



BRAWIJAYA UNIVERSITY

FACULTY OF AGRICULTURE

DEPARTMENT OF PLANT PESTS AND DISEASES / MASTER OF AGRICULTURAL ENTOMOLOGY STUDY PROGRAM

SEMESTER COURSES PLAN

| COURSES | CODE | CLUSTERS OF COURSES | CREDIT | SEMESTER | Date of Preparation |
|--|--|---|---------------------------|-----------------|--|
| Insect Ecology | PTH6101 | Agricultural Entomology | 2 2,34 ECTS | Odd | 8 June 2021 |
| AUTHORIZATION | Course Developer Lecturer | | Course Coordinator | | Head of Study Program |
| Department of Plant Pests and Diseases | Dr. Ir. Gatot Mudjiono, MS. Dr. Ir. Retno Dyah Puspitarini, MS. | | Name Signature | | Akhmad Rizali, SP, M.Si, Ph.D Signature |
| Learning Outcomes | ILO STUDY PROGRAM | | | | |
| | S1 | Able to work together and have social sensitivity and high concern for the community and the environment. | | | |
| | P1 | Mastering concepts, theories and methods in the field of agricultural entomology | | | |

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| | K1 | Have skills in developing innovations and applications that are tested for problem solving in society in the field of agricultural entomology in an inter/multidisciplinary manner within the framework of sustainable agriculture. |
| | CLO | |
| | 1 | Students develop knowledge about the scope of population ecology, understanding autecology, acquisition, resource allocation, biogeography, and community ecology |
| | 2 | Students are able to develop knowledge about the structure and dynamics of communities as well as the structure and function of ecosystems |
| | 3 | Students are able to develop knowledge about herbivorous insects, pollination and seed dispersal, decomposition and pedogenesis |
| | 4 | Students are able to develop knowledge about insects as process regulators in ecosystems and environmental services provided by insects and how to conserve them |
| Brief Description of Course | This course is aimed at increasing and developing knowledge about autecology, population ecology, community structure and dynamics, herbivorous insects, pollination and seed dispersal, decomposition, environmental services provided by insects, an insect conservation. | |
| Learning Material / Subject | <ol style="list-style-type: none"> 1) Introduction (Coverage of insect ecology ranging from autecology to community ecology) 2) Autecology: The individual ecology of insects 3) Resource acquisition and allocation 4) Population Ecology 5) Biogeography 6) Community Ecology 7) Community structure and dynamics 8) Structure and function of the ecosystem 9) Herbivorous insects 10) Pollination and seed dispersal | |

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| | 11) Decomposition and pedogenesis 12) Insects as regulators of processes in ecosystems 13) Environmental services provided by insects 14) Insect conservation | | | | | | | | |
| Relationship between CLO and ILO | | S1 | P1 | P2 | P3 | U1 | U2 | K1 | |
| | CLO1 | 0.5 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| | CLO2 | 0.25 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.25 | |
| | CLO3 | 0.0 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 | |
| | CLO4 | 0.0 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 | |
| Book | Main | | | | | | | | |
| | | 1) Schowalter TD. 2022. Insect Ecology: An Ecosystem Approach. 5th Edition. 2) Price PW, Denno RF, Eubanks MD, Finke DL, Kaplan I. 2011. Insect Ecology: Behavior, Populations and Communities. | | | | | | | |
| | Supporting References | 1) Kalshoven. 1981. The Pest of Crops in Indonesia. Revised by P.A. Van der Laan. PT. Ikhtiar Baru-Van Hoeve Jakarta 2) Prabowo H, Rahardjo BT, Mudjiono G, Rizali A. 2021. Impact of habitat manipulation on the diversity and abundance of beneficial and pest arthropods in sugarcane ratoon. Biodiversitas 22: 4002-4010. 3) Zuhran M, Puspitarini RD, Mudjiono G. 2021. Pengaruh pengelolaan agroekosistem terhadap kelimpahan kutu loncat jeruk <i>Diaphorina citri</i> Kuwayama (Hemiptera: Liviidae). Jurnal Entomologi Indonesia 18(2): 102 | | | | | | | |
| Learning Media | Software: | | | | | | Hardware: | | |
| | | Gmeet, Zoom, Powerpoint | | | | | Computer, LCD | | |
| Team Teaching | Dr. Ir. Retno Dyah Puspitarini, MS | | | | | | | | |

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| | Dr. Ir. Gatot Mudjiono |
| Required Courses | 1) None |

| Week to - | Sub-CLO (as expected final capability) | Indicator | Criteria & Forms of Assessment | Learning Methods (Lectures / Assignments / other forms of learning) | Time (Duration) | Learning Materials [References] | Proportion (%) |
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| 1 | Students are able to develop thoughts about the definition and scope of course material which includes understanding and scope of material in insect ecology | The ability to master learning materials systematically, and follow learning activities and explain insect ecology | Criteria: The ability of students to understand insect ecology Form of Assessment: the ability to respond and | Discussion | 100 minutes | Introduction (Coverage of insect ecology ranging from autecology to community ecology) Book: | 5 % |

