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Module designation	Animal Structure and Development 1
Module level, if applicable	Undergraduate
Code, if applicable	PBIOUM6109
Subtitle, if applicable	-
Courses, if applicable	-
Semester(s) in which the module is taught	Odd semester
Person responsible for the module	Dra. Amy Tenzer, M.S.
Lecturer	Dra. Amy Tenzer, M.S. Dra. Nursasi Handayani, M.Si Ajeng Daniarsih, S.Si, M.Si Nur'aini Kartikasari, S.Si, M.Sc
Language	*Bahasa Indonesia*
Relation to curriculum	Undergraduate degree program, compulsory, 2nd semester.
Type of teaching, contact hours	Undergraduate degree program: cooperative learning, presentation, laboratory work, 2 x 50 = 150 minutes and 1 x 170 minutes
Workload	1. Lectures: 2 x 50 = 100 minutes (1,67 hours) per week. 2. Exercises and Assignments: 2 x 60 = 120 minutes (2 hours) per week. 3. Laboratory work: 1 x 170 minutes (2.83 hours) per week. 4. Private study: 2 x 60 = 120 minutes (2 hours) per week.
Credit points	3 credit points (~5 ECTS-eq)
Requirements according to the examination regulations	A student must have attended at least 80% of the lectures to be eligible for the final examination.
Recommended prerequisites	- PBIOUM6101 (General Biology) - PBIOUM6106 (*Laboratory Technique)*
Module objectives/intended learning outcomes	Students are able to: (LO3) Master basic biological theoretical concepts in an integrated manner, logically, critically, systematically and innovatively to analyze various problems in the field of biology so that they admire and try to protect His creations

<table>
<tr><td>Course learning outcomes</td><td colspan="2">1. Mastering the theoretical concepts of basic tissue characteristics, and describing the histological structure of the systems that make up the mammalian body.
2. Analyzing the anatomical structure of the systems that make up the mammalian body.</td></tr>
<tr><td>Content</td><td colspan="2">This course covers the following main topics:
● The relationship between the structure and function of the basic tissues (epithelial tissue, connective tissue, muscle tissue, neural tissue).
● Function and histological structure of the integumentary system, motion, digestion, respiration, circulation, urine, reproduction, nerves and mammalian sense organs.
● Comparative anatomy of the integumentary system, motion, digestion, respiration, circulation, urinary, reproduction, nerves and the sense organs of vertebrates.</td></tr>
<tr><td rowspan="6">Learning activity</td><td>Week 1</td><td>● Introduction to Theory
● Introduction to Practicum</td></tr>
<tr><td>Week 2</td><td>● Analyzing the structure and function of epithelial tissue and connective tissue through microscopic observations.
● Discussion and Q&A
● Making a practicum report</td></tr>
<tr><td>Week 3</td><td>● Analyzing the structure and function of epithelial, connective, muscle, and nerve tissues through microscopic observations.
● Discussion and Q&A
● Making a practicum report</td></tr>
<tr><td>Week 4</td><td>● Observing muscle and skin models and observing muscle and skin tissue preparations with a microscope
● Reviewing the literature
● Presentation and discussion on the structure and anatomy of the mammalian integumentary system
● Making a practicum report</td></tr>
<tr><td>Week 5</td><td>● Observing the skeletal system of experimental animals (guinea pigs), draw and describe the results
● Observing the muscle system of experimental animals (guinea pigs), draw and describe the results
● Reviewing the literature
● Presentation and discussion on the structure and anatomy of the mammalian locomotor system
● Making a practicum report</td></tr>
<tr><td>Week 6</td><td>● Observing histology preparations of teeth, tongue, digestive tract, digestive glands, drawing and describing the results.</td></tr>
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		● Dissecting experimental animals (guinea pigs), observing the digestive system, drawing and describing the results ● Reviewing the literature ● Presentation and discussion of the histological and anatomical structures of the mammalian digestive system ● Making a practicum report
	Week 7	● Observing the histological preparations of the trachea and lungs, drawing and describing the results. ● Dissecting experimental animals (guinea pigs), observing the respiratory system, drawing and describing the results. ● Reviewing the literature ● Presentation and discussion of the histological and anatomical structures of the mammalian respiratory system ● Making a practicum report
	Week 8	● MIDTERM EXAMINATION (THEORIES) ● MIDTERM EXAMINATION (PRACTICUM)
	Week 9	● Observing human and bird blood smear preparations, arteries and veins, draw and describe the results ● Observing models of the heart and large blood vessels of mammals, draw and describe the results ● Reviewing the literature ● Presentation and discussion of the histological and anatomical structures of the mammalian respiratory system ● Making a practicum report
	Week 10	● Observing mammalian kidney histology preparations, drawing and describing the results ● Dissecting experimental animals (guinea pigs), observing the urinary system, drawing and describing the results. ● Reviewing the literature ● Presentation and discussion on the histological structure of the mammalian kidney, and the anatomy of the mammalian urinary system ● Making a practicum report
	Week 11	● Observing mammalian ovarian and testicular histology preparations, drawing and describing the results ● Dissecting male and female experimental animals (guinea pigs), observing the reproductive system, drawing and describing the results. ● Reviewing the literature

