

INSTITUTE	FACULTY OF AGRICULTURE
PROGRAM	BACHELOR OF SCIENCE (Hons.) AGRICULTURE
SEMESTER	4
COURSE TITLE	PRINCIPLES OF INTEGRATED PEST MANAGEMENT
COURSE CODE	16AS0403
COURSE CREDITS	2

Objective:

- 1 To manage agricultural pests effectively, economically and safely.
- 2 To develop various strategies for the control of agricultural pests.

Course Outcomes: After completion of this course, student will be able to:

- 1 Students will be able to know about concepts, tools and principles of integrated pest management.
- 2 Students will develop understanding of the role of IPM in sustainable agriculture as the future of modern plant protection in pest control strategy.
- 3 Students will be able to analyze agricultural ecosystem, level of pest damage, Pest risk and timing of different pest control tactics to manage the pest population effectively.
- 4 Students will be able to evaluate Economic Injury Level and Economic Threshold Level for timely application of control measures for pest management.
- 5 Students will be able to develop skills about methods of detection and diagnosis of insect pest and application of different pest control techniques.

Pre-requisite of course:To aware students about different IPM techniques.

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
1	0	2	50	30	20	25	25

Contents : Unit	Topics	Contact Hours
1	1 Insect Ecology: Introduction, Environment and its components. Effect of abiotic factors–temperature, moisture, humidity, rainfall, light, atmospheric pressure and air currents. Effect of biotic factors – food competition, natural and environmental resistance. Concepts of Balance of life in nature, biotic potential and environmental resistance and causes for outbreak of pests in agro-ecosystem	4

Contents : Unit	Topics	Contact Hours
2	2 Categories of insect pests, IPM: Introduction, history, importance, concepts, principles and tools of IPM [Host plant resistance, cultural, mechanical, physical, legislative, biological (parasites, predators & transgenic plant, pathogens such as bacteria, fungi and viruses) and chemical control (Importance, hazards and limitations)] Classification of insecticides, toxicity of insecticides and formulations of insecticides, Insecticides Act 1968-Important provisions. Application techniques of spray fluids. Phytotoxicity of insecticides. Symptoms of poisoning, first aid and antidotes. Introduction to conventional pesticides for the insect pest's management. Implementation and impact of IPM (IPM module for Insect pests. Safety issues in pesticide uses. Political, social and legal implication of IPM. Case histories of important IPM programmes	7
3	3 Recent methods of pest control, repellents, antifeedants, hormones, attractants, gamma radiation, transgenic, nano technology as well as genetic control. Practices, scope and limitations of IPM.	2
4	4 Economic importance of insect pests. Methods of detection and diagnosis of insect pest. Importance of Economic threshold level. Ecological management of crop environment. Pest surveillance and pest forecasting.	3
Total Hours		16

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	1 Methods of diagnosis and detection of various insect pests	2
2	2 Methods of insect pests sampling	2
3	3 Assessment of crop yield losses	2
4	4 Calculations based on economics of IPM (ICBR/ NICBR/ CBR)	2
5	5 Identification of biocontrol agents, Crop (agro-ecosystem) dynamics of a selected insect pests	2
6	6 Plan & assess preventive strategies (IPM module) and decision making	2
7	7 Crop monitoring attacked by insect pests	2

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
8	8 Awareness campaign at farmers' fields	2
9	9 Pesticide formulations and calculation of spray fluid and doses	2
Total Hours		18

Textbook :

- 1 NA, NA, NA, NA

References:

- 1 Integrated Pest Management: Concepts and Approaches, Integrated Pest Management: Concepts and Approaches, G. S. Dhaliwal, and R. Arora, Kalyani Publishers, 2002
- 2 Agricultural Entomology and Pest Control, Agricultural Entomology and Pest Control, S. Pradhan, ICAR Publication, 1983
- 3 Insect Pest Management, Insect Pest Management, Larry P. Pedigo, Pearson Publication, 2008

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember / Knowledge	Understand	Apply	Analyze	Evaluate	Higher order Thinking
25.00	25.00	20.00	10.00	10.00	10.00

Instructional Method:

- 1 The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board may also use any of tools such as demonstration, role play, quiz, brain storming, MOOCs etc.
- 2 The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.
- 3 Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.
- 4 Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory.