

MODULE HANDBOOK

Module Name	Metabolism and Pathways of Genetics Information
Module level	Bachelor
Abbreviation, if applicable	3074213049
Sub-heading, if applicable	-
Course included in the module, if applicable	-
Semester/term	6 th / 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 Adi Prahara, 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:	3 x 50 minutes lectures, 3 x 60 minutes structured activity, 3 x 60 minutes individual activity, 14 weeks per semester, 119 total hours per semester ~ 4.77 ECTS**
Credit points:	3 CU x 1.59 = 4.77 ECTS
Prerequisite course(s):	-
Targeted learning outcomes:	<ol style="list-style-type: none"> 1. Able to solve the problem of SCIENCE IN GENERAL CHEMISTRY and in simple spheres such as identification, analysis, isolation, transformation, and synthesis of micromolecules, through the application of structures, properties, molecular changes, energy and kinetics 2. Able to solve the science and technology in the field of biochemistry, especially related to metabolism and processing of genetic information, based on the study of science and methods of analysis and synthesis, as well as the application of relevant technologies. 3. Have knowledge of : a) metabolism and regulation of biomolecules of carbohydrates, lipides, and proteins, b) the process of transfer of electrons in photosynthesis as well as c) the process of processing genetic information. 4. Demonstrate the responsible attitude of his work in biochemical learning II independently
Content:	<p>Metabolic aspects and their role in living cells : Macro and micro metabolic aspects, energy cycles</p> <p>Carbohydrate Catabolism : Glycolysis, Glycogenesis, Anaerobic Reactions (Fermentation), Citric Acid Cycle, Oxidative Phosphorylation, ATP Calculation,</p>

	<p>Gluconeogenesis, Glyconeogenesis, Catabolism Control Photosynthesis : Dark reactions – light, Calvin Cycle, Hatch Cycle – Slack Amino acid catabolism and Purine - Pyrimidin : Intermediat pathways of amino acid catabolism, transaminases reactions, nitrogen secretion pathways in ammonotelics, oreotelic, and uricotelic, urea cycles. Synthesis of amino acids from ammonium through 3 enzymatic reactions and their regulation, synthesis of amino acids from glutamate transaminases reactions with α-keto acid, degradation and synthesis of Purines – Pyrimidin Lipide catabolism : Saturated fatty acid catabolism, Unsaturated fatty acid, and - oxidation, ketogenesis and control. Lipogenesis, anabolism in special fats, control Genetic Information Flow : Replication, Transcription, Translation and Lac Operon</p>										
Study / exam achievements:	<p>Students are considered to complete the course and pass if they obtain at least 40% of maximum final grade. The final grade (NA) is calculated based on the following ratio:</p> <table border="1" data-bbox="618 888 1414 1129"> <thead> <tr> <th>Assessment Components</th> <th>Percentage of contribution</th> </tr> </thead> <tbody> <tr> <td>Participation</td> <td>20%</td> </tr> <tr> <td>Assignment</td> <td>30%</td> </tr> <tr> <td>Mid-semester test</td> <td>20%</td> </tr> <tr> <td>Final semester test</td> <td>30%</td> </tr> </tbody> </table>	Assessment Components	Percentage of contribution	Participation	20%	Assignment	30%	Mid-semester test	20%	Final semester test	30%
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Media:	Computer, White board										
Learning Methods	Individuals assignment, group assignment, discussion, presentation										
Literature:	<ol style="list-style-type: none"> 1. Ayala, F.J. and Kieger, J.A. 1984. <i>Modern Genetics</i>. California: The Benyamin Cummings Publishing Company Inc.. 2. Koolman, J. and Roehm, K.H. 2005. <i>Color Atlas of Biochemistry</i>. 2nd edition. New York: Stutgard. 3. Lehninger. 1988. <i>Dasar-Dasar Biokimia (I,II,III)</i>. Jakarta: Erlangga. 4. Mathew,C.K., van Holde, K.E., Ahern, K.G. 1999. <i>Biochemistry</i>. San Fransisco: Addison-Wesley Pub. Co. 5. Murray R.K., Granner R.K., Mayes P.A., and Rotwell V.W. 2003. <i>Harper's Illustrated Biochemistry</i>, The McGraw-Hill Companies 6. Nelson, D.L. and Cox, M.M. 2003. <i>Lehninger Principle of Biochemistry</i>. 4th edition. Madison: University of Winconsin. 7. Styer, L., 1988. <i>Biochemistry</i>. New York: W.H. Freeman and Company 										

Notes:	<p>*1 CU in learning process = three periods consist of: (a) scheduled instruction in a classroom or laboratory (50 minutes); (b) structured activity (60 minutes); and (c) individual activity (60 minutes) according to the Regulation of Indonesia Ministry of Research, Technology, and Higher Education No. 44 Year 2015 jo. the Regulation of Indonesia Ministry of Research, Technology, and Higher Education No. 50 Year 2018.</p> <p>**1 CU = 1,59 ECTS according to Rector Decree Of Universitas Negeri Surabaya No. 598/UN38/Hk/Ak/2019</p>
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