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| | | | argue in the system | | | | |
| 2 | Students are able to gain knowledge about the individual ecological characteristics of insects | Ability to respond to learning materials, participate in learning activities and skills to understand the ecology of individual insects and carry out tasks | Criteria: Student ability in exploring individual insect ecology Assessment form: Quizzes and assignments | Discussion | 100 minutes Self-study (2x60 minutes) | Autecology: The individual ecology of insects | 5 % |
| 3 | Students are able to gain knowledge about the characteristics of resource acquisition and allocation by insects | Ability to respond to learning materials, participate in learning activities, acquisition and allocation of resources by insects | Criteria: The ability of students to understand the acquisition and allocation of resources by insects Form of assessment: | Discussion | 100 minutes Self-study (2x60 minutes): | Resource acquisition and allocation | 5 % |

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| | | | Quizzes and assignments | | | | |
| 4 | Students are able to gain knowledge about insect population ecology | Ability to respond to learning materials, participate in learning activities and ecological skills of insect populations and carry out tasks | <p>Criteria:</p> <p>The ability of students to understand the ecology of insect populations</p> <p>Form of assessment:</p> <p>Quizzes and assignments</p> | Discussion | <p>100 minutes</p> <p>Self-study (2x60 minutes):</p> | Population Ecology | 5 % |
| 5 | Students are able to gain knowledge about biogeography | Ability to respond to learning materials, participate in insect biogeography learning activities and carry out tasks | <p>Criteria:</p> <p>Student ability in understanding insect biogeography</p> | Discussion | <p>100 minutes</p> <p>Self-study (2x60 minutes):</p> | Community ecology | 5 % |

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| | | | Form of assessment: Quizzes and assignments | | | | |
| 6 | Students are able to gain knowledge about community ecology | Ability to respond to learning materials, participate in community ecology learning activities and carry out tasks | Criteria: The ability of students to understand community ecology Form of assessment: Quizzes and assignments | Discussion | 100 minutes Self-study (2x60 minutes) | Community ecology | 5 % |
| 7 | Students are able to gain knowledge about the characteristics, structure and dynamics of the community | Ability to master learning materials, participate in learning activities about community structure and dynamics | Criteria: The ability of students to understand the characteristics, structure and dynamics of the community | Discussion | 100 minutes Self-study (2x60 minutes) | Community structure and dynamics | 5 % |

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| | | | Form of assessment: Quizzes and assignments | | | | |
| 8 | Mid-term Exam | | | | | | |
| 9 | Students are able to gain knowledge about the characteristics, structure and function of ecosystems | Ability to respond to learning materials, participate in learning activities about ecosystem structure and function and carry out tasks | Criteria: Able to understand about characteristics, structure and ecosystem Form of assessment: Quizzes and assignments | Discussion | 100 minutes + 120 minutes Practicum (2x60 minutes) | Structure and function of the ecosystem | 5 % |
| 10 | Students are able to gain knowledge about herbivorous insects | Ability to respond to learning materials, participate in learning activities and skills to identify | Criteria: Able to gain about herbivorous insects | Diskusi | 100 minutes + 120 minutes | Herbivorous insects | 5 % |

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| | | herbivorous insects and carry out tasks | Form of assessment: Quizzes and assignments | | Practicum (2x60 minutes) | | |
| 11 | Students are able to gain knowledge about pollination and seed dispersal | The ability to master learning materials, participate in learning activities about pollination and seed dispersal | Criteria: Able to gain about pollination and seed dispersal Form of assessment: Quizzes and assignments | Discussion | 100 minutes + 120 minutes Practicum (2x60 minutes) | Pollination and seed dispersal | 5 % |
| 12 | Students are able to gain knowledge about decomposition and pedogenesis | The ability to master learning materials, participate in learning activities about decomposition and pedogenesis | Criteria: Able to study decomposition and pedogenesis Form of assessment: | Face to face, discussion, | 100 minutes + 120 minutes Praktikum (2x60 minutes) | Decomposition and pedogenesis | 5 % |

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| | | | Quizzes and assignments | | | | |
| 13 | Students are able to gain knowledge about the characteristics and role of insects as regulators of processes in ecosystems | The ability to master learning materials, follow learning activities about insects as regulators of processes in the ecosystem | Criteria: Able to understand about the role of insects as regulators of processes in ecosystems Form of assessment: Quizzes and assignments | Face to face, discussion, | 100 minutes + 120 minutes Practicum (2x60 minutes) | Insects as regulators of processes in ecosystems | |
| 14 | Students are able to gain knowledge about environmental services provided by insects | The ability to master learning materials, follow learning activities about environmental services provided by insects | Criteria: Able to understand about environmental services provided by insects | Face to face, Discussion, | 100 minutes + 120 minutes Practicum (2x60 minutes) | Environmental services provided by insects | 5 % |

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| | | | Form of assessment: Quizzes and assignments | | | | |
| 15 | Students are able to gain knowledge about insect conservation | The ability to master learning materials, participate in learning activities about insect conservation behavior | Criteria: Able to study insect conservation Form of assessment: Quizzes and assignments | Discussion | 100 minutes + 120 minutes Practicum (2x60 minutes) | Insect conservation | 5 % |
| 16 | Final Exam | | | | | | |