



# THE MODULE HANDBOOK

## FACULTY OF BIOLOGY

### Biochemistry

<b>Module code</b>	BID 20101IUP
<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>	English
<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
<b>Requirements</b>	Biochemistry (BIB 10101IUP)



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### Learning goals/ competencies

#### 1. Knowledge and understanding

- a. Basic principles in mathematics, physics and chemistry related to the structure and process in living system.
- b. Theoretical and principles of structure, functions of biomolecules and its role in living process.
- c. Concepts and theory of chemical reactions in living organisms.
- d. The role of biochemistry in the understanding of living systems and sciences.
- e. The involvement of biologist in the social community and scientific community.

#### 2. Ability/intelektual skill

- a. To do and report a research in biochemistry fields.
- b. To formulate and prove hypothesis in biochemistry field.
- c. To integrate and evaluate the information and data in biochemical process of living.
- d. Organisms from many sources.

#### 3. Practical skill

- a. To use Scientifics references and to make lecture note effectively.
- b. To make and produce technical services in scientific manner.

#### 4. Managerial and transferable skill

- a. Good and effectively communications either in writing, oral or drawing.
- b. To apply the principles of mathematics and chemistry in biology.
- c. To work together in the group.
- d. To apply and integrate the biochemistry in biology and its branches.

#### 5. Attitude

- a. To develop curiosity.
- b. Respect to the originality ideas, concepts and other Findings.
- c. Attention and respect to other opinions and comments.
- d. Pay attention to and be able to appreciate the views and opinions of others.

### Content

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 mikroorganism, plant and



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	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>