Module Descriptions

Module designation	Genetics and Genomics *Genetika dan Genomik*
Course Code	-
Semester/Term	4th Semester
Person responsible for the module	Prof. Dr. Isnawati, M.Si. Prof. Dr. Endang Susantini, M.Pd. Guntur Trimulyono, S. Si., M.Sc. Ahmad Fudhaili, S.Si., M.Si.., PhD Dr. Nurul Jadid Mubarakati, S.Si., M.Si Putut Rakhmad Purnama, S.Si, M.Si., Ph.D. Fitriari Izzatunnisa Muhaimin, B.Sc., M.Sc.
Language	Indonesian Language (Bahasa Indonesia)
Relation to curriculum	Compulsory course
Teaching methods	Lecture, lab works
Workload	Contact hours: 3 x 50 hours face-to-face, 3x 50 lab works Private study: 4 x 60 hours structured assignments, 4x60hours of independent study Total of 180 hours per semester
Credit Point	4 credit units (~6.36 ECTS)
Required and recommended prerequisites for joining the module	General Biology, Biochemistry
Module Objectives/intended learning outcomes	1. Able to demonstrate basic knowledge related to the concept of genetics and genomics to understand current scientific phenomena and issues and apply them in solving genetics and genomics problems in everyday life (Knowledge) 2. Able to demonstrate the basic principles of software applications and instruments, standard analysis methods, and synthesis in research related to genetics and genomics (Knowledge) 3. Able to independently work in the laboratory and develop relevant skills in the field of genetics and genomics by applying bioethics and occupational safety (special competence) 4. Able to work independently and collaboratively, and be responsible, in completing various assignments in the

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<tr><td></td><td>classroom, in the laboratory, and in the field in the field of genetics and genomics (Attitudes and Social)</td></tr>
<tr><td>Content</td><td>The Genetics course covers the scope of introduction (introduction of terms used in studying genetics, Mendelian genetics (Mendel's Law I & II, crosses with various different traits, Mendel's Law apparent deviations, multiple alleles, multiple genes, probability theory, X2 test, type determination) sex, linking and crossing over, chromosome mapping, karyotyping in humans and their aberrations, biochemical genetics and inherited metabolic errors, basics of genetic engineering, basics of population genetics, genetic material and its expression, basics of genes & chromosome mutations. This course also equips students related to genomics which includes the organization and structure of the genome, as well as its implications, genomic analysis techniques (DNA isolation, PCR, gene cloning, genome mapping and sequencing, mutagenesis analysis, gene silencing) and genomic and genomic analysis applications in various fields Presentation through lecture activities, wet lab lab and dry lab and assignments / research</td></tr>
<tr><td>Examination forms</td><td>Written exam</td></tr>
<tr><td>Study and examination requirements and forms of examination</td><td>Study Requirement

Attendance: students must attend at least 75% of the lectures to be eligible for the final examination.

Study examination

The final grade (NA) is calculated based on the following ratio:

<table>
<tr><td>Assessment Components</td><td>Percentage of contribution</td></tr>
<tr><td>Participation</td><td>20%</td></tr>
<tr><td>Assignment</td><td>30%</td></tr>
<tr><td>Mid-semester test</td><td>20%</td></tr>
<tr><td>Final semester test</td><td>30%</td></tr>
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<td>Grade conversion of 0-100 scale into 0-4 scale is set as below:
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<tr><th>Letter</th><th>Number</th><th>Grade Interval</th></tr>
<tr><td>A</td><td>4,00</td><td>85 ≤ A ≤ 100</td></tr>
<tr><td>A-</td><td>3,75</td><td>80 ≤ A- < 85</td></tr>
<tr><td>B+</td><td>3,50</td><td>75 ≤ B+ < 80</td></tr>
<tr><td>B</td><td>3,00</td><td>70 ≤ B < 75</td></tr>
<tr><td>B-</td><td>2,75</td><td>65 ≤ B- < 70</td></tr>
<tr><td>C+</td><td>2,50</td><td>60 ≤ C+ < 65</td></tr>
<tr><td>C</td><td>2,00</td><td>55 ≤ C < 60</td></tr>
<tr><td>D</td><td>1,00</td><td>40 ≤ D < 55</td></tr>
<tr><td>E</td><td>0,00</td><td>0 ≤ E < 40</td></tr>
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<td>Reading List</td>
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1. Adisewoyo, S.S. 2016. *Genetika Strata 1*, Yogyakarta: Gadjah Mada University Press.
2. Adisewoyo, S.S. 2016. *Genetika Manusia*, Yogyakarta: Gadjah Mada University Press.
3. Klug, W.S., Cummings, M.R., Spencer, C.A., Palladino, M.A. 2010. *Essentials of Genetics.* San Fransisco: Pearson Benjamin Cummings.
4. Susantini, E. Isnawati, Trimulyono, G, Lisdiana L. 2015. *Genetika Belajar Melalui Penemuan*. Surabaya: Unesa University Press.
5. Susantini, E. Isnawati, G. Trimulyono, L. Lisdiana, 2015. *Petunjuk Praktikum Genetika*. Surabaya: Unesa University Press.
6. William S Klug, Michael Cummings, Charlotte A. Spencer, Michael A. Palladino, 2013 *Concepts of Genetics 10th Edition*, New Jersey: Pearson New International

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