Syllabus for B.Sc. (Hons) Agriculture Year – III (Sem. V)

Subject Code: 16AS1505

Subject Short Name: Ag. Ento. 5.2

Subject Name: Pest Management in Crops and Stored Grains

Objective:

1. To provide information on nature of damage and eco-biology of important agricultural
2. and horticultural pests
3. To provide information regarding integrated pest management strategies for agricultural and horticultural crops

Credits Earned: 3 Credits (2+1)

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

- Recognize the pest and natural enemies on various crops and understand typical damage symptoms caused by pests and their management strategies.
- Prepare sustainable pest management strategies based on pest prediction model.
- Demonstrate survey and surveillance techniques for insect pest prediction.
- Calculate the accurate dose of pesticides and their appliances and estimate the yield losses caused by major insect pests.

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE (E)	Mid Sem (M)	Progressive Assessment (PA)	Viva (V)	Term work (TW)	
2	0	2	3	40	20	20	10	10	100

Theory Content:

Unit	Topics	Contact Hours
1	General description on nature and type of damage by different arthropod pests;	**1**
2	Scientific name, order, family, host range, distribution, biology and bionomics Nature of damage and management of major insect pests of various field crops	**3**
3	Scientific name, order, family, host range, distribution, biology and bionomics Nature of damage and management of major insect pests of various vegetable crops	**3**
4	Scientific name, order, family, host range, distribution, biology and bionomics Nature of damage and management of major insect pests of various fruit crops	**3**
5	Scientific name, order, family, host range, distribution, biology and bionomics Nature of damage and management of major insect pests of various plantation crops	**3**
6	Scientific name, order, family, host range, distribution, biology and bionomics Nature of damage and management of major insect pests of various ornamental crops	**2**
7	Scientific name, order, family, host range, distribution, biology and bionomics Nature of damage and management of major insect pests of various spices and condiments.	**2**
8	Structural entomology and important household pests, their nature of damage and management. Factors affecting loss of stored grains. Insect pests, mites, rodents, birds and microorganisms associated with stored grains and their management.	**2**
9	Storage structures and methods of grain storage and fundamental principles of stored grains management. Management of non-insect pest of mites, snails and slugs,	**2**

10	Concept of IPM, Practices, scope and limitations of IPM.	**1**
11	Classification of insecticides, toxicity of insecticides and formulations of insecticide	**1**
12	Biorational pesticides including insect repellents, antifeedants, Use of drones and AI in pest management	**1**
	Total	**24**

Practical Content:

Unit	**Topics**	**Contact Hours**
1	Field visit, identification of major insect pests and their damage symptoms.	**2**
2	Collection and preservation of major insect pests	**2**
3	Collection of damage samples, their identification and herbarium preparation.	**2**
4	Methods of monitoring of pest incidence in situ.	**2**
5	Management strategies of insect pests of different crops.	**2**
6	Study on structural entomology and household pests.	**2**
7	Storage structures and methods of grain storage.	**2**
8	Spraying techniques for selected field and horticultural crops.	**2**
9	Vertebrate pest management	**2**
10	Mass multiplication of NPV and entomopathogenic nematodes.	**2**
	Total	**20**

Reference Books:

- A Textbook of Insect Pest and Disease Management, 2021. Somnath Sen, and Mohd. Sameer, S. Kataria & Sons publish.
- Agricultural Pests of India and South east Asia, A.S. Athwal, Kalyani Publishers.
- A Textbook of Applied Entomology, K.P. Srivastava and G. S. Dhaliwal, Kalyani Publish.
- Essentials of Pest Management: Key Information on Pest Identification and its Management, 2022. Prakash Rambhat Thalya and Ravi Chandra
- Integrated pest Management Concept and Approaches- G.S. Dhaliwal and Ramesh Arora
- Pest Management: Methods, Applications and Challenges, Tarique Hassan Askary, Agriculture, Agriculture Issues and policies, Books, Nova, Pest Control, Science and Technology,2022.

Suggested Theory distribution:

The suggested theory distribution as per Bloom's taxonomy is as per 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	Understand	Apply	Analyze	Evaluate	Create
25%	25%	20%	10%	10%	10%

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 white 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 class-rooms.
3. Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory/ field.
4. Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory.