



University of Gadjah Mada

Faculty of Forestry

Study Program of Doctor in Forestry Science

Module Handbook

Name (Code)	: Quantitative Ecology (KTDK22805)									
ECTS Type Status	: 7.5 Class lecture Elective									
Semester OfL:OnL Ratio LMS	: 2 60:40 elok.ugm.ac.id									
Pre-Requisite	: -									
Description of content	: This course raises how to quantitatively describe patterns and relationships between ecosystem components between living things and their environment. The quantitative approach is based on statistical and mathematical rules.									
Course Outcomes and PLO mandated	Finishing this course, student will be able to identify the natural patterns of spatial distribution of individuals due to seed dispersal, mosaic of environmental factors and species association (CO1/PLO4), to select the vegetation sampling techniques based on measuring plots, non-measuring plots and relief (CO2/PLO3), to differentiate various community classification models, ordination model construction, and ordination model validity testing techniques (CO3/PLO3), to distinguish various agglomeration techniques in cluster analysis, the use of complete linkage clustering and the use of discriminant analysis (CO4/PLO3), and formulate one form of decision-making model with multiple criteria simultaneously, the technique of measuring parameters of qualitative or even quantitative parameters (CO5/PLO7).									
Lecturer(s)	1. Prof. Dr. Erny Poedjirahajoe, MP 2. Prof. Dr. Djoko Marsono									
Workload	: Total workload per semester is for 14 weeks, with weekly activities: 2*(50' lectures, 60' structured activities, 60' independent study), and 2 mid-exam and final exam weeks.									
Learning Method	: Class Lecture and Discussion									
Student Learning Experience	: Actively discuss the class material and research cases, structured assignment, group work, quiz, material reflection, review of literature and problem in forestry sectors									
Mapping CO-syllabus	CO	Syllabus	Learning form				Meeting s			
	1	1. Quantitatively describe patterns and relationships between ecosystem components 2. Spatial Distribution Patterns 3. Diameter distribution pattern	Class lecture and discussion				3			
	2	4. Vegetation Sampling Techniques and How to place measuring plots and relief in hypothetical areas 5. Quiz and assignment 6. How to assess the accuracy of a sampling technique	Class lecture, discussion, assignment				3			
	3	7. Community classification 8. Community Coefficient Cluster Model Classification 9. Ordination Model 10. How to find the relationship of ordination models with environmental factors	Class lecture, discussion				4			
	4	11. Cluster Analysis, Single Linkage Clustering 12. Cluster Analysis, Complete Linkage Clustering dan Discriminant analysis	Class lecture, discussion, presentation				2			
	5	13. Analytical Hierarchy Process 14. Techniques for measuring qualitative and quantitative parameters	Class lecture, discussion, presentation				2			
Assessment method	Base of Evaluation		Component of Evaluation		CO1	CO2	CO3	CO4	CO 5	Total (%)
	Participative activity		Assignment and quiz				√	√	√	35
	Cognitive & Psychomotoric		Mid exam		√	√	√			25
	Case Study result		Final exam/ presentation				√	√	√	40
References	1. Ludwig, J.A. and Reynolds, J.F. (1988) Statistical Ecology: A Primer on Methods and Computing. Wiley-Interscience Pub., New York. 2. Mueller-Dombois, D. and Ellenberg, H. (1974) Aims and Methods of Vegetation Ecology. John Wiley and Sons, New York. 3. Newton, A (2007). Forest Ecology and Conservation. A Handbook of Techniques. Oxford University									

