

**SCHOOL OF BIOLOGICAL SCIENCES
UNIVERSITI SAINS MALAYSIA**

BGT 314: INSECT PEST MANAGEMENT AND CONTROL

Lecturer: Professor Dr Lee Chow Yang (50%), Dr Hamdan Ahmad (50%).
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No. units: 4.
Contact time: 3 hours of lectures/week, and 3 hours of lab every 2 weeks.

Course synopsis

This course exposes student the various factors affecting insect population in its environment, and various control methods against insects such as cultural, physical, biological, chemical, genetical, plant resistance and quarantine methods. In the chemical control section, aspects of insecticide mode of actions, toxicity, physiology, resistance, pollution and biomagnification will be discussed. The use of semiochemicals and insect growth regulators (IGRs) for the control of insect pests will also be dealt in this course. Other aspects that will be discussed include integration of control methods, and their suitabilities from the perspectives of economics, environment and safety to non-target organisms.

Course evaluation

Final examination	60%
Tests	20%
Laboratory reports	10%
IPM case studies/presentation	10%

Lecture topics

Prof Lee's section

- **The Principle of Insect Ecology**
- **Surveillance and sampling**
- **Economic decision levels for pest populations**
- **Pest Management Theory** (What is a pest, History of Pest Control, Concept of pest management, Development of a pest management program).
- **Chemical control** (Classes of insecticides, Insecticide toxicology, Insecticide mode of actions, Insecticide formulations, Dilutions/calculations, Insecticide resistance, Pollution and biomagnifications and insect growth regulators (IGRs)).
- **Probit analysis**

Dr Hamdan's section

- Biological control
- Biopesticides and semiochemicals

- Cultural control
- Physical control
- Plant resistance
- Genetical control
- Quarantine

Laboratory classes

Population estimations.

Comparison of insecticide efficacy of different groups.

Serial dilution and larvicide testing

Biological control of mosquito – a laboratory evaluation.

Reference list

Burgess HD & Hussey NW. 1971. Microbial control of insects and mites. Academic Press, London.

Chavasse DC & Yap HH (eds). 1997. Chemical methods for the control of vectors and pests of public health importance. WHO/CTD/WHOPES/97.2. World Health Organization, Geneva.

Coats JR (ed). 1982. Insecticide mode of action. Academic Press, London.

Dent D. 1991. Insect Pest Management. CAB International, Oxon.

Ismail S. 1988. Racun makhluk perosak. Penerbit UKM, Kuala Lumpur.

Lee CY, Z Jaal, HH Yap & NL Chong (eds). 2003. Urban Pest Control – A Malaysian perspective. Second Edition. Universiti Sains Malaysia. 130 pp.

Lee CY. 2007. Perspectives in Urban Insect Pest Management in Malaysia. Universiti Sains Malaysia. 104 pp.

Matsumura F. 1985. Toxicology of insecticides. Second edition. Plenum Press, New York.

Matthews GA. 1982. Pesticide application methods. Longman Group, London.

Metcalf RL & Luckman WH. 1975. Introduction to insect pest management. John Wiley & Son, London.

Mitchel FR (ed). 1981. Management of insect pests with semiochemicals. Concept and practice. Plenum Press, New York.

Pedigo LP & ME Rice. 2008. Entomology and pest management. Sixth Edition. Pearson, Prentice Hall, Columbus, Ohio.

Ware GW. 1981. Complete guide to pest control – with or without chemicals. Thomson Publication, California.
