Important Pest of Agricultural Plants

Obligatory module or Selective module	**Important Pest of Agricultural Plants**	**PNH 4233**
Semester	Odd Semester	
Module level	Undergraduate	
Module Coordinator		
Lecturer(s)	Dr. Suputa, S.P., M.P. Dr. Ir. Witjaksono, M.Sc.	
Type of Module	1 hour 40 minutes lecture Laboratory works	
Status	E (elective courses)	
Exam	Written	
Number of participants		
Credit Points:	2/1 (5.02 ECTS)	
Description	The content of this course is an introduction and understanding of important pests in Indonesia. Understanding of the main pests and occasionally pests. Understanding of differences in pest organisms caused by insects, mites, nematodes and vertebrates. Understanding of the bio-taxonomy, classification, and bio-ecology of the main plant pest species in Indonesia. An understanding of the economic value of each pest species. An understanding of the symptoms of an attack that is a marker of the presence of pest species. The introduction of pest organisms and the specific symptoms of damage caused by these pests will be presented and discussed in detail and thoroughly: pests on Paddy, Maize, Soybean, Tea, Cacao, Cashew, Coconut, Sugarcane, Cabbage, Potato, Tomato, Chili, Mango, Durian, Rambutans, Salak, Guava, Apple Rose, Citrus, Apple, Soursop, Sweetsop, Medicinal and Ornamental Plants.	
Academic goal (competency)	**Course:** By the end of the course, the students will be able to: 1. recognize and know the important agricultural crop pests in Indonesia, 2. know the distribution patterns of important pests in Indonesia, 3. know the hosts range of each pest species on various agricultural commodities, 4. know the life cycle of major insect pests of different crops, 5. describe and explain the typical symptoms of pest attacks in every part of the plant. **Practicals:** By the end of the practicum activities, students will be able to: 1. identify insect pests and non-insect pests,	

	2. diagnose various organism pests based on symptoms of damage. 3. mastering how to make correct pest voucher specimens including herbarium which is a symptom of a pest attack.

Learning outcomes:

P1 The graduates master the identification of important pests in agriculture.

P2 The graduates are competent in understanding the bioecology of pests.

Contents:

Course

1. Introduction of economic importance of pest in agriculture.

2-3. Major pests of paddy-distribution-marks of identification-biology-nature and symptoms of damage of brown plant hopper and stem borer (striped rice stem borer, purple stem borer and yellow stem borer) and major vertebrate pests of rice-distribution-marks of identification-biology-nature and symptoms of damage of rat and bird. Occasionally insect pests of rice-distribution-marks of identification-biology-nature and symptoms of damage of rice bug, grasshopper and other pests (grubs, green paddy leafhopper etc.).

4-5. Major pests of maize-distribution-marks of identification-biology-nature and symptoms of damage of fall army worm, corn earworm, Asian corn borer, striped rice stem borer, purple stem borer, rat and bird. Occasionally insect pests of maize-distribution-marks of identification-biology-nature and symptoms of damage of grasshopper and other pests (grubs, corn planthopper etc.).

6. Student group presentation: Major pests of soybean-distribution-marks of identification-biology-nature and symptoms of damage of cotton leaf worm, pulse pod borer moth, soya bean leaf beetle, bean fly, leaf folder, golden twin-spot moth.).

7. Major pests of tea, cacao, cashew-distribution-marks of identification-biology-nature and symptoms of damage of smaller green leafhopper, false spider mite, cocoa pod borer and tea bug. Occasionally insect pests of tea and cacao-distribution-marks of identification-biology-nature and symptoms of damage of bagworm and other pests (tea mosquito bug, tea tortrix, slug, bagworm, coffee carpenter, brown twig beetle or brown coffee twig beetle, leaf eater, plantain squirrel, Malayan field rat.).

