UNIVERSITAS NEGERI YOGYAKARTA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
DEPARTMENT OF CHEMISTRY EDUCATION
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Bachelor of Education in Chemistry **MODULE HANDBOOK**

Module name:	**BIOCHEMISTRY**
Module level, if applicable:	Undergraduate
Code:	KIM 6413
Sub-heading, if applicable:	-
Classes, if applicable:	2
Semester:	6th
Module coordinator:	C. Budimawarti, M.Si
Lecturer(s):	Dr. Dra. Retno Arianingrum, M.Si.; Dr. Das Salirawati, M.Si.
Language:	Bahasa Indonesia and English
Classification within the curriculum:	Compulsory Subject
Teaching format / class hours per week during the semester:	• Lectures: 150 minutes lectures, 180 minutes structured activities and 180 minutes individual study per week • Laboratory Work: 170 minutes includes the laboratory work and it's report per week.
Workload:	Total workload of the activity is hours per semester which consist of 150 minutes lectures, 180 minutes structured activities and 180 minutes individual study per week, and 170 minutes include laboratory work and it's report.
Credit points:	3SKS (4.92 ECTS) lectures, and 1SKS (1,64 ECTS) laboratory Work
Prerequisites course(s):	- Basic Organic Chemistry
Course outcomes:	After taking this course, the students are expected to be able to: CO1. describe the basic concepts of the structure and function of chemical processes in cells (the smallest part of living things) CO2. understand about the metabolism of carbohydrates, fats, proteins and lipids CO3. identify and study chemical processes through practical activities in the laboratory CO4. describing biochemical concepts about the flow of biological information including replication, transcription, and translation; and genetic engineering CO5. explain the differences between mechanistic models and empirical models
Content:	This course concerns about chemical structures, functions, chemical processes in cells (the smallest part of living things) which consists of carbohydrates, fats, proteins, enzymes, minerals, vitamins and water in the chemical process (metabolism) of carbohydrates, lipids and proteins. Discusses nucleic acids, genetic engineering, hormones, nutrition and food, and practices about traits and chemical reactions of carbohydrates, lipids, proteins, and enzymes.

<table>
<tr>
<td>Study / exam achievements:</td>
<td>Attitude assessment is carried out at each meeting by observation and/or self-assessment techniques using the assumption that basically every student has a good attitude. The student is marked very good or not good attitude if they show it significantly compared to other students in general. The result of attitude assessment is not taken into account in the final grades, but as one of the requirements to pass the course. Students will pass from this course if at least have a good attitude. The final mark will be weight as follow:
<table>
<tr><th>No</th><th>CO</th><th>Assessment Object</th><th>Assessment Technique</th><th>Weight</th></tr>
<tr><td>1</td><td>CO1,
CO2,
CO3,
CO4.</td><td>Participation
Assignment
Competency Examination 1
Competency Examination 2
Lab Work</td><td>Presentation / written test</td><td>5%
25%
20%
20%
30%</td></tr>
<tr><td colspan="4">Total</td><td>100%</td></tr>
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<td>Forms of media:</td>
<td>Board, LCD Projector, Laptop/Computer, Tools and Chemicals for demonstration</td>
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<td>References:</td>
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Anna Poedjiadi; F.M. Titin Supriyanti. 2006. Dasar-Dasar Biokimia, Jakarta Edisi Revisi: Penerbit Universitas Indonesia
Veerakumari, L. 2016. Biochemistry: Janarthanan India
Litwack, G. 2017. Human Biochemistry: Elsevier
Palmer, T. & Bonner, P.L. 2007. Enzymes: Biochemistry, Biotechnology, Clinical Chemistry: Woodhead Publishing
Lehninger, A, (Alih bahasa Maggy Thenawijaya). 1990. Dasar-dasar Biokimia Jilid I, II, dan III. Jakarta : Penerbit Erlangga.
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Akhmaloka. 1990. Asam Nukleat Struktur dan Fungsi. Bandung : Penerbit ITB Bandung
David W. Martin. Jr., MD at all (alih bahasa Dr. Iyan Darmawan). 1987 Biokimia Harper Edisi 20 (Harper’s Review of Biochemistry)
Soeharsono Martoharsono. Biokimia Jilid II. Yogyakarta: Gadjah Mada University Press

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PLO and CO mapping

	PLO					
	Attitude		Knowledge	Specific Skill	General Skill	
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
CO1			√			
CO2			√			
CO3				√		√
CO4			√			
CO5			√			