



Universitas Gadjah Mada  
 Faculty of Agriculture  
 Agronomy Study Program

Course Syllabus

Course Code	Course Name	Credits	Semester	Course Status	Requirement
PNA 4128	Agroecology	2	5/7	Compulsory	-
Learning Outcome	1	Having the ability to show in-depth theoretical concept of science and technology, such as planting material support through plant breeding activities (conventional and biotech), plant physiology, ecology, plant management and production of annual crops and annual plants, factors that affect the quality of plant production, sustainable plant production system on postharvesting, and smart-farming including the challenge of increasing suboptimal land productivity based on Good Agriculture Practices (GAP) approach, particularly in suboptimal land.			
	2	Having the ability to evaluate the theoretical concept for problem solving skill to an area of interest in agronomy/plant breeding based on experimental method and technology approach.			
	3	Having the ability to design and implement agricultural business including food crop production, industrial plantation, or horticultural sector from assembling new cultivars through breeding activities to cultivating plants considering several aspects of ecological environment, economic, and social through conventional system, organic-farming, and smart-farming based on Good Agricultural Practices (GAP) approach.			
Course Description	This course studies the meaning of agroecosystems, structure and functions, interactions in agroecosystems, agroecosystem analysis, agroecosystem zoning and it's development				
Course Content	<ol style="list-style-type: none"> <li>1. Introduction, the history of agriculture (past, present, future) and the concept of agroecology in agriculture. Agricultural Wastes and Its Applications in Plant-Soil Systems</li> <li>2. The structure and flow of resources in an agroecosystem and its interactions, and the input-output relationships in an agroecosystem.</li> <li>3. The agroecological approaches in sustainable cropping system, the integrated farming system, and agroforestry system.</li> <li>4. The concepts of high external input for agriculture (HEIA), low external input for agriculture (LEIA), and low external input for sustainable agriculture (LEISA).</li> <li>5. The concepts of the management of biodiversity in the planting system and agroecological approaches to increase food security, independence, security, and sovereignty</li> <li>6. Land use and evaluation</li> </ol>				

Reference	<p><i>1. Atangana, A., Khasa, D. Tropical Agroforestry, Springer, New York. , Chang, S., Degrande, A. 2014.</i></p> <p><i>2. Buck, L.E., Lassoie, J.P., Fernandes, E.C.M. 1999. Agroforestry in Sustainable Agriculture. CRC Press, New York.</i></p> <p><i>3. Cox, G.W., Atkins, M.D. 1979. Agricultural Ecology: An Analysis of World Food Production Systems. Freeman and Co, San Francisco, US</i></p>
Lecturer	<p>Ir. Sri Muhartini, M.S.</p> <p>Ir. Budiastuti Kurniasih, M.Sc., Ph.D</p> <p>Taufan Alam, S.P., M.Sc.</p> <p>Kartika Restu Susilo, S.P., M.Sc</p>