8. Major pests of coconut and sugarcane-distribution-marks of identification-biology-nature and symptoms of damage of coconut rhinoceros beetle, Asian palm weevil, Coconut sexava treehopper, coconut leaf beetle, coconut moth, leaf moth, nettle caterpillars, bagworm, spotted borer, sugarcane top borer, plantain squirrel, and Malayan field rat.

9. Major pests of cabbage, potato, tomato, and chili-distribution-marks of identification-biology-nature and symptoms of damage of diamondback moth and large cabbage moth caterpillar, black cutworm, pea leaf miner, golden twin-spot moth, serpentine leaf miner and potato tuber moth, mole cricket, golden nematodes, potato grub, green peach aphid, vegetables thrips, tobacco whitefly, tobacco cutworm, and Southern root-knot nematode.

10. Major pests of mango, durian, rambutans-distribution-marks of identification-biology-nature and symptoms of damage of oriental fruit fly and the mango fruit borer, mango seed weevil, the nettle caterpillar, fruit borer, stem borer, twig borer, plantain squirrel, Javan thick-thumbed bat, Malayan field rat.

11. Major pests of salak, guava, apple rose-distribution-marks of identification-biology-nature and symptoms of damage of oriental fruit fly, mealybug, bagworm, thionia,

leptocetrus, treehopper, leaf-rolling beetles, leaf-footed bugs, plantain squirrel, Malayan field rat.

12. Major pests of citrus, apple, soursop and sweetsop-distribution-marks of identification-biology-nature and symptoms of damage of citrus fruit borer, fruit flies, citrus rind borer, Asian citrus psyllid, citrus leaf miner, orthern citrus root weevil, chequered swallowtail, great Mormon, common jay, tailed jay, sweetsop fruit borer, San Jose scale, citrus rust mite.
13. Major pests of medicinal plants and ornamental plants-distribution-marks of identification-biology-nature and symptoms of damage of rhizome borer, leaf eater, flower crown eater, mealybug, scale insect, mite, thrips.
14. Unique and uncommon pest-brief morphology and systematics infesting agricultural crops and their symptom and damage.

Practicals:

1. Typical symptoms of damage caused by various phytophagous organisms. Collection and preservation pest specimen vouchers and their symptoms. Special theme: maintaining unique pests and observing their eating abilities (group = two students), observation data submitted at the end of the semester.
2. Identification of major pests of paddy, maize, soybean and their damage symptoms.
3. Identification of insect pests of tea, cacao, cashew, coconut, sugarcane and their damage symptoms.
4. Identification of insect pests of cabbage, potato, tomato, chili, mango, durian, rambutans and their damage symptoms.
6. Identification of insect pests of snake fruit, guava, apple rose, citrus, apple, soursop, sweetsop and their damage symptoms.
7. Identification of insect pests of medicinal plants and ornamental plants and also uncommon pest and their symptom and damage.

Note: Submission of well-maintained pest specimens and part of crops with symptoms of a pest attack during the final practical examination is compulsory.

Which previous course required?

- PNH 2104 Agricultural Zoology
- PNH 2105 Agricultural Entomology

Literature:

- Kalshoven 1981. The Pest of Crops in Indonesia. PT Ichtiar Baru – Van Hoeve. Jakarta
- Scientific journal and NPPO report

Materials provided:

- PowerPoint
- Handout
- Online system via Elisa UGM

Requirements for exam: 75% Attendance

Teaching method(s)	This lecture is offered 50% through class meetings and 50% online systems, the online system with 25% using Webex (scheduled) and 25% using websites (Elisa UGM or flexible schedule). Students are expected to be active in the learning. Laboratory components: Laboratory sessions will be scheduled periodically at class meeting

	times (two hours per week), and attendance is mandatory. Laboratory activities will involve live insects, preserved insects (specimens), and herbarium (symptom of pest attack). Field activities are exploration, collection, preservation, and identification of pests of several commodities as annual and perennial crops.
Workload (hrs). Theoretical of course: 14 times Lab work: 7 times Field work: 7 times Home studies: 10 times	