

Animal Development

Module name		Animal Development				
Module level		2 nd year of Bachelor program				
Abbreviation, if applicable						
Sub-heading, if applicable						
Courses included in the module, if applicable		BI-2201 Animal Development				
Semester/term		4 th Semester				
Module coordinator(s)		Dr. Anggraini Barlian				
Lecturer(s)		Dr. Anggraini Barlian Dr. Marselina I Tan Dr. Ayda T. Yusuf				
Language		Indonesian				
Classification within the Curriculum		Compulsory courses for Bachelor Program in Biology				
Teaching format/ class hours per week during the semester		<p><i>2 parallel classes consists of 40 students / class:</i></p> <p><i>Lecture (Face to face lecture & student presentation): 66%</i></p> <ul style="list-style-type: none"> Lecture : 2 hours x 14 weeks Assignment : Student class presentation/group (4-5 students/group) : 2 hours/semester <p><i>Practical class : 34%</i></p> <ul style="list-style-type: none"> Practical class : 3 hours x 11 weeks 				
Workload	Total Workload	144 hours; 3(1) CU= 5 ECTS				
		Face to face teaching	Structured Activities	Independent study	Exam	Total
	Lecture	30	28	32	6	96
	Practical class	33	-	11	4	48
	Total					144
Credit points		<i>Animal Development (3(1) CU)</i>				
Requirements		<i>Fundamental Biology; Basic sciences (Math, Physics, Chemistry)</i>				
Content		<ol style="list-style-type: none"> Introduction to animal development, origin of life and life cycle General animal reproductive structure and physiology Animal gametogenesis and fertilization Early and late normal animal development Organogenesis of several organ systems representative from three germ layers (ectoderm, mesoderm, endoderm) and possible malformation during organogenesis <p>Level of this lecture is from knowledge until application however the weighing of this lecture is more knowledge</p>				

Learning goals/ competencies	<p><i>After completion of this module students are expected to be able to:</i></p> <p>Knowledge :</p> <ul style="list-style-type: none"> • identify animal gametogenesis, fertilization, reproduction, early developmental stages and late developmental stages and organogenesis in molecular, cellular, tissue level as well as organ level • describe the fundamental mechanisms that control embryonic development • explain some of the key embryonic development processes <p>Skill:</p> <ul style="list-style-type: none"> • Apply the key stages of animal development and the origin of different tissues and organs in analyzing developmental biology issues (cognitive skill). • Observe animal development and localize organogenesis sites in animal models and recognize the process using dissecting and compound microscopes (practical skill). • search for and present relevant information from scientific publications dealing with developmental biology issues • Deliver an effective presentation, develop and exercise leadership and communication as a teamwork <p>Competences :</p> <ul style="list-style-type: none"> • Interpret and apply developmental biology concepts to identify normal and abnormalities in animal development • apply critical thinking in evaluating and explaining developmental biology issues 																										
	Study/exam achievements	<p><i>Lecture (66%); Practical class (34%)</i></p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th></th> <th><i>Midterm exam 1</i></th> <th><i>Midterm exam 2</i></th> <th><i>Final exam</i></th> <th><i>Quizzes</i></th> <th><i>Student class presentation</i></th> <th><i>Total</i></th> </tr> </thead> <tbody> <tr> <td><i>Lecture</i></td> <td>25%</td> <td>25%</td> <td>25%</td> <td>10%</td> <td>15%</td> <td>100%</td> </tr> <tr> <td><i>Practical class</i></td> <td>30%</td> <td>30%</td> <td>30%</td> <td>10%</td> <td>-</td> <td>100%</td> </tr> </tbody> </table>							<i>Midterm exam 1</i>	<i>Midterm exam 2</i>	<i>Final exam</i>	<i>Quizzes</i>	<i>Student class presentation</i>	<i>Total</i>	<i>Lecture</i>	25%	25%	25%	10%	15%	100%	<i>Practical class</i>	30%	30%	30%	10%	-
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Forms of media	<i>Classical teaching tools:</i>		<i>white board/ chalk and talk, animation, power point, practical class</i>																								
	<i>Integrated teaching tools:</i>		<i>guest lectures</i>																								
	<i>Digital teaching tools:</i>		-																								
	<i>Problem based teaching tools:</i>		-																								
Literature	<ol style="list-style-type: none"> 1. Gilbert, S.F. 2006. Developmental Biology. 8th ed. Sinauer Associates, Inc, Sunderland, Massachusetts. 2. Carlson, B.M. 1996. Patten's Foundations of embryology. 6th ed. McGraw Hill. 3. Wolpert, L. 2002. Principles of developmental. Oxford University press. 4. Mathews, W.W. 1982. Atlas of descriptive embryology. 4th ed. Macmillan. 																										