		● Presentation and discussion on the histological structure of the ovaries and testes of mammals, anatomy of the mammalian reproductive system ● Making a practicum report
	Week 12	● Observing mammalian ovarian and testicular histology preparations, drawing and describing the results ● Dissecting male and female experimental animals (guinea pigs), observing the reproductive system, drawing and describing the results. ● Reviewing the literature ● Presentation and discussion on the histological structure of the ovaries and testes of mammals, anatomy of the mammalian reproductive system ● Making a practicum report
	Week 13	● Observing the histological preparations of the cerebrum, cerebellum, mammalian spinal cord, drawing and describing the results ● Observing the nervous system model of Pisces, amphibians, reptiles, aves, mammals, draw and describe the results ● Reviewing the literature ● Presentation and discussion of the histological structure and comparative anatomy of the vertebrate nervous system ● Making a practicum report
	Week 14	Sense organs ● Histological and anatomical structures of the senses of sight, hearing and balance, the sense of touch, the sense of taste, and the sense of smell ● Comparative anatomy of the sense organs of vertebrates
	Week 15	● THEORY REVIEWS ● PRACTICUM REVIEWS
	Week 16	● FINAL EXAMINATION (THEORIES) ● FINAL EXAMINATION (PRACTICUM)
Study and examination requirements and forms of examination	A. Concept mastery test : 35% B. Portfolio (practice reports, papers, answers to assignments): 25% C. Performance appraisal (presentation, practicum performance): 20% D. Activities (attendance, discussion): 20%	
Media employed	LCD, power point, white board, video and moodle (Sipejar)	
Reading list	1. Gartner, L.P. and Hiatt, J.L. 2006. Color Atlas of Histology. 4th ed. Philadelphia: Lippincot Williams & Wilkins.	

	2. Junqueira, L.C. dan Carneiro, J. 2010. Basic Histology. Alih Bahasa: Histologi Dasar, oleh Adji Dharma. Jakarta: EGC. 3. Kardong, K.V. 2006. Vertebrates: Comparative Anatomy, Function, Evolution. Singapore: McGraw-Hill. 4. Kent, G.C. 1987. Comparative Anatomy of Vertebrates. Ed. 3. Saint Louis: Mosby **5.** Kotpal, R.L., 2009. Modern Textbook of Zoology Vertebrates. New Delhi: Capital Offset Press. 6. Telford, L.R. dan Bridgman, C.F. 1995. Histology**.** Ed. 2. London: Harper Collins. 7. Ross, M.H., Pawlina, W., 2011. Histology: A Textbook and Atlas: with Correlated Cell and Molecular Biology. 6th ed. Philadelphia: Lippincott Williams & Wilkins. 8. Tenzer, A, Lestari, U, Gofur, A, Rahayu, S.E., Masjhudi, Handayani, N., Wulandari, N., Maslikah, S.I., 2014. Struktur Perkembangan Hewan Bagian I. Malang: Diktat Kuliah, not yet published 9. Tenzer, A, Lestari, U, Gofur, A, Rahayu, S.E., Masjhudi, Handayani, N., Wulandari, N., Maslikah, S.I., 2014. Struktur Perkembangan Hewan Bagian II. Malang: Diktat Kuliah, not yet published
Date of class amendment made	January, 2022