Diponegoro University
Faculty of Science and Mathematics
Undergraduate Program Of Chemistry

Module designation	**Basics of Biological Chemistry (Kbio)**
Semester(s) in which the module is taught	2
Person responsible for the module	Dr. Agustina LN Aminin, M.Si Dr. M. Asy'ari, M.Si Dra. Nies Suci Mulyani, MS Purbowatiningrum RS., M.Si
Language	Indonesian
Relation to curriculum	Compulsory/~~elective~~/~~specialisation~~
Teaching methods	Lecture
Workload (incl. contact hours, self-study hours)	Face to face: 1 x (2 x 50 min); Structured study: 1 x (2 x 60 min); Self-study: 1 x (2 x 60 min)
Credit points	2
Required and recommended prerequisites for joining the module	No requirement
Module objectives/intended learning outcomes	(S9) Demonstrate a responsible attitude towards work in their field of expertise independently (PP1) Mastering the theoretical concepts of structure, properties, changes, kinetics, and energetics of molecules and chemical systems, identification, separation, characterization, transformation, synthesis of micromolecular chemicals, and their application (KU1) Able to apply logical, critical, systematic, and innovative thinking in the development or implementation of science and technology that pays attention to and uses humanities values by their field of expertise (KK3) Able to analyze several alternative solutions in identification, analysis, isolation, transformation, and synthesis of available chemicals and present analysis conclusions for appropriate decision making

Content	1. Characteristics and Classification of Living Things a. Characteristic of Living Things b. Concepts and Applications of Classification Systems c. Characteristics of Living Things 2. Organization of Living Things (Cells and Organelles) Part I a. Cell structure and organization b. Levels of an organization 3. Organization of Living Things (Cells and Organelles) Part II a. Specimen size b. Microscopy techniques 4. Cell/Macromolecule Chemistry: Part I a. Carbohydrate structure in cells and biological function b. Lipid structure in cells and biological function 5. Cell/Macromolecular Chemistry: Part II a. Protein structure in cells and biological function b. Nucleic Acid Structure in Cells and Biological Functions 6. Cell membrane and membrane transport a. Cell Membrane Structure b. Diffusion and Osmosis c. Active transport 7. Introduction of the Delivery System a. Electric signal b. Signal transduction c. Extracellular structure 8. Cell nucleus and chromosomes 9. Organization of the cell nucleus a. Chromosomal structure b. Cytoskeleton and Cell Motility c. Cytoskeleton d. Cell Motility 10. Plant Nutrition a. Leaf Structure b. Photosynthesis I and II c. Mineral Needs 11. Human and Animal Nutrition a. Diet/Diet b. Mechanical digestion c. Chemical digestion d. Absorption 12. Transport in plants a. Transport system in plants b. Water Absorption c. Transpiration 13. Transport in animals a. Transport system in animals b. Hearts c. Blood and lymphatic vessels 14. Respiration a. Respiratory system

	b. Aerobic respiration
Exams and assessment formats	Mid-Semester Exam and Final Exam
Study and examination requirements	Participatory Activities -30% Project Results -30% Cognitive/Task Knowledge -5% Task -5% Mid-semester -15% Final exams -15%
Reading list	-