

Module designation	Biochemistry
Module level, if applicable	Undergraduate
Code, if applicable	PIPAUM6601
Subtitle, if applicable	-
Courses, if applicable	-
Semester(s) in which the module is taught	First Term
Person responsible for the module	Novida Pratiwi, S.Si, M.Sc.
Lecturer	Novida Pratiwi, S.Si, M.Sc. Safwatun Nida, S.Si, M.Pd, Ph.D Dr. Dian Nugraheni, S.Pd, M.Sc. (candidate)
Language	Bahasa Indonesia for regular class and English for bilingual class
Relation to curriculum	Undergraduate degree program, compulsory, 3th semester
Type of teaching, contact hours	Cooperative learning
Workload	1. Lectures: 3 x 50 = 150 minutes (2.5 hours) per week. 2. Exercises and Assignments: 3 x 60 = 180 minutes (3 hours) per week. 3. Private study: 3 x 60 = 180 minutes (3 hours) per week.
Credit points	3 credit points (5 ECTS).
Requirements according to the examination regulations	A student must have attended at least 80% of the lectures to sit in the exams.
Recommended prerequisites	Basic Chemistry II, Basic Biology II
Module objectives/intended learning outcomes	1. After completing this module, students are expected to: (LO4): analyze science phenomena in an integrated manner 2. to solve problems logically, critically, systematically, and critically using information technology as data resources in the form of team 3. work that respect the originality of other works.
Course learning outcome	1. Analyzing the structure and function of biomolecules, metabolism of biomolecules, and the application of biotechnology in life as a basis for studying biology and science topics further 2. Processing, reasoning and presenting various

	experiments related to the structure and function of biomolecules, metabolism of biomolecules, and applications of biotechnology with critical thinking	
Content	<ol style="list-style-type: none"> 1. Structure and function of biomolecules (carbohydrates, proteins, lipids, and nucleic acids) 2. Metabolism of biomolecules (carbohydrates, lipids, and proteins) 3. The molecular basis of heredity 	
Learning activity	Week 1	Introduction: course orientation and regulations
	W2	Classroom discussion: the classification of living things, biomolecules: type and function, distribution of biomolecules, cell structure of animal and plant
	W3	Group presentation and classroom discussion: amino acid structure, protein: type, structure and function, factors affecting rate reaction, mechanism of enzym
	W4	Group presentation and classroom discussion:protein 3D structure using Cn3D
	W5	Group presentation and classroom discussion: vitamin and mineral
	W6	Group presentation and classroom discussion: carbohydrates and lipid structure and function
	W7	Laboratory practicum: composition of biomolecule in food
	W8	Mid term examination
	W9	Group presentation and discussion: nucleic acid
	W10	Group presentation and discussion: biotechnology, GMO
	W11	Group presentation and discussion: application of biotechnology in food and health sector
	W12	Lab practicum: conventional biotechnology
	W13	Group presentation and discussion: carbohydrate metabolism
	W14	Practicum: photosynthesis and respiration
	W15	Group presentation and discussion: Lipid metabolism
	W16	Final test
Study and examination requirements and forms of examination	Assignment, Mid-term examination, and Final examination	
Media employed	LCD, websites, Youtube Video, SIPEJAR	

Reading list	<ol style="list-style-type: none"> 1. Moore, J.T & Langley, R. 2008. <i>Biochemistry for Dummies</i>. Hoboken: Wiley Publishing, Inc. 2. Nelson, D.L. dan Cox, M.M. 2012. <i>Principles of Biochemistry, 6th edition</i>. London: W.H. Freeman and Company, Macmillan Publisher 3. http://www.ncbi.nlm.nih.gov 4. https://www.youtube.com/watch?v=VpmT7Lw_4v0 about DNA replication 5. https://www.youtube.com/watch?v=DkT6XHWne6E about process of PCR 6. https://www.youtube.com/watch?v=2BwWavExcFI about process of DNA transcription and translation 7. https://www.youtube.com/watch?v=JtkhHIG3nx4 about technical process of GMO (Genetically Modification Organism) 8. https://www.youtube.com/watch?v=13h5oC4jlsk&t=56s about Photosynthesis 9. https://www.youtube.com/watch?v=7J4LXs-oDCU about Cell Respiration 10. https://www.youtube.com/watch?v=9dghtf7Z7fw about Cholesterol, LDL, HDL, and Lipoprotein 11. https://www.youtube.com/watch?v=sICmrtFH FQQ about Beta-oxidation process of Fatty Acid
Date of last amendment made	January, 2022