DISCIPLINE SPECIFIC ELECTIVE COURSE: **ALS ZOO DSE 12**

PATHOGENS OF INSECTS IN PEST MANAGEMENT

Credits distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practicals / Practice		
Pathogens of Insects in Pest Management **ALS ZOO DSE 12**	**4**	**2**	**Nil**	**2**	**Appeared in Sem-VII**	NA

Learning Objectives:

The learning objectives of this course are as follows:

- to provide knowledge about the basic pathogens infecting insects.
- To understand Epizootiology, symptomatology and etiology of diseases caused by various agents.
- To promote use of environmentally friendly pest Control

Learning Outcomes:

By studying this course, students will be able to:

- Describe the nature and diversity of pathogens infecting insects, including viruses, bacteria, fungi, protozoa, and nematodes.
- Identify and classify different insect pathogens based on their biology, morphology, and mode of action.
- Assess the potential of entomopathogens as biological control agents in sustainable pest management.
- Advocate the use of insect pathogens as alternatives to chemical pesticides in promoting environmentally friendly pest control:

Theory **30 h**

Unit 1: Introduction to Insect Pathogens **6 h**

History of insect pathology, Classification of Insect Pathogens, infection of insects by bacteria, fungi, viruses, protozoa, rickettsia , spiroplasma and nematodes.

Unit 2: Etiology of Diseases and Defense systems **10 h**

Epizootiology, symptomatology and etiology of diseases caused by the Insect Pathogens and the controlling factors. Defense mechanisms in insects against pathogens.

Unit 3: Control of Pests **10 h**

Exploitation of Bacteria (Bacillus thuringiensis) and Viruses (Nuclear Polyhedrosis Viruses) for control of pests: Management and mass production techniques.

Unit 4: Sustainable Pest Control **4 h**

Safety and registration of microbial pesticides. Role of insect pathogens in Sustainable Pest Control.

Practicals **60 h**

(Laboratory periods: 15 classes of 4 hours each)

1. Equipments used in insect laboratory.
2. Identification of different groups of insect pathogens and symptoms of infection.
3. To study symptomatology and etiology of diseases caused by bacteria, fungi, viruses, protozoa, rickettsia, spiroplasma and nematodes with the help of photographs.
4. Isolation, culturing and testing pathogenicity of different groups of pathogens.
5. Testing Koch's postulates. Estimation of pathogen load.
6. Extraction of pathogens from live organisms and soil.

Essential/recommended readings

1. Boucias DG & Pendland JC. 1998. Principles of Insect Pathology. Kluwer Academic Publisher, Norwel.
2. Nitesh Kumar Maru, Ashwani Kumar, and Sunil Zachariah. Insect pathology: Text Book and Practicals Manual**.** Scientific Publisher, New Delhi.
3. Steinhaus EA. 1984. Principles of Insect Pathology. Academic Press, London.

Suggested readings

1. Yoshinori Tanada and Harry K. Kaya. **Insect Pathology** Academic Press.London.
2. Burges HD & Hussey NW. (Eds). 1971. Microbial Control of Insects and Mites. Academic Press, London.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.