



THE MODULE HANDBOOK

Magister Biology Study Program

FACULTY OF BIOLOGY

ABNORMAL ANIMAL STRUCTURE AND DEVELOPMENT

Course code	BIMB202213
Course level	Magister
Semester/ term	Odd/Even
Course coordinator(s)	Dr. Bambang Retnoaji, S.Si., M.Sc.
Lecture(s)	1. Dr. Bambang Retnoaji, S.Si., M.Sc. 2. Dr. Slamet Widiyanto, M.Sc. 3. Dr. med.vet. drh. Hendry Saragih, M.P. 4. Dr. Ardaning Nuriliani, S.Si., M.Kes.
Language	Indonesia and English (if there is/are foreign student(s))
Classification within the Curriculum	Compulsory of laboratory
Teaching format/ classhours per week during the semester	This course is organized into 1 class and planned to have 14 teaching weeks and 2 week of examination.
Workload	Estimated working hour: 2 credits of theory and 1 credit of laboratory work.
Credits	2-1 credits
Requirements	-
Program Learning Outcome	KN1 The graduates are demonstrating knowledge and comprehenc biological theorie includes all aspects of biological studies at various levels in the organization of I (Knowledge); GS1 The graduates are able to develop logical, critical, systematic, and creati thinking through scientific concept and research (General Skills); SS1 The graduates are able to conduct research in the field of biology independently or groups, and able to solve various biological-related problems (Specific Skills);
Course Learning Outcome	CPMK 1. Students understand the stages of embryonic development (fetus) in relation to the sensitivity to external/environment factors that cause abnormalities CPMK 2. Students understand regarding materials and drugs that have potential asteratogenic agents and their interaction mechanisms CPMK 3. Students are able to analyze cases of abnormalities in the development and structure of animal organs caused by teratogens or other factor (toxicant) CPMK 4. Students are able to synthesize lecture material and understand research designs on the field of animal development and development abnormalities



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	CPMK 5. Students acknowledge the ethics of using teratogenic drugs and have the skills to conduct research on structural and developmental abnormalities						
Course Description	The course in Animal Structure and Development Abnormality, with a total of 14 meetings provides an understanding of the phenomenon of abnormalities in the structure and development of animals, materials or substances that have the potential as teratogenic agents in embryos and their mechanisms of action. The discussion will be emphasized on the occurrence of abnormalities, substances and drugs that cause abnormalities in development (teratogenic materials / drugs), and maternal conditions that result in abnormal embryonic development.						
Assesments	Assessment components	Percentage	CPMK 1	CPMK 2	CPMK 3	CPMK 4	CPMK 5
	Assignment	10%					
	Journal review and presentation	10%					
	Midterm exam	25%					
	Final exam	25%					
	Laboratory Practice	30%					
Study Media	This course studies the stages of embryonic development, abnormalities in embryonic development, abnormalities in animal tissues and organs due to teratogens and potential toxicants exposure, potential teratogenic drugs, abnormalities and maternal factors, abnormalities therapy and stem cells.						
Literature	<ol style="list-style-type: none"> https://embryology.med.unsw.edu.au/embryology/index.php/Animal_Development https://embryo.asu.edu/pages/embryonic-differentiation-animals http://users.rcn.com/jkimball.ma.ultranet/BiologyPages/E/EmbryonicDevelopment.ht http://www.britannica.com/science/animal-development http://depts.washington.edu/terisdb/terisweb/index.html http://www.teratology.org/generalpublic.asp http://home.sandiego.edu/~cloer/bio376f04/376links.html https://www.cdc.gov/ncbddd/birthdefects/surveillancemanual/chapters/chapter-1/chapter1-4.html https://www.who.int/news-room/fact-sheets/detail/congenital-anomalies https://www.cdc.gov/ncbddd/fasd/index.html https://embryology.med.unsw.edu.au/embryology/index.php/Abnormal_Development/Thalidomide https://embryo.asu.edu/pages/retinoids-teratogens https://stemcells.nih.gov/ https://www.diabetes.org/diabetes 						



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