



THE MODULE HANDBOOK

Magister Biology Study Program

FACULTY OF BIOLOGY

ENZYME TECHNOLOGY

Course code	BIMB202215
Course level	Magister
Semester/ term	Odd
Course coordinator(s)	Dr. Tri Rini Nuringtyas, M.Sc
Lecture(s)	1. Dr. Rarastoeti Pratiwi 2. Dr. Yekti Asih Purwestri, M.Si 3. Dr. Woro Anindito Sri Tunjung, M.Sc
Language	Indonesia
Classification within the Curriculum	Elective
Teaching format/ class hours per week during the semester	This course is organised as one class and planned to have 14 teaching weeks and 2 weeks of examination.
Workload	Estimated working hour: 2 credits of theory
Credits	2 credits
Requirements	-
Program Learning Outcome	<ul style="list-style-type: none">• CPL K1 has strong knowledge of biological theory, covering all aspects of biological studies at various levels in the organization of life;• CPL GS1. develop logical, critical, systematic, and creative thinking through scientific research; develop scientific concepts and present the results based on scientific principles, procedures, and ethics in the form of theses and scientific publications.• CPL GS5. use information technology in the development of science and apply it in their field of expertise;
Course Learning Outcome	<ul style="list-style-type: none">• Have knowledge and understanding of enzymes as biomolecules, and their role in biological systems, their biosynthesis and how to engineer enzymes to improve their performance• Understand the nomenclature of enzymes according to consensus, have technical knowledge and basic principles of enzyme technology and then purify the enzyme• Understand the knowledge and understanding of the mechanism of action of enzymes, enzyme kinetics and isoenzyme analysis• Understanding, interpreting data and communicating scientific works in the field of enzymology in writing and orally with presentations as a means of understanding



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	the mechanism of enzyme action, enzyme kinetics and isoenzyme analysis
Course Description	Enzyme Technology course discusses enzymes as biomolecules, and their role in biological systems including enzyme nomenclature according to international consensus, working mechanism of biosynthetic enzymes, enzyme kinetics, enzyme purification techniques, enzyme engineering and technology and isoenzyme analysis. The course also discusses the application of enzymes in various fields such as agro (agriculture, animal husbandry, fisheries), health (pharmaceutical and medicine), industry and the environment.
Assesments	Quiz (10%), Assignment (10%), Presentation (20%), Mid term Exam (30%), Final Exam (30%)
Study Media	Google Classrom, Google Form, Youtube, and Scholar google
Literature	<ol style="list-style-type: none">1. Campbell, M.K. and S. O. Farrell. 2003. Biochemistry. Fourth edition. Thomson Learning, Inc. United States.2. Nelson, D.L. and M.M. Cox. 2000. Lehninger Principles of Biochemistry. 3rd edition. Worth Publishers. New York.3. Buchholz, K., Kasche, V. and Bornscheuer, U.T., 2012. Biocatalysts and enzyme technology. John Wiley & Sons.4. Price, N.C. and L. Stevens. 1984. Fundamentals of Enzymology. Oxford. New York.5. Bilal, M., Iqbal, H.M., Guo, S., Hu, H., Wang, W. and Zhang, X., 2018. State-of-the-art protein engineering approaches using biological macromolecules: A review from immobilization to implementation view point. International journal of biological macromolecules, 108, pp.893-901.6. Solekha, R., Susanto, F.A., Joko, T., Nuringtyas, T.R. and Purwestri, Y.A., 2020. Phenylalanine ammonia lyase (PAL) contributes to the resistance of black rice against <i>Xanthomonas oryzae</i> pv. <i>oryzae</i>. Journal of Plant Pathology, 102(2), pp.359-365.7. Janatunaim, R.Z., Hamid, R.M., Christy, G.P., Purwestri, Y.A. and Tunjung, W.A.S., 2015. Identification of BSA B1 bacteria and its potency of purified cellulase to hydrolyze <i>Chlorella zofingiensis</i>. Indonesian Journal of Biotechnology, 20(1), pp.77-87.8. Janatunaim, R., Wijaya, C., Ridha Azizah, A., Ramadhani, E., Priyambada, F. and Purwestri, Y.A., 2015. Characterization of cellulase in the cellulolytic bacteria of termites (order: Isoptera) as composting accelerator agensia. In Hokkaido: The



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12th Hokkaido Indonesian Student Association
Scientific Meeting (HISAS 12).[In Bahasa
Indonesia].
