THE MODULE HANDBOOK
DOCTOR BIOLOGY STUDY PROGRAM
FACULTY OF BIOLOGY

SELECTED TOPIC FOR DISSERTATIONS

Microalgae Engineering

Course code	BIDB203113
Course level	Doctoral Program
Semester/ term	Odd/even
Course coordinator	Dr. Eko Agus Suyono,M.App.Sc
Lecture(s)	Dr. Eko Agus Suyono,M.App.Sc
Language	Indonesian/English
Classification within the Curriculum	Compulsory
Teaching format/ class hours per week during the semester	This course is planned to have 14 teaching weeks and 2 weeks of examination.
Workload	90 hours
Credits	2-0 credits / 3.6 ECTS
Requirements	Receiving approval from the Supervisory Team.
Program Learning Outcome	CPL 1.1. Upon completing this program, the graduates demonstrate an attitude of being able to contribute to improving the quality of life in society, nation and state, and the progress of civilization based on Pancasila CPL 1.2. Upon completing this program, the graduates demonstrate an attitude of being able to demonstrate honesty, responsibility, self-confidence, emotional maturity, ethics, and awareness of being a lifelong learner CPL 1.3. Upon completing this program, the graduates demonstrate an attitude of being able to internalize academic values, norms and ethics. CPL 3.4. After completing this program, the graduates will be able to communicate research results through reputable media and scientific publications to the academic community and/or directly to the wider community CPL 3.5. After completing this program, the graduates will be able to demonstrate academic leadership and increase independent learning capacity
Course Learning Outcome	BIDB203113.1 By the end of this course, students will be able to discover or develop new theories, concepts, or scientific ideas in the field of algae engineering

	BIDB203113.2 By the end of this course, students are able to contribute to the development and application of biology through scientific research based on scientific principles and ethics, using interdisciplinary, multidisciplinary, or transdisciplinary approaches to solve problems in the field of algae engineering. BIDB203113.3 By the end of this course, students will be able to manage and formulate valid research data in the field of algal engineering with full academic integrity and a strong commitment to anti-plagiarism.
Course Description	This course covers specialized topics related to dissertation research in the field of microalgae engineering. It includes discussions on microalgae diversity, habitats and distribution, nutrition and cultivation media, sampling and isolation techniques, laboratory-, pilot-, and mass-scale cultivation methods, harvesting and cryopreservation techniques, as well as biorefinery and bioprospecting approaches.
Assessments	The assessment for Selected Topic for Dissertations (Ecology) is based on three components, with the respective criteria and weights: • Structured Assignment/Task (30%) • Mid-term Exam (30%) • Final-term Exam (30%) • Presentation (10%)
Study Media and Literature	**Main:** 1. Andersen, R.A. 2005. Algal Culturing Technique. Elsevier Academic Press. UK. 2. Suyono, et al. 2024.The Effect of Various Photoperiodic Conditions and Zn2+ Concentrations on Growth Rate and Metabolite Content in Euglena sp. Journal of Tropical Life Science, Vol. 14, No. 2, 237 – 252 http://dx.doi.org/10.11594/jtls.14.02.04 3. Suyono, et al. 2024. Metabolite Compounds of Euglena sp. on Mass Cultivation System under MgCl2 and CaCl2 Salt Stress. International Journal on Advanced Science, Engineering and Information Technology, vol. 14, no. 3, pp. 1057-63, doi:10.18517/ijaseit.14.3.19820. **Additional** 1. Tia Erfiantia , Istini Nurafifaha , Brilian Ryan Sadewob, Budi Setiadi Daryono, Eko Agus Suyonoa, and Arief Budiman. 2024. Comparison of CO2 absorption via terrestrial plants and

microalgae: A review. Asia Pacific Journal of Moleculer Biology and Biotechnology. Vol. 32 (2) : 15-26
2. Erik Lawijaya, Dwi Umi Siswanti and Eko Agus Suyono. 2023. Optimisation of Bioflocculation Using Anabaena sp. and Navicula sp. for Harvesting of Glagah Microalgae Consortium. Pertanika Journal of Tropcal Agriculture Science. 46 (4): 1083 - 1096