



**THE MODULE HANDBOOK**  
**FACULTY OF BIOLOGY**  
**MASTER PROGRAMME**

**GENETICS**

<b>Module code</b>	BIO-60402
<b>Module level</b>	1 <sup>st</sup> year of Master Program in Biology
<b>Abbreviation, if applicable</b>	-
<b>Courses related</b>	-
<b>Semester</b>	Odd
<b>Course coordinator(s)</b>	Dr. Niken Satuti Nur Handayani, M.Sc
<b>Lecture(s)</b>	1. Dr. Niken Satuti Nur Handayani, M.Sc 2. Dr. Budi Setiadi Daryono, M.Agr.Sc.
<b>Language</b>	Bahasa Indonesia and English
<b>Classification within the Curriculum</b>	Compulsory Course for Specific Field of Interest
<b>Teaching format/class hours per week during the semester</b>	This course is organized into one class and planned to have 14 teaching weeks and 2 weeks of examination.
<b>Workload</b>	Estimated working hour: 10,5 hours/week.
<b>Credit</b>	3-0 credits
<b>Requirements</b>	-
<b>Course Learning Outcome</b>	<ol style="list-style-type: none"><li>1. Able to explain the DNA structure and its role, central dogma, chromosomal structure, genetic inheritance process, and current advances in genetic research.</li><li>2. Able to do pedigree analysis, utilize probability theory, read chromosome maps and inbreeding diagram</li><li>3. Able to make reports on genetic case/disease using comprehensive sources</li></ol>
<b>Syllabus</b>	The course will cover the basic concepts of genetics; genetic material and the mechanism for gene expression; chromosome structure, cell cycle mechanism, meiosis and genetic material inheritance, Mendel's Law and its relation with meiosis; the Mendelian inheritance principle and its development on molecular levels; probability theory in genetics and the use of Chi Square statistical tests; integration between sex determination with sex linkage and its inheritance pattern in cytological and molecular levels; combination of Mendelian inheritance patterns; pedigree diagram analysis; inheritance of genes integrated with meiosis; construction of chromosome maps based on conventional crosses and based on molecular biology methods; gene frequency and genotype analysis; inbreeding and its effects, and inbreeding diagram analysis on a single marriage; molecular biology techniques and their applications.



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<b>Study/exam achievements</b>	<ol style="list-style-type: none"><li>Midterm: 35%</li><li>Final examination: 35%</li><li>Projects &amp; Presentation: 15%</li><li>Quiz: 15%</li></ol>
<b>Forms of media</b>	White board, notebook, LCD
<b>Reference</b>	<ol style="list-style-type: none"><li>Albert, B., Bray, D., Lewis, J., Raff, M., Robert, K., Watson, J.D. (2008). <i>Molecular Biology of the Cell</i>. 5th ed. Garland Publ. Inc., New York.</li><li>Brown, T.A. (2002). <i>Genomes</i>. New York and London: Garland Science</li><li>Campbell, N.A., L.G. Mitchell, and J.B. Reece. 2008. <i>Biology</i>. 8th ed. The Benjamin Cummings Publ.Co.Inc., California (USA)</li><li>Campbell, N.A., L.G. Mitchell, and J.B. Reece. 2008. <i>Biology: Concept and Connection</i>. The Benjamin Cummings Publ.Co.Inc., California (USA)</li><li>Griffith, A.J.F., J.F.Miller, R.C. Lewontin, and W.M. Gelbart. 2008. <i>Modern Genetics Analysis</i>. W.H. Freeman &amp; Co., New York (USA)</li><li>Griffith, A.J.F., J.F.Miller, D.T. Suzuki, R.C. Lewontin, and W.M. Gelbart. 2008. <i>An Introduction to Genetic Analysis</i>. W.H. Freeman &amp; Co., New York (USA)</li><li>Hartl, D.L. and E.W. Jones. 2011. <i>Genetics: Principles and Analysis</i>. Jones &amp; Bartlett Publisher, London</li><li>Hartwell, L., Hood,L., Goldberg, M.L., Reynolds, A.E., Silver, L.M., and Veres, R.C. 2000. <i>Genetics: From Genes to Genomes</i>. 1st ed. The Mc.Graw Hill Companies, Inc. USA</li><li>Klug, W.S. and R. Cummings, C.A. Spencer, and M.A. Pallatini. 2012. <i>Concept of Genetics</i>. 10th.ed. Prentice Hall Inc., New Jersey (USA)</li><li>Lewin, Benjamin . 2006. <i>Essential Genes</i>. International Edition. Pearson Ed. Inc. USA Passarge, E. 2001. <i>Color Atlas of Genetics</i>. 2nd.ed. Thieme Stuttgart, New York (USA)</li><li>Pasternak, J.J. 2005. <i>An Introduction To Human Molecular Genetics</i>. 2nd ed. A John Wiley &amp; Sons, Inc., Hoboken, New Jersey.</li><li>Robinson, R. 2003. <i>Genetics</i>. Volume 1, 2, 3, &amp; 4. Macmillan Reference, USA</li><li>Suryo. 1997. <i>Genetika</i>. Gadjah Mada University Press, Yogyakarta.</li><li>Suryo. 1997. <i>Genetika Manusia</i>. Gadjah Mada University Press, Yogyakarta.</li></ol>