



THE MODULE HANDBOOK

FACULTY OF BIOLOGY

Animal Embriology

Module code	BIO 30702
Module level	2 nd year of Undergraduate Program in Biology
Abbreviation, if applicable	-
Sub-heading, if applicable	-
Courses included in the module, if applicable	-
Semester/term	Odd
Module coordinator(s)	Dr.med.vet.drh. Hendry T.S.G.Saragih,M.P.
Lecture(s)	<ol style="list-style-type: none">1. Dr.med.vet.drh. Hendry T.S.G.Saragih,M.P.2. Dr. Bambang Retnoaji, M.Sc.3. Drs. Johannes Sugiyanto, M.S.4. Zuliyati Rohmah, M.Si., Ph.D.
Language	Indonesia
Classification within the Curriculum	Elective course
Teaching format/class hours per week during the semester	This course is organized in 1 class and planned to have 14 to 15 teaching weeks and 2 weeks of examination for teaching session. The Teaching session is scheduled on Thursday at 09-11 am. The classroom used for this course is determined by the head of study program and can be changeable every semester due to classromm availabelity. Laboratory session is designed in a class with maximum 30 students. The number of the class can be adjusted if the class member more than 30 students. The laboratory session is held in Animal Structure and Development Laboratory. It is scheduled once a week, every Tuesday at 1-4 pm. The student have to follow 7 weeks of laboratory session which is devided into 6 weeks of laboratory work and 1 week of laboratory final exam.
Workload	Estimated working hour: 10,5 hours/week.
Credit points	2-1 credits
Requirements	Animal Structure and Development (BIO 20701)
Learning goals/ competencies	This course supports Program Learning Outcome (PLO) number 3, which is: The students will be able to demonstrate skills and knowledge of Functional Biology in Tropical Biology. Particularly Performance indicator number 1, which is:



THE MODULE HANDBOOK

FACULTY OF BIOLOGY

The students are able to demonstrate skills and knowledge of Animal Structure and Development

To support the attainment of those PLO 3.1, Animal Embryology Course has course learning outcome as follows:

1. Knowledge and understanding

Student has a knowledge and understanding to explain regarding base of concept, principal and theory of reproduction and developmental of embryo (gametogenesis and organogenesis) in animals.

2. Ability/intellectual skills

Students are able to observe and mention the processes that occur in gametogenesis and organogenesis and can explain the relationship between the processes that occur in gametogenesis and organogenesis.

3. Practice skills

Sufficient skills in the field of embryology of animals can be used for various purposes, such as :

- a. Students are able to perform a scientific literature review properly, and understand the basic principles of literature citations for the standards of scientific ethics.
- b. Students skilled in using a microscope and equipment for observation, sperm analysis and observation of embryonic development.
- c. Students skilled microscopic observation using a light microscope to look of the development of animal embryos.

4. Managerial and transferable skills

Student has a ability to design research regarding embryology issue for fish, amphibian, reptiles, aves and mammalia animal.

5. Attitude

- a. Students are able to apply the principles of embryology as a basis for studies related to the structure and function of cells and tissues in the body's constituent organs of animals in accordance with the rules of research
- b. Students applying ethical literature citations and identify good practices in conducting literature review and understand the risk of plagiarism

Content

Animal Embryology teaching provides an understanding of the learning method both conventional and modern. The course of embryology animal also showed understanding of cell and tissue in the body's constituent organs of animals. Topic of this course includes an



THE MODULE HANDBOOK

FACULTY OF BIOLOGY

	<p>explanation of the processes of reproduction and development of animals, stages of formation of organs, as well as the regulatory mechanisms of organ formation process. In the implementation of the lecture, designed a complete picture of how an organism is formed since the process of the formation of sex germination or gametogenesis until the formation of a functional organ in the unity of the hierarchy and in a coordinated metabolism processes.</p>
Study/exam achievements	<p>1. Theory</p> <ul style="list-style-type: none">a. Midterm: 35%b. Final examination: 35%c. Presentation, attendance, and activity: 30% <p>2. Laboratory work</p> <ul style="list-style-type: none">a. Pretest: 20%b. Laboratory report: 30%c. Task: 10%d. Final test: 40%
Forms of media	White Board, Laptop, LCD Projector, Laboratory, Specimens
Literature	<ol style="list-style-type: none">1. Mammed Sagi. 2004. Buku Ajar Embriologi Hewan Perbandingan Pada Vertebrata. Laboratorium Histologi-Embriologi Hewan. Fakultas Biologi. Yogyakarta.2. Miller, W. A. 1997. Developmental Biology, Springer-Verlag. New York.3. Gilbert. 1991. Developmental Biology. Sinauer Associates Publisher. Sunderland.4. Kalthoff, K. 2001. Analysis of Biological Development. McGraw Hill. Singapore.5. Wolpert, L., Beddington, R., Brocks, J., Jessel, Lawrence, P., Mayerowitz, E. 1998. Principle of Development. Oxford University Press. London.