UIN SUNAN KALIJAGA YOGYAKARTA
FACULTY OF SCIENCE AND TECHNOLOGY
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Undergraduate Programme in Biology

Telp : +62274 519739
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MODULE HANDBOOK

Module Name	Biochemistry
Module level, if applicable	Bachelor
Code, if applicable	BIO414005
Subtitle, if applicable	-
Courses, if applicable	Biochemistry
Semester(s) in which the module is taught	2nd (Second)
Person responsible for the module	Dian Aruni Kumalawati, M.Sc
Lecturer(s)	Dian Aruni Kumalawati, M.Sc, Dr. rer.medic. Esti Wahyu Widowati, M.Si.
Language	Bahasa Indonesia
Relation to curriculum	Compulsory course in the first year (1st semester) Bachelor Degree
Type of teaching, contact hours	100 minutes lectures, 120 minutes structured activities, 120 minutes individual study, 170 minutes laboratory practical per week.
Workload	Total workload is 136 hours per semester, which consists of 100 minutes lectures per week for 16 weeks, 120 minutes structured activities per week, 120 minutes individual study per week (in total is 16 weeks per semester, including mid exam and final exam), 170 minutes laboratory practical (in total is 8 weeks per semester, including individual study and structured activities).
Credit points	3 credits (4,5 ECTS)
Requirements according to the examination regulations	Students must meet a minimum attendance of 75% of the total meetings to be able to take the final exam
Recommended prerequisites	No prerequisites stated on
Module objectives/intended learning outcomes	After completing this course, the students: CO 1. Students are able to apply the basic concepts of biological systems and cell organization CO 2. Students are able to apply the basic concepts of the structure and function of biomolecules (water, carbohydrates, proteins, lipids, nucleic acids). CO 3. Students are able to explain and analyze the structure and function of enzymes and enzymatic reactions CO4. Students are able to analyze and explain the concepts of bioenergetics and thermodynamics CO5. Students are able to analyze and explain biomolecular metabolism
Content	a. Introduction to Biochemistry. b. Structure, function, physical and chemistry character of water. c. Structure, function, physical and chemistry character of carbohydrate. d. Structure, function, physical and chemistry character of lipid. e. Structure, function, physical and chemistry character of amino acid and protein.

<table>
<tr><td></td><td>f. Structure, function, physical and chemistry character of nucleic acid.
g. Bioenergetic and thermodynamic.
h. Carbohydrate metabolism.
i. Lipid Metabolism
j. Amino acid and Protein metabolism.</td></tr>
<tr><td>Study and examination requirements and forms of examination</td><td>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>30%</td></tr>
<tr><td>2</td><td>Mid-Term Examination</td><td>30%</td></tr>
<tr><td>3</td><td>Class Activities : Quiz, Homework, etc.</td><td>15%</td></tr>
<tr><td>4</td><td>Laboratory practical</td><td>25%</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></td></tr>
<tr><td>Media employed</td><td>White-board, Lcd Projector, e-learning (https://daring.uin-suka.ac.id/)</td></tr>
<tr><td>Reading list</td><td>1. Murray, et al., 2003. Biokimia Harper. EGC. Penerbit Buku
2. Mathews, C.K, van Holde, 2000, Biochemistry, Edisi 2, The Benjamin/Cummings Publishig Company Inc
3. Poedjadi, Anna,1994, Biokimia, Penerbit UI, Jakarta
4. Lehninger. 1995. Principles of Biochemstry, Fourth edition
5. Lahiri, S and Futerman A.H. 2007. The metabolism and function of sphingolipids and glycosphingolipids. Cell. Mol. Life Sci.Vol. 64
6. O'Donnell, V.B, Rossjohn,J and Wakelam, M.J. 2018. Phospholipid signaling in innate immune cells. J Clin Invest. 2018;128(7):2670-2679.
7. Ogretmen, B. 2018. Sphingolipid metabolism in cancer signalling and therapy. Nat Rev Cancer. 2018 January ; 18(1): 33–50.
8. Albert B, Johnson A, Lewis J, Raff M, Roberts K, and Walter P. 2008. *Molecular Biology of the Cell*. Garland Science, taylor & Francis Group. New York.
9. Campbell, N.A., J.B. Reece, and L.G. Mitchell. 1999. *Biologi*. Edisi Kelima. Penerbit Erlangga. Jakarta.
10. Rahmani, T.P., Kumalawati, D.A., Tyas, D.A., Armanda, D.T., Rusmadi, R. 2020. Feasibility Analysis of Nitrogen-Fixing Cereals Project. *Al-Hayat: Journal of Biology and Applied Biology, Vol 3, No 2 (2020), 102-110*.</td></tr>
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PLO and CO Mapping

	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	PLO 11
CO 1					√			√			
CO 2					√			√			
CO 3					√			√			
CO 4					√			√			
CO 5					√			√			