THE MODULE HANDBOOK
DOCTOR BIOLOGICAL SCIENCES STUDY PROGRAM
FACULTY OF BIOLOGY

SELECTED TOPIC FOR DISSERTATIONS

Plant and Animal Breeding

Course code	BIDB203002
Course level	Doctoral Program
Semester/ term	Odd/even
Course coordinator	Prof. Dr. Budi Setiadi Daryono, M.Agr.Sc.
Lecture(s)	Prof. Dr. Budi Setiadi Daryono, M.Agr.Sc. Prof. Tety Hartatik, S.Pt., Ph.D. Dr. Aprilia Sufi Subiastuti, S.Si.
Language	Indonesian/English
Classification within the Curriculum	Compulsory Specialization Courses
Teaching format/ class hours per week during the semester	This course is planned to have 14 teaching weeks and 2 weeks of examination.
Workload	1,125 hours/day 5 days/week 5,625 hours/week 16 Weeks/Semester total workload : 90 hours/3,6 ECTS
Credits	3.6 ECTS
Requirements	-
Program Learning Outcome	CPL 2.1.Upon completing this program, the graduates demonstrate an understanding of of the scientific philosophy of biology which is related in depth to structure, function, diversity, reproduction, evolution and engineering of biological systems. CPL 2.2. After attending this program, graduates demonstrate an understanding of substantial and leading theory in the field of biology/biological resources in order to support education for sustainable development CPL 3.1. After completing this program, the graduates will be able to discover or develop new scientific theories/concepts/ideas in biology
Course Learning Outcome	BIDB243023.1 By the end of this course, students will be able to demonstrate comprehensive understanding of biochemical signal transduction pathways including receptors, signaling cascades, and cellular

	responses as a basis for explaining molecular mechanisms of organismal adaptation to biotic and abiotic environmental factors. BIDB243023.2 By the end of this course, Students will be able to integrate fundamental knowledge of biochemical signaling pathways to support the development and advancement of the life sciences. BIDB243023.3 By the end of this course, Students will be able to understand and critically interpret scientific data from journal articles related to biochemical signaling mechanisms underlying adaptation in animals, plants, and microorganisms. BIDB243023.4 By the end of this course, students will be able to use a range of scientific literature to analyze and evaluate issues related to biochemical signaling pathways as mechanisms of adaptation in living organisms. BIDB243023.5. By the end of this course, students will be able to communicate scientific work related to biochemical signaling pathways as mechanisms of organismal adaptation effectively, both in written and oral formats, supported by visual presentations
Course Description	This course aims to explore cellular communication involving signal perception by cellular receptors, signal transduction, and cellular responses that enable organisms (animals, plants, and microorganisms) to adapt to environmental changes. Natural phenomena related to the ability of living organisms to adapt to both biotic and abiotic environments are studied through a molecular approach. The course includes an understanding of fundamental strategies, capacities, and mechanisms of adaptation, with emphasis on the diversity of adaptive patterns and processes mediated by complex biomolecular networks.
Assessments	The assessment for Selected Topic for Dissertations (Biochemical Signaling Systems) is based on three main components, with the respective criteria and weights: A. Participatory Activity (10%) • Participation (10%) B. Project (40%) • Presentation (25%) • Article (10%) C. Kognitif (50%) • Stuctured Assignment/Task (5%) • Quizz (5%) • Mid-term Exam (20%) • Final-term Exam (20%)

Study Media and Literature	**Main** 1. Berg,J.M., Tymochka, J.L. and L.Stryer, 7th, pdf, W.H. Freeman & Co. 2. Buchanan,B.B.; Gruissem,W. and R.l. Jones, (2001), Biochemistry and Molecular Biology of Plants, 3rd ed. , American Society of Plant Physiologist, Maryland USA 3. Edwards, C ed. (1990), Microbiology of Extreme Environment, Open university Press, Milton Keynes 4. Hochachka, P. and G.N. Somero (1984), Biochemical Adaptation,W.B.Saunders, Princeton University Press, Princeton 5. Hochachka, P. and G.N. Somero (2002), Biochemical adaptation: Mechanism and process physiological evolution. Oxford University Press. 6. Lehninger,A.L.;Nelson, D.l. & M.M.Cox, (2018) Principles of Biochemistry, 4th ed., (pdf) **Additional** 1. Anik Hidayah, Rizka Rohmatin Nisak, Febri Adi Susanto, Tri Rini Nuringtyas, Nobutoshi Yamaguchi, Yekti Asih Purwestri. 2022. Seed Halopriming Improves Salinity Tolerance of Some Rice Cultivars During Seedling Stage. Botanical Studies 63:24 https://doi.org/10.1186/s40529-022-00354-9 2. Alfino Sebastian, Ilham Cahyo Nugroho, Herdin Surya Dwi Putra, Febri Adi Susanto, Putri Wijayanti, Nobutoshi Yamaguchi, Tri Rini Nuringtyas, Yekti Asih Purwestri. 2022. Identification and characterization of drought-tolerant local pigmented rice from Indonesia. Physiol Mol Biol Plants 28(5):1061–1075 https://doi.org/10.1007/s12298022-01185-5