



# UNIVERSITAS NEGERI YOGYAKARTA

FACULTY OF MATHEMATICS AND SCIENCE  
DEPARTMENT OF BIOLOGY EDUCATION

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## Bachelor of Science in Biology

## MODULE HANDBOOK

Module name:	Molecular Genetics
Module level, if applicable:	Undergraduate
Code:	BIO6232
Sub-heading, if applicable:	-
Classes, if applicable:	-
Semester:	Odd
Module coordinator:	Dr Ixora Sartika Mercuriani, M.Si
Lecturer(s):	Dr Ixora Sartika Mercuriani, M.Si Evy Yulianti, M.Sc
Language:	Bahasa Indonesia
Classification within the curriculum:	Elective Course
Teaching format / class hours per week during the semester:	100 minutes lectures, 120 minutes structured activities, and 120 minutes individual study per week
Workload:	Total workload is 91 hours per semester which consists of 100 minutes lectures, 120 minutes structured activities, and 120 minutes individual study per week for 16 weeks.
Credit points:	2 SKS (3 ECTS)
Prerequisites course(s):	Genetics, Biology Molecular of the Cell
Programme Learning Outcomes	1. (PLO 4) Mastering the structure of biological sciences in depth (core biology) to solve problems faced in the field of biology (problem solving) and as capital in mastering other related science (related science). 2. (PLO 6) Adaptive, creative, and innovative in applying biology and related sciences.

	<p>3. (PLO 9) Able to pursue a career or create employment opportunities / entrepreneurship in the field of biology.</p> <p>4. (PLO 11) Having scientific skills as a supporter of public speaking skills in local, national and international forums.</p>																				
Course Outcomes	<p>After taking this course, the students have ability to:</p> <p>CO1. Develops science in a more profound way in the molecular field specifically related to genetics or inheritance in living things</p> <p>CO2. Explain the Proof of DNA as carrier of genetic material</p> <p>CO3. Identify genes and biological information and the structure and functions of DNA and RNA</p> <p>CO4. Explain and analyze changes in genetic material and the function of genes</p> <p>CO5. Outline the molecular mendelic genetics and analyze the problems related in a daily life</p> <p>CO6. Explain the genomes in prokaryotes and eukaryotes and the human genomes</p> <p>CO7. Explain the DNA replication, transcription and translations</p> <p>CO8. Elaborate, analyze and relate the regulation of gene expression in Prokaryotes and Eukaryotes. with problems in a daily life</p>																				
Content:	<p>This course develops science in a more profound way in the molecular field specifically related to genetics or inheritance in living things. The material covered includes: (1) Proof of DNA as Carrier of Genetic Material (2) Genes and Biological Information (3) Structure of DNA and RNA (4) Changes in Genetic Material (5) Function of Genes (6) Molecular Mendelic Genetics (7) DNA Replication (8) Genomes in prokaryotes and eukaryotes (9) Human Genomes (10) Transcription (11) Translations (12) Regulation of Gene Expression in Prokaryotes and (13) Regulations for Gene Expression in Eukaryotes.</p>																				
Study / exam achievements:	<p>The final mark will be weight as follow:</p> <table border="1"> <thead> <tr> <th>No</th> <th>CO</th> <th>Assessment Object</th> <th>Assessment Technique</th> <th>Weight</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>CO1 to CO8</td> <td>Observed attitudes , knolwedge, and skills</td> <td>Survey, test, rubrics and manuals</td> <td>30%</td> </tr> <tr> <td>2</td> <td>Mid term</td> <td>Observed attitudes , knolwedge, and skills</td> <td>Survey, test, rubrics and manuals</td> <td>30%</td> </tr> <tr> <td>3</td> <td>Final term</td> <td>Observed</td> <td>Survey, test,</td> <td>40%</td> </tr> </tbody> </table>	No	CO	Assessment Object	Assessment Technique	Weight	1	CO1 to CO8	Observed attitudes , knolwedge, and skills	Survey, test, rubrics and manuals	30%	2	Mid term	Observed attitudes , knolwedge, and skills	Survey, test, rubrics and manuals	30%	3	Final term	Observed	Survey, test,	40%
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2	Mid term	Observed attitudes , knolwedge, and skills	Survey, test, rubrics and manuals	30%																	
3	Final term	Observed	Survey, test,	40%																	

			attitudes , knowledge, and skills	rubrics and manuals	
	Total				100%
Forms of media:	Multimedia				
Reference:	<p>A. Russel, P. J. 2010. <i>Genetics - A Molecular Approach</i>. San Francisco: Pearson Education, Inc.</p> <p>B. Albert, B., Johnson, A., Lewis, J. Raff, M., Roberts, K., Walter, P. 2002. <i>Molecular Biology of the Cell</i>. 4<sup>th</sup> ed. Garland Science. New York</p> <p>C. Brown, TA. 1989. <i>Genetic and Molecular Approch</i>. Van Nastrand Reinhold ( Internasional ) Co. Ltd. London.</p> <p>D. Karp, G. 1984. <i>Cell Biology</i>, 2<sup>nd</sup> ed, McGraw-Hill Book Co., New York.</p>				

### PLO and CO mapping

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11
C01				√		√					√
C02				√		√					√
C03				√							√
C04				√		√					√
C05				√		√			√		√
C06				√							√
C07				√							√
C08				√		√					√