



**THE MODULE HANDBOOK**  
**DOCTOR BIOLOGICAL SCIENCES STUDY PROGRAM**  
**FACULTY OF BIOLOGY**

**SELECTED TOPIC FOR DISSERTATIONS**

**Cell and Molecular Genetics**

<b>Course code</b>	BIDB203126
<b>Course level</b>	Doctoral Program
<b>Semester/ term</b>	Odd/even
<b>Course coordinator</b>	Prof. Dr. Niken Satuti Nur Handayani, M.Sc.
<b>Lecture(s)</b>	Prof. Dr. Budi Setiadi Daryono, M.Agr Sc. Prof. Dr. Niken Satuti Nur Handayani, M.Sc. Prof. Dra. Tuty Arisuryanti, M.Sc., Ph.D. Ganies Riza Aristya, S.Si., M.Sc., Ph.D.
<b>Language</b>	Indonesian/English
<b>Classification within the Curriculum</b>	Compulsory Specialization Courses
<b>Teaching format/ class hours per week during the semester</b>	This course is planned to have 14 teaching weeks and 2 weeks of examination.
<b>Workload</b>	1,125 hours/day 5 days/week 5,625 hours/week 16 Weeks/Semester  total workload : 90 hours/3,6 ECTS
<b>Credits</b>	3.6 ECTS
<b>Requirements</b>	-
<b>Program Learning Outcome</b>	CPL 2.1. Upon completing this program, the graduates demonstrate an understanding of of the scientific philosophy of biology which is related in depth to structure, function, diversity, reproduction, evolution and engineering of biological systems. CPL 2.2. After attending this program, graduates demonstrate an understanding of substantial and leading theory in the field of biology/biological resources in order to support education for sustainable development CPL 3.1. After completing this program, the graduates will be able to discover or develop new scientific theories/concepts/ideas in biology



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<b>Course Learning Outcome</b>	<p>BIDB203126.1 By the end of this course, students are able to analyze and explain the cell cycle and its regulation, chromosomal structural and numerical aberrations along with their consequences; explain the regulation of gene expression in prokaryotic and eukaryotic organisms; and describe the mechanisms underlying genome variation and its associated aspects.</p> <p>BIDB203126.2 By the end of this course, students are able to conduct research in the field of biology, particularly genetics, both independently and in teams; solve various problems related to DNA analysis; and apply molecular markers and genetic engineering in the fields of genetics and the breeding of biological resources.</p> <p>BIDB203126.3 By the end of this course, students are able to effectively communicate their research findings in both written and oral forms</p>
<b>Course Description</b>	<p>This course covers the regulation of the cell cycle, causes and consequences of chromosomal aberrations, genome variation and genome libraries, gene expression and its regulation, DNA analysis, and the application of molecular markers in various fields. It also includes genetic engineering and its practical applications. Students are expected to review scientific articles, present their findings, and engage in discussions with the instructor.</p>
<b>Assessments</b>	<p>The assessment for Selected Topic for Dissertations (Cell and Molecular Genetics) is based on four components, with the respective criteria and weights:</p> <ol style="list-style-type: none"><li>1. Mid-Term Exam (30%)</li><li>2. Final-Term Exam (30%)</li><li>3. Discussion (20%)</li><li>4. Presentation (20%)</li></ol>
<b>Study Media and Literature</b>	<p><b>Main</b></p> <ol style="list-style-type: none"><li>1. Albert, B., Bray, D., Lewis, J., Raff, M., Robert, K., Watson, J.D. Molecular Biology of the Cell. Garland Publ. Inc., New York.</li><li>2. Watson, J.D., Gilman, M., Witkowski, J., and Zoller, M. Recombinant DNA. Freeman and Co., New York.</li></ol> <p><b>Additional</b></p> <ol style="list-style-type: none"><li>1. Brown, T.A. Genomes. New York and London: Garland Science</li><li>2. Griffiths, Anthony J.F.; Gilbert, William M.; Miller, Jeffrey H.; Lewontin, Richard C. Modern Genetic Analysis. New York: W. H. Freeman &amp; Co.</li></ol>



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3. Klug, W.S. and R. Cummings. Concept of Genetics. Prentice Hall Inc., New Jersey (USA)
  4. Reece, R.J. Analysis of Genes and Genomes. John Wiley & Sons, Inc., New York.
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