UNIVERSITAS BRAWIJAYA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
DEPARTMENT OF BIOLOGY
GRADUATE STUDY PROGRAM IN BIOLOGY

FOURTEEN DAYS SUMMER COURSE LEARNING PLANS

SUBJECT COURSE	WEIGHT (credits)	Date Drafting
Ecology and Tropical Biodiversity: Harmony in Nature from East Java Integrating Indigenous Wisdom and Field Ecology for Sustainable Tropical Ecosystems Conservation	3 credits	February 4, 2024

AUTHORIZATION	Plans Developer Lecturer	Coordinator	Head of Study Program
	Signature Prof. Dr. Catur Retnaningdyah	Viky Vidayanti, M.Si	Mufidah Afiyanti, Ph.D

Courses Learning Outcome (CLO)	CLO 1	Understand the principle of ecological concepts in a way theoretical and application
	CLO 2	Understand the methodology to hold biodiversity assessment in tropical ecosystems (terrestrial and aquatics) by organizing research to explore important information and or produce an innovative idea and its applications in the perspective of bioconservation
	CLO 3	Have the skills to observe ecological phenomena in the lab and field using standard laboratory equipment/instruments Under international methodology standards with notice of bioethics and safety
	CLO 4	Able to complete the task well independently or in a group related to ecological and assessment biodiversity analysis techniques to overcome problem environment
	CLO 5	Have the skills and capacity to search, read, create a resume, share and discuss information related to ecology in individual or in a team
Description Brief Summer Course	This course explains and discusses the scope and characteristics of Ecology, starting from the Population to the Ecosystem level of organization, interactions between biotic and abiotic factors, food chains and webs, and application of ecological concepts to ecosystem management and solving the environmental problems	
Learning Materials / Basics Discussion	1) Lecture contract and introduction: Scope, objectives, teaching strategies & evaluation. Some concepts of ecology, environmental abiotic factors, and the impact of human activities on environmental abiotic factors 2) Population Ecology: Characteristics of populations, growth models, population density estimation, population distribution, habitat, niche, and bioindicators, intra and inter-population interactions, population regulation and stability 4) Community concept and change of community: Definition of the community, characteristics and structure of communities, biodiversity assessments, kinds of changes in the community, succession mechanisms 5) Terrestrial and aquatic ecosystems and their services. Assessment of ecosystem health using ecosystem service indicators. 7) Animal behavior, territoriality, and *home range:* Behavioral responses and adaptations of organisms to the environment. *Home range* and territoriality. 9) Agroecosystems management and biological control: food and web chains in natural and artificial ecosystems. Predation, parasitism, parasitoidism, and biological control. 10) Application of ecological concepts to ecosystem management and role of indigenous knowledge in solving the environmental problem	

References	**Main**	
	1) Odum, EP & Barrett, GW 2017. Fundamentals of Ecology. 5th Ed. Thomson Brooks/Cole Learning, Australia 2) Molles, MC & Sher, AA 2019. Ecology: Concepts and Applications, 8th Ed. McGraw-Hill Education, Boston. 3) Krebs, CJ 2008. Ecology: The Experimental Analysis of Distribution and Abundance. 6th Ed. Pearson Publish.	
	Supporter	
	1) Riisgard , HU 2017. General Ecology: Outline of contemporary ecology for university students, 1st edition, bookboon.com	
Instructional Media	**Device Soft:**	**Device Hard :**
	Microsoft Office (Words, PowerPoint, Excel), Zoom, Google Meet, GCR	Laptop, LCD
Team Teaching	1) Prof.Dr. Catur Retnaningdyah, M.Sc. 2) Prof. Amin Setyo leksono, phD. 3) Prof. Luchman Hakim 4) Viky Vidayanti , M.Sc 5) Dr. Turhadi 6) Mufidah Afiyanti, PhD	

The assessment component to assess the summer course final score

Assessment Component	Quiz	Presentation Theoretical Understanding	Practical Posttest	Practical Report	Presentation of results practicum	Final Take home test
Weight (%)	10	20	15	15	25	15

SCHEDULE OF FOURTEEN DAYS SUMMER COURSE LEARNING PLANS

LOCATION OF COURSES: IN THE LABORATORY AND OR FIELD AS WELL AS GCR

Day of	TOPIC
1	• Lecture Contract: Scope, objectives, teaching strategies & evaluation. • the scope and characteristics of Ecology • Some concepts of ecology, environmental abiotic factors • The impact of human activities on environmental abiotic factors
2	Population Ecology: Characteristics of populations, growth models, population density estimation, population distribution, habitat, niche, and bioindicators, intra and inter-population interactions, population regulation and stability
3	Community concept and change of community: Definition of the community, characteristics and structure of communities, biodiversity assessments, kinds of changes in the community, succession mechanisms
4	Animal behavior, territoriality, and home range: Behavioral responses and adaptations of organisms to the environment. Home range and territoriality
5	Agroecosystems management and biological control: food and web chains in natural and artificial ecosystems. Predation, parasitism, parasitoids, and biological control
6	Role of indigenous knowledge in solving the environmental problem
7	Plant and vertebrate diversity assessment
8	Analyzing, interpreting data, and making a report on plant and vertebrate diversity
9	• Terrestrial invertebrate diversity assessment in agroecosystem • Aquatic animal diversity assessment
10	Analyzing, interpreting data, and making a report on invertebrates' diversity and determining the role of invertebrates in the management of agroecosystems as pest biological control
11	Analyzing, interpreting data, and making a report on aquatic diversity and its role as a bioindicator of water quality or water ecosystem health
12	Assessment of traditional ecological knowledge held by Indigenous communities
13	Determining the role of indigenous practices in sustainable resource management and conservation (making report)
14	Preparing PPT for final presentation
15	Oral presentation: sharing good practices among groups
16	Competency test (final take home test)