

## **Course Outcomes of B.Sc. (Ag) II sem. (Entomology)**

### **Course outcomes of Introductory Entomology (Paper Code: D294)**

- Describe general introduction to Phylum-Arthropoda, its various classes and their distinguishing characters with particular reference to class insecta.
- Discuss about insect morphology; body wall-structure, composition and functions.
- Clarify structure and functions of insect head.
- Explain modifications of antennae.
- Describe in detail the biting and chewing, piercing and sucking, sponging, siphoning, chewing, and lapping type mouthparts of insect.
- Elucidate structure and functions of insect thorax.
- Describe modifications of legs and wings, wing coupling apparatus and wing venation.
- Clarify segments and appendages of insect abdomen.
- Elucidate insect anatomy with digestive, excretory, reproductive, circulatory, respiratory and nervous systems of grass hopper.
- Discuss about sense organs; structure and functions of ocelli, compound eye and Johnston's organ.
- Elucidate the post-embryonic development including ecdysis, instars, types of larvae and pupae.
- Explain different types of metamorphosis in insects.
- Describe insect classification of order Orthoptera (Acrididae).
- Describe insect classification of order Isoptera (Termitidae).
- Discuss about insect classification of order Hemiptera (Coreidae, Pyrrhocoridae, Lophopidae, Aleurodidae, Jassidae, aphidae, Coccidae, Lacciferidae.)
- Describe insect classification of order Coleoptera (Dermestidae, Coccinellidae, Bruchidae, Chrysomelidae; Curculionidae, Tenebrionidae, Scarabaeidae).
- Explain insect classification of order Lepidoptera (Gelechiidae, Pyralidae, Noctuidae, Cymidae, Papilionidae, Arctiidae and Bombycidae).
- Describe insect classification of order Hymenoptera (Tenthredinidae and Apidae).
- Describe insect classification of order Diptera (Trypetidae).

## **Course Outcomes of B.Sc. (Ag) IV sem. (Entomology)**

### **Course outcomes of Economic Entomology (Paper Code: D-495)**

- Describe in detail the economic importance, nature and extent of damage, life history and management of the major insect pests of Paddy (*Leptocorisavariconis*, *Hieroglyphus Spp.*, *Nilaparvatalugens*, *Nephotetix, spp.*, *Mythimna separate*).
- Discuss about major insect pests of Jowar and Maize (*Chilopartellus*, *Atherigonavarascoccate*).
- Elucidate the major insect pests of Sugarcane (*Tryporyza novella*, *Emmaloceradepressella*, *Pyriallaprepussila*, *Aleurolobusbarodensis*).
- Describe in detail major insect pests of Cotton (*Pectinophoragossypiella*, *Earias Spp.*, *Syleptaderogala*, *Dysdercus Spp.*, *Bomisiatabci*, *Amrascablouttula*).

- Explain insect pests of Oilseeds (*Lipaphiserysimi*, *Athaliaproxima*, *Bagrada*, *Cruciferarun*, *Dasyneuralini*).
- Discuss about major insect pests of Pulses (*Helicoverpaarmigera*, *Agrotis Spp.*, *EtiellaZinckenella*, *Melanagromyza obtuse*, *Phytomyzeatriornis*).
- Elucidate major insect pests of Fruit crops (*DrosichaMangiferae*, *idioscopus Spp.*, *PapilioDemeclius*, *Diaphorinacitri*, *Phyllocnistiscitrelia*, *Otheris Spp.*, *Virechoisisocrates*, *Eriosomalanigerum*, *Quadraspidotuspermincousus*).
- Explain insect pests of Vegetable (*Leucinodesorbonalis*, *Epitachnaviontioclopunctate*, *Raphidoplafaveicollis*, *DacusCucurbitae*, *PlutellaXylostella*).
- Describe the pests of Stored Grains (*Sitophilus oryzae*, *Trogoderma granarium*, *Tribullumcastaneum*, *sitotrogacerealella*, *callsobruchuschinensis*).
- Discuss about Polyphagus pests (*Odontotermesabesus*, *Schistocerca gregaria*, *Holotirichiaconsanquinceaspilosoma oblique*, *spodopteralitura*, *AmsectaSpp*).
- Explain elementary knowledge of apiculture and lac culture.

### **Course Outcomes of B.Sc. (Ag) Vsem. (Entomology)**

#### **Course outcomes of Crop pests and Integrated Pest Management (Paper Code: D-594)**

- Discuss about basic principles of pest out- breaks and their economic status.
- Describe in details the cultural, physical, mechanical, legal, biological and chemical methods of insect control.
- Explain the use of insecticides, repellents, antifeedants, attractants, chemosterilants, pheromones and insect growth regulators.
- Elucidate basic concept of integrated pest management.
- Describe the elementary knowledge of plant protection equipments.
- Discuss about Plant protection organization at the state and national level.
- Explain general account of non-insect pests with particular reference to rodents, naeatodes, mites and mollusks.
- Elucidate insect vectors transmitting plant diseases.

### **B.Sc. (Ag) VIII sem. (Entomology)**

#### **Paper: Agriculture Entomology (RAWE) (Paper Code: D-891 (k))**

Rural agricultural work experience (RAWE) is a **practical training programme**. (Where students associated to farmers, Agro- industrial units and agricultural research station for a period of 3-4 months).

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**Course Outcome**

**1. Fundamentals of Plant Pathology and (AG-204) (3+1)**

At the end of the semester the students will:

CO 1: Learn about the basics of plant pathology.

CO 2: Get knowledge about the scope and objective of plant diseases and its development.

CO 3: Learn about various types of plant pathogens.

CO4: Gain knowledge about the general characters, reproduction of plant pathogen e.g., fungi, Bacteria and viruses.

**2. Principles of Integrated Disease Management (AG-307) (2+1)**

At the end of the semester the students will:

CO 1: Understand about the categories of diseases.

CO 2: Learn about the importance, concept and principles of Integrated Diseases Management (IDM).

CO 3: Learn how to diagnose plant disease.

CO 4: Know about the Calculation and dynamics of economic injury level and importance of Economic threshold level.

CO5: Learn about Methods of control: Host plant resistance, cultural, mechanical, physical, