MODULE HANDBOOK

Module Name	Metabolism and Pathways of Genetics Information
Module level	Bachelor
Abbreviation, if applicable	8420403034
Sub-heading, if applicable	-
Course included in the module, if applicable	-
Semester/term	6th/Third Year
Module coordinator(s)	Prof. Dr. Lenny Yuanita, M.Kes
Lecturer(s)	Prof. Dr. Rudiana Agustini, M.Pd; Dr. Prima Retno Wikandari, M.Si; Dr. Nuniek Herdyastuti, M.Si,; Mirwa Adiprahara Anggarani, S.Si., M.Si
Language	Indonesian
Classification within the curriculum	Compulsory Course
Teaching format/class hours per week during the semester:	3 hours lecturers (50 min per hours)
Workload:	1 CU for bachelor degree equals to 3 workhours per week or 170 minutes (50' face to face learning, 60' structured learning, and 60' independent learning). In one semester, courses are conducted in 14 weeks (excluding mid and end-term exam). Thus, 1 CU equals to 39.67 workhours per semester. One CU equals to 1.59 ECTS.
Credit points:	3 CU = 3 x 1.59 = 4.77 ECTS
Prerequisites course(s):	-
Targeted learning outcomes:	CLO 1 Able to solve science and technology problems in the field general chemistry and in simple environments such as reporting, analysis, isolation, transformation, and synthesis of micromolecules, through the application of their structure, properties, molecular changes, energy and kinetics. CLO 2 Able to solve science and technology problems in the field of biochemistry, especially those related to metabolism and genetic information processing, based on scientific studies and analysis and synthesis methods, as well as the application of relevant technology. CLO 3 Have knowledge of: a) metabolism and regulation of carbohydrate, lipid and protein biomolecules, b) electron transfer processes in photosynthesis and c) genetic information processing. CLO 4 Demonstrate a responsible attitude in his work in learning Metabolism and Pathways of Genetics Information independently.
Content:	**Metabolic aspects and their role in living cells:** Macro and micro aspects of metabolism, energy cycles. **Carbohydrate Catabolism:**

	Glycolysis, Glycogenesis, Anaerobic reactions (Fermentation), citric acid cycle, Oxidative phosphorylation, ATP calculation, Gluconeogenesis, Glyconeogenesis, Catabolism control. **Photosynthesis:** Dark - light reaction, Calvin Cycle, Cycle Hatch – Slack **Amino acid and purine catabolism - Pyrimidines:** Intermediate pathways for amino acid catabolism, transaminase reactions, ammonothelic, oreothelic, and uricotelic nitrogen secretion pathways, urea cycle. Synthesis of amino acids from ammonium through 3 enzymatic reactions and its regulation, synthesis of amino acids from the reaction of glutamate transaminases with α-keto acid, degradation and synthesis of purines – pyrimidines. **Lipid Catabolism:** Saturated fatty acid catabolism, unsaturated fatty acid catabolism, and oxidation, ketogenesis and control. Lipogenesis, anabolism in specific fats and control. **Genetic Information Flow:** Replication, Transcription, Translation and Lac Operon.
Study / exam achievements:	Students are considered to be competent and pass if at least get 55 Final score is calculated as follows: 20% participation + 30% assignment + 20% middle exam (UTS) & 30% final exam (UAS) Table index of graduation • A = 4 (85 ≤-≥ 100) • A- = 3,75 (80 ≤-< 85) • B+ = 3,5 (75 ≤- < 80) • B = 3 (70 ≤-< 75) • B- = 2,75 (65 ≤-<75) • C+ = 2,5 (60 ≤-<65) • C = 2 (55 ≤-<60) • D = 1 (40 ≤-<55) • E = 0 (0 ≤-<40)
Media:	Computer, LCD, White board
Learning Methods	Individuals assignment, group assignment, discussion, presentation
Literature:	1. Ayala, F.J. and Kieger, J.A. 1984. *Modern Genetics*. California: The Benyamin Cummings Publishing Company Inc. 2. Koolman, J. and Roehm, K.H. 2005. *Color Atlas of Biochemistry*. 2 nd edition. New York: Stutgard. 3. Lehninger. 1988. *Dasar-Dasar Biokimia* (I,II,III). Jakarta: Erlangga. 4. Mathew,C.K., van Holde, K.E., Ahern, K.G. 1999. *Biochemistry.* San Fransisco: Addison-Wesley Pub. Co. 5. Murray R.K., Granner R.K., Mayes P.A., and Rotwell V.W. 2003. *Harper's Ilustrated Biochemistry,* The

	McGraw-Hill Companies 6. Nelson, D.L. and Cox, M.M. 2003. *Lehninger Principle of Biochemistry. 4th edition.* Madison: University of Winconsin. 7. Styer, L., 1988. *Biochemistry*. New York: W.H. Freeman and Company