

Undergraduate Programme in Biology

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MODULE HANDBOOK

Module Name	Cell and Molecular Biology
Module level, if applicable	Bachelor
Code, if applicable	BIO414014
Subtitle, if applicable	-
Courses, if applicable	Cell and Molecular Biology (Biologi Sel dan Molekuler)
Semester(s) in which the module is taught	4 th (fourth)
Person responsible for the module	Jumailatus Solihah, S.Si., M.Biotech.
Lecturer(s)	Jumailatus Solihah, S.Si., M.Biotech., Anti Damayanti Hamdani, S.Si., M.Molbio.
Language	Indonesia
Relation to curriculum	Compulsory course in the second year (4 th semester) Bachelor Degree
Type of teaching, contact hours	150 minutes lectures, 180 minutes structured activities, 180 minutes individual study, and 170 minutes lab work (practicum) per week.
Workload	Total workload is 181,3 hours per semester, which consists of 150 minutes lectures per week for 14 weeks, 180 minutes structured activities per week, 180 minutes individual study per week, in total is 16 weeks per semester (including mid exam and final exam), and 170 minutes lab work for 16 weeks (including lab result review and practicum final exam).
Credit points	4 credits (6 ECTS)
Requirements according to the examination regulations	Students must meet a minimum attendance of 75% of the total lecture meetings to be able to take the final exam; There are no repeat practicums or follow-up exams for practicum activities.
Recommended prerequisites	No prerequisites stated on
Module objectives/intended learning outcomes	After completing this course, the students: CO 1. apply and explain theoretical concepts of cell biology as the smallest functional unit of an organism CO 2. analyse and explain the basic structure and function of cells and their constituent organelles, as well as the role of cells and their interactions in the ecosystem CO 3. analyse and explain the basic molecular mechanisms (replication, expression and genetic regulation) in organisms CO 4. analyse and explain the molecular lab work principles, and to perform the basic cell and molecular methods
Content	a. Membrane Plasm : structure, function, and transport mechanism through membrane b. Cell interaction c. Endomembrane system d. Cytoskeleton e. Structure and function of mitochondria and chloroplast

	f. Cell cycle, cell division, and apoptosis g. Cell Signaling h. Cell development and differentiation i. Genome and Gene j. Gene mutation and repair k. Genetic expression and regulation in prokaryotes l. Genetic expression and regulation in eukaryotes m. Basic techniques in Cell and molecular Biology (DNA extraction, PCR, DNA recombinant) n. DNA Transposition dan Recombination																																																									
Study and examination requirements and forms of examination	The final mark will be weighted as follows: <table><tr><th>NO</th><th>Assessment methods (components, activities)</th><th>Weight (percentage)</th></tr><tr><td>1</td><td>Final Examination</td><td>25%</td></tr><tr><td>2</td><td>Mid-Term Examination</td><td>25%</td></tr><tr><td>3</td><td>Class Activities : Quiz, Homework, etc.</td><td>20%</td></tr><tr><td>4</td><td>Laboratory activities: Pretest/posttest, lab. Report, lab work exam</td><td>30%</td></tr></table> The final assessment is expressed in the form of a letter value converted from a number value with the following categories: <table><tr><th>NO</th><th>Number Value</th><th>Letter Value</th><th>NO</th><th>Number Value</th><th>Letter Value</th></tr><tr><td>1</td><td>≥ 95</td><td>A</td><td>7</td><td>65-69.99</td><td>B/C</td></tr><tr><td>2</td><td>90-94.99</td><td>A-</td><td>8</td><td>60-64.99</td><td>C+</td></tr><tr><td>3</td><td>85-89.99</td><td>A/B</td><td>9</td><td>55-59.99</td><td>C</td></tr><tr><td>4</td><td>80-84.99</td><td>B+</td><td>10</td><td>50-54.99</td><td>C-</td></tr><tr><td>5</td><td>75-79.99</td><td>B</td><td>11</td><td>55-34.99</td><td>D</td></tr><tr><td>6</td><td>70-74.99</td><td>B-</td><td>12</td><td><35</td><td>E</td></tr></table>	NO	Assessment methods (components, activities)	Weight (percentage)	1	Final Examination	25%	2	Mid-Term Examination	25%	3	Class Activities : Quiz, Homework, etc.	20%	4	Laboratory activities: Pretest/posttest, lab. Report, lab work exam	30%	NO	Number Value	Letter Value	NO	Number Value	Letter Value	1	≥ 95	A	7	65-69.99	B/C	2	90-94.99	A-	8	60-64.99	C+	3	85-89.99	A/B	9	55-59.99	C	4	80-84.99	B+	10	50-54.99	C-	5	75-79.99	B	11	55-34.99	D	6	70-74.99	B-	12	<35	E
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Media employed	Lcd Projector, e-learning (https://daring.uin-suka.ac.id/), lab equipments and materials for practicum.																																																									
Reading list	1. Albert B, Johnson A, Lewis J, Raff M, Roberts K, and Walter P. 2008. <i>Molecular Biology of the Cell</i>. Garland Science, taylor & Francis Group. New York. 2. Campbell, N.A., J.B. Reece, and L.G. Mitchell. 1999. <i>Biologi</i>. Edisi Kelima. Penerbit Erlangga. Jakarta. 3. Cooper, J.M. 2000. <i>The Cell : A Molecular Approach</i>. Washington, D.C.: ASM Press; Sunderland, Mass.: Sinauer Associates 4. O'Donnell, M ,Langston, L , Stillman, B. 2013. Principles and Concepts of DNA Replication in Bacteria, Archaea, and Eukarya. <i>Cold Spring Harb Perspect Biol</i> 2013;5:a010108 5. Lanza, R. et al. 2009. <i>Essentials of Stem Cell Biology</i>. Academic Press. Canada 6. Beckerman, M. 2008. <i>Molecular and Cellular Signaling</i>. Springer Science. New York																																																									

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