



THE MODULE HANDBOOK

FACULTY OF BIOLOGY

Technical Biochemistry

Module code	BIO 40102
Module level	Undergraduate
Abbreviation, if applicable	-
Sub-heading, if applicable	-
Courses included in the module, if applicable	-
Semester/ term	Even
Module coordinator(s)	Dr. Tri Rini Nuringtyas, M.Sc.
Lecture(s)	1. Dr. Rarastoeti Pratiwi, M.Sc. 2. Dr. Yekti Asih Purwestri, M.Si. 3. Woro Anindito Sri Tunjung, S.Si., M.Sc., Ph.D. 4. Lisna Hidayati, S.Si., M.Biotech.
Language	Indonesia
Classification within the Curriculum	Compulsory
Teaching format/ class hours per week during the semester	This course is organised into 2 parallel classes and planned to have 14 teaching weeks and 2 weeks of examination.
Workload	Estimated working hour: 1 credit of theory and 1 credit of laboratory work.
Credit points	1-1credits
Requirements	Biochemistry (BIO 30101)
Learning goals/ competencies	1. Knowledge and understanding By the end of the semester, students should: a. Understand the basic principal of mathematics, physics and chemistry related to basic laboratory equipment for isolation and biological metabolites analysis. b. Understand basic concept, principle and theory related to basic method on isolation and analysis of biomolecules. c. Understand fact, concept, principle and theory on separation techniques and analysis of biomolecules. d. Understand basic theory and instrumentation on conducting life science research.



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2. Ability/intellectual skill

By the end of the semester, students should:

- a. Be able to conduct and report a research in biochemistry and its related science.
- b. Be able construct and verify hypothesis on life science research.

3. Practical skill

By the end of the semester, students should:

- a. Be able to analyse research result in biochemistry and validate the result.
- b. Be able to use laboratory equipment to obtain data.
- c. Be able to analyse research result and decide the quality of the data in terms of accuracy and precision.
- d. Be able to search and use related references and make an effective research logbook.
- e. Be able to make and deliver the technical scientific report.

4. Managerial and transferable skill

By the end of the semester, students should:

- a. Be able to communicate effectively both written and oral.
- b. Be able to communicate in English.
- c. Be able to apply principles of mathematics, chemistry and physics in Biochemistry.
- d. Be able to work in team.
- e. Be able to manage their resource and time effectively and efficiently.
- f. Be able to study effectively for developing their study and career.

5. Attitude

By the end of the semester, students should:

- a. have a high curiosity in life science research
- b. have a high appreciation to originality of idea, concept and invention.
- c. Be able to accept and appreciate other opinions.

Content

This course is designed to introduce the second year students to understand the principle of diverse tools used in biology laboratory. Emphasis of the course is on the tools used for measuring, isolating and analysing biomolecules. The biomolecules analysis covers basic acid and basic, pH and buffer, homogenisation, centrifugation, spectroscopy, dialysis, immunology technique, radioisotope, chromatography and electrophoresis as well as on working in laboratory emphasis in accuracy and precision, also biosafety



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Study/ exam achievements	<ol style="list-style-type: none">1. Midterm: 20 %2. Final examination: 30 %3. Laboratory work: 50 %
Forms of media	White board, LCD, elearning, video and animation.
Literature	<ol style="list-style-type: none">1. Albert, S.B. A. Johnson, J. Lewis, M. Raff, K. Roberts, P. Walter. 2002. <i>Molecular Biology of the Cell</i>. Garland Science. USA .2. Bintang M, 2010. <i>Biokimia: Teknik Penelitian</i>. Penerbit Erlangga, Jakarta.3. Holme, D.J. and Peck, H. 1998. <i>Analytical Biochemistry</i>, Third Edition. Longman.4. Plummer, D.T. 1971. <i>An Introduction to Practical Biochemistry</i>. TATA McGraw-Hill Publishing Company, LTD.5. Sambrook, J., Fritsch and Maniatis, T. 1989. <i>Molecular Cloning : A Laboratory Manual</i>. 2nd Edition Edition.6. Segel, I.H. 1976. <i>Biochemical Calculations, How to Solve Mathematical Problems in General. Biochemistry</i>. 2nd Edition. John Wiley & Sons. New York.