism process of fats and fatty acids 10. Types, structures, functions, and work mechanisms of nucleic acids 11. Types, structures, functions, work mechanisms, and metabolism of vitamins 12. Types, structures, functions, work mechanisms, and metabolism of mineral 13. Work mechanism of Bio-energetics 14. Biochemical applications in the field of animal science
<p>Study and Examination Requirements and Forms of Examination</p>	<ul style="list-style-type: none"> – Examination requirements: A minimum of 80% attendance to attend the final exam – The forms of the test: Multiple Choice/Essay/Group <p>The Final Score Component:</p> <ul style="list-style-type: none"> – 30% Midterm Exam, – 30% Final Exam, – 30% Practicum, – 5% Structured Assignments – 5 % Quiz <p>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</p>



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Media Employed	Projector and screen, Zoom application, Google Classroom, e-book, WhatsApp Group
Reading List	<p>Main</p> <ol style="list-style-type: none">1. A., Lehninger. 2008. Dasar-Dasar Biokimia, translate. Maggy Thenawidjaja. Jakarta: Erlangga. <p>Supporter</p> <ol style="list-style-type: none">2. Anna Poedjiadi and F.M. Titin Supriyanti, 2009. Dasar-Dasar Biokimia, Jakarta: UI-Press.3. David S Page, 2005. Prinsip Prinsip Biokimia. Edisi Kedua. Penerbit Airlangga. Jakarta.4. Freeman, B. M. 1984. Physiology dan Biochemistry of the Domestic Fowl. Vol. 5. Academic Press Inc : London.5. Garrent, R. H., and C. M. Grisham.2005. Biochemistry. 3rded. Thomson Brooks / Cole. California.6. Linder, M.C. 1992. Biokimia Nutrisi dan Metabolisme. Jakarta: UI Press.7. Martoharsono. 2012. Biokimia 1. Gadjah Mada University. Yogyakarta.8. Murray, R. K., Granner, D. K., & Rodwell, V. W.2009.Biokimia Harper (27 ed.). Buku Kedokteran EGC. Jakarta.