

## Animal Biotechnology

Module name		<i>Animal Biotechnology</i>				
Module level		3 <sup>rd</sup> year of Bachelor program				
Abbreviation, if applicable		-				
Sub-heading, if applicable		-				
Courses included in the module, if applicable		BI3203 Animal Biotechnology				
Semester/term		6 <sup>th</sup> Semester				
Module coordinator(s)		Dr. Sony Heru Sumarsono				
Lecturer(s)		Dr. Sony Heru Sumarsono				
Language		Indonesian				
Classification within the Curriculum		Elective courses for Bachelor Program in Biology				
Teaching format/ class hours per week during the semester		Lecture (face to face teaching): 2 x 1 hour x 12 weeks Assignment: Student class presentation/group: 2 hours x 2 weeks Quizzes: 15 minutes x 8 weeks				
Workload	Total Workload	96 hours; 2 CU				
		Face to face teaching	Structured Activities	Independent study	Exam	Total
	Lecture	28	32	32	4	96
Credit points		<i>Animal Biotechnology (2 CU)</i>				
Requirements		-				
Content		<ol style="list-style-type: none"> <li>1. Introduction: biotechnology, microbe, plant &amp; animal;</li> <li>2. Asisted reproductive technology: superovulation, ovum/embryo culture, in vitro fertilisation, embryo transfer, sperm, ovum &amp; embryo freezing and thawing;</li> <li>3. Animal breeding: fish, frog, and other animal;</li> <li>4. Tissue and organ transplantation/implantation;</li> <li>5. Transgenics animal: promoter, gene and gene expression;</li> <li>6. Homologous recombination: embryonal stem cell, chimaera, gene mutation;</li> <li>7. Reproductive kloning;</li> <li>8. Stem cell;</li> <li>9. Genetic therapy;</li> <li>10. Vaksin &amp; antibody productions</li> </ol>				
Learning goals/competencies		Students are able to explain animal biotechnology related to biomedical science as well as commercial scheme				
Study/exam achievements		Midterm exam	Final exam	Assignment	Total	
		35%	35%	30%	100%	
Forms of media		<i>Classical teaching tools:</i>		<i>White board, power point presentation</i>		
		<i>Digital teaching tools:</i>		<i>Video/CD, Website</i>		
Literature		<ol style="list-style-type: none"> <li>1. Robertson EJ.(1987) Teratocarcinomas and embryonic stem cells : a practical approach. IRL Press. Oxford-Washington DC.</li> <li>2. Hogan B, Constantini F, Lacy E (1986). <b>Manipulating the mouse embryo. A laboratory manual.</b> Cold Spring Harbour Laboratory, USA.</li> <li>3. Kola I, Sumarsono SH (1995). Microinjection of in vitro transcribed RNA and antisense oligonucleotides in mouse oocytes and early embryos to study the gain- and loss-of-function of genes. <i>In: In vitro transcription and translation protocols.</i> Edited by: Tymms M. Humana Press, Inc. Totowa, New Jersey. p135-150.</li> </ol>				