



# THE MODULE HANDBOOK

## FACULTY OF BIOLOGY

### Biochemistry

<b>Module code</b>	BIO 40101
<b>Module level</b>	2 <sup>nd</sup> year of Undergraduate Program in Biology
<b>Abbreviation, if applicable</b>	-
<b>Sub-heading, if applicable</b>	-
<b>Courses included in the module, if applicable</b>	-
<b>Semester/term</b>	4/ even
<b>Module coordinator(s)</b>	Dr. Rarastoeti Pratiwi, M.Sc.
<b>Lecture(s)</b>	<ol style="list-style-type: none"><li>1. Dr. Rarastoeti Pratiwi, M.Sc.</li><li>2. Dr. Tri Rini Nuringtyas, M.Sc.</li><li>3. Dr. Yekti Asih Purwestri, M.Sc.</li><li>4. Dr. Woro Anindito Sri Tunjung, M.Sc.</li></ol>
<b>Language</b>	Indonesia
<b>Classification within the Curriculum</b>	<ol style="list-style-type: none"><li>1. Elective course</li><li>2. Advanced Biochemistry course is the optional course according to the curriculum 2013 of Study Program of Biology. This course consist of 2 credits units of teaching and learning course. The teaching and learning course contain of 14 mean topics i.e: introduction and overview of biochemistry and the development of biochemistry up to date, the relation between protein structure and function, conjugate protein (such as: glycoprotein, lipoprotein and nucleoprotein); membran system; enzyme; metabolism pathway and regulation; bioenergetics and ATP syntesis; comparative study of C and N metabolism in microorganism, plant and animal (mammals), nucleic acids metabolism and protein post translation and its regulation.</li></ol>
<b>Teaching format/class hours per week during the semester</b>	Advanced Course is given on the fourth semester to S1 regular students in Faculty of Biology, 1 meeting per week with time allocation of 100 minutes. Learning method delivery such as Student Centered Learning combined with Collaborative Learning, Cooperative Learning, Case Based Learning and Problem Learning.
<b>Workload</b>	Estimated working hour: 7 hours/week.
<b>Credit points</b>	2-0 credits



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<b>Requirements</b>	Biochemistry (BIO 30101)
<b>Learning goals/ competencies</b>	<p><b>1. Knowledge and understanding</b></p> <ol style="list-style-type: none"><li>Basic principles in mathematics, physics and chemistry related to the structure and process in living system.</li><li>Theoretical and principles of structure, functions of biomolecules and its role in living process.</li><li>Concepts and theory of chemical reactions in living organisms.</li><li>The role of biochemistry in the understanding of living systems and sciences.</li><li>The involvement of biologist in the social community and scientific community.</li></ol> <p><b>2. Ability/intellectual skill</b></p> <ol style="list-style-type: none"><li>To do and report a research in biochemistry fields.</li><li>To formulate and prove hypothesis in biochemistry field.</li><li>To integrate and evaluate the information and data in biochemical process of living.</li><li>Organisms from many sources.</li></ol> <p><b>3. Practical skill</b></p> <ol style="list-style-type: none"><li>To use Scientifics references and to make lecture note effectively.</li><li>To make and produce technical services in scientific manner.</li></ol> <p><b>4. Managerial and transferable skill</b></p> <ol style="list-style-type: none"><li>Good and effectively communications either in writing, oral or drawing.</li><li>To apply the principles of mathematics and chemistry in biology.</li><li>To work together in the group.</li><li>To apply and integrate the biochemistry in biology and its branches.</li></ol> <p><b>5. Attitude</b></p> <ol style="list-style-type: none"><li>To develop curiosity.</li><li>Respect to the originality ideas, concepts and other Findings.</li><li>Attention and respect to other opinions and comments.</li><li>Pay attention to and be able to appreciate the views and opinions of others.</li></ol>
<b>Content</b>	Introduction and overview of biochemistry and the development of biochemistry up to date, the relation between protein structure and function, conjugate protein (such as: glycoprotein, lipoprotein and nucleoprotein); membran system; enzyme; metabolism pathway and regulation; bioenergetics and ATP syntesis; comparative



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	study of C and N metabolism in mikroorganism, plant and animal (mammals), nucleic acids metabolism and protein post translation and its regulation.
<b>Study/exam achievements</b>	<ol style="list-style-type: none"><li>1. Midterm: 30%</li><li>2. Final examination: 30%</li><li>3. Quiz and home works: 10%</li><li>4. Presentation: 20%</li></ol>
<b>Forms of media</b>	White board, LCD
<b>Literature</b>	<ol style="list-style-type: none"><li>1. Horton HR, Moran LA, Rawn JD dan Scrimgeor KG (1996) Principles of Biochemistry. Second Edition. Prentice-Hall International, INC.</li><li>2. Lehninger AL, Nelson DL, Cox MM (1993) Principles of Biochemistry. Second Edition Worth Publisher.</li><li>3. Nelson, DL and Cox MM (2000) Lehninger: Principles of Biochemistry. Third Edition. Worth Publisher. (e-book).</li><li>4. Stryer L (1995) Biochemistry. Fourth Edition. W.H. Freeman and Company.</li><li>5. Boyer, R (1999) Concept in Biochemistry. Brooks Cole Publishing Company.</li></ol> <p><b>Other References</b></p> <ol style="list-style-type: none"><li>1. Understand Biochemistry Lehninger Principles biochemistry 3/6 Version. (1999) The Mona Group, LLC</li><li>2. Textbook Principles of Biochemistry 1993 and 2000.</li></ol>