



Subject Module  
 Department of Agrotechnology  
 Faculty of Agriculture  
 University of Islam Malang

## Module Handbook

<b>Module Title</b>	Agroecosystem Management
<b>Module Level, if available</b>	Undergraduate Study Program of Agrotechnology
<b>Subject Code</b>	MKP 60609
<b>Headings, if available</b>	-
<b>Subject (MK)</b>	Agroecosystem Management
<b>Semester</b>	7
<b>Course Coordinator</b>	Anita Qur'ania, SP., M.Ling
<b>Teaching Team</b>	-
<b>Language of instruction</b>	Indonesian language/English
<b>Linkages with the Curriculum</b>	Study Program : Agrotechnology Specialization: Agrotechnology Type: <u>Compulsory</u> /elective
<b>Learning Methods and Duration</b>	<ol style="list-style-type: none"> <li>1. Lecture: 100 minutes/meeting (14 meetings)</li> <li>2. Research Based Learning through field practicum: 170 minutes/meeting (8 meetings)</li> <li>3. Structured Assignments/individual and group Assignments presentation</li> </ol>
<b>Student Study Load</b>	<ol style="list-style-type: none"> <li>1. Lecture: 100 minutes/meeting (14 meetings)</li> <li>2. Practicum: 170 minutes/meeting (8 meetings)</li> <li>3. Structured Assignments/quiz/group presentation</li> <li>4. Attendance: 75% of total attendance</li> </ol>
<b>Credit Weight</b>	3 credits or 5.1 ECTS
<b>Requirements for Passing the Course</b>	<ul style="list-style-type: none"> <li>• Attendance &gt;75%</li> <li>• The final score of all the components of the learning evaluation &gt;44</li> </ul> <p>The final score component:</p> <ul style="list-style-type: none"> <li>• 20% Midterm Exam</li> <li>• 20% Final Exam</li> <li>• 30% Practicum</li> <li>• 20% Structured Assignments (individual and group)</li> <li>• 10% Presence</li> </ul>
<b>Prerequisite Courses</b>	Sustainable Agriculture
<b>Learning Outcomes</b>	<p>The expected learning outcomes are:</p> <ol style="list-style-type: none"> <li>1. Have a creative and innovative thinking attitude in their work in accordance with professional ethics in agriculture field (ILO 1)</li> <li>2. Have good and deep knowledge in the field of basic agricultural science that supports Agrotechnology (ILO 3)</li> <li>3. Able to apply agricultural practices based on Good Agricultural Practices (ILO 8)</li> </ol>

	4. Able to design enterprise opportunities in the field of plant production (ILO 10)
<b>Learning Content</b>	<p>After completing this course students are able to:</p> <ol style="list-style-type: none"> <li>1. Gaining a thorough understanding of the science and technology of agroecosystem management based on sustainable agriculture</li> <li>2. Able to use information and data analysis to solve problems in agroecosystem management based on sustainable farming</li> <li>3. Able to implement effective and efficient agroecosystem management as good agricultural practices based on sustainable agriculture</li> <li>4. Recommend the best management practices in crop production systems to consider aspects of ecology</li> </ol> <p>The topics include:</p> <ol style="list-style-type: none"> <li><b>1. Introduction</b> <ul style="list-style-type: none"> <li>• Definition of agroecosystem management</li> <li>• differences between agroecosystems and natural ecosystems</li> <li>• problems that occur in agroecosystems in Indonesia</li> </ul> </li> <li><b>2. The environmental services</b> <ul style="list-style-type: none"> <li>• Definition of environmental services</li> <li>• Plant biodiversity includes a variety of environmental services.</li> <li>• Biodiversity benefits in agroecosystem landscapes</li> </ul> </li> <li><b>3. Agroforestry and interactions between agroecosystems</b> <ul style="list-style-type: none"> <li>• Definition of Agroforestry, Integrated Farming System, and Organic farming</li> <li>• Interaction of light, nutrient and cycle</li> <li>• Biodiversity management of agroforestry</li> <li>• The positive and negative effects of multistory systems</li> </ul> </li> <li><b>4. Agroforestry's functions and roles in terms of biophysical and environmental aspects</b> <ul style="list-style-type: none"> <li>• Role of agroforestry on soil physical qualities</li> <li>• The role of agroforestry in reducing greenhouse gases and maintaining carbon stocks, reducing the danger of erosion, suppressing pests and plant diseases, maintaining microclimate stability, and suppressing weed populations</li> </ul> </li> <li><b>5. Agroforestry's functions and roles in terms of socioeconomic aspects</b> <ul style="list-style-type: none"> <li>• Socio-economic aspects of agroforestry at the regional level</li> <li>• Agroforestry and the creation of jobs</li> </ul> </li> <li><b>6. Criteria and indicators for plant cultivation aspects at the scale of agroecosystem area</b> <ul style="list-style-type: none"> <li>• crop growth patterns,</li> <li>• plant biodiversity,</li> <li>• cropping patterns</li> </ul> </li> <li><b>7. Criteria and indicators for plant protection aspects at the scale of agroecosystem area</b></li> </ol>

	<ul style="list-style-type: none"> <li>• agroecosystem management in pest control</li> <li>• population dynamics of microflora and mesofauna in relation to pest and disease management</li> </ul> <p><b>8. Criteria and indicators for soil aspects at the scale of agroecosystem area</b></p> <ul style="list-style-type: none"> <li>• Characteristics of Sustainable Soil</li> <li>• Life Soil Principle as an important component in Sustainable Soil Management</li> <li>• Role and function of soil organisms</li> </ul> <p><b>9. Agroecosystems Management of dry land, wetlands and critical land</b></p> <ul style="list-style-type: none"> <li>• Definition and characteristics of dry land</li> <li>• potential and constraints of dry land use</li> <li>• efforts in dry land management</li> </ul> <p><b>10. Agroecosystems Management of wet and critical land</b></p> <ul style="list-style-type: none"> <li>• Definition and characteristics of wet and critical land</li> <li>• potential and constraints of wet and critical land use</li> <li>• efforts in wet and critical land management</li> </ul> <p><b>11. Agroecosystem sustainability analysis using multidimensional scaling application/ MDS</b></p> <ul style="list-style-type: none"> <li>• Definition of MDS</li> <li>• MDS Development in Indonesia</li> <li>• Steps of data input on MDS application</li> </ul> <p><b>12. Analysis of agroecosystem sustainability indicators</b> Analysis of the success of agroecosystem management using MDS</p> <p><b>13. Case studies on agroecosystem management based on sustainable agriculture</b> Case studies presentation of several types of agroecosystem management, including:</p> <ul style="list-style-type: none"> <li>- forest,</li> <li>- hilly land farming (plantation),</li> <li>- hilly land farming (horticulture),</li> <li>- hilly land farming (food)</li> </ul> <p><b>14. Case studies on agroecosystem management based on sustainable agriculture (part 2)</b> Case studies presentation of several types of agroecosystem management (part 2), including:</p> <ul style="list-style-type: none"> <li>- agroforestry,</li> <li>- sloping land farming (plantation),</li> <li>- sloping land farming (horticulture),</li> <li>- sloping land farming (food)</li> </ul>
<b>Test Terms and Forms</b>	<p>Examination requirements: A minimum of 75 % attendance to attend the final exam</p> <p>Forms of examination: Essay</p>
<b>Learning Media</b>	<p>Projector and screen, Zoom application, Google Classroom, , WA Group, Practical guide book</p>

**References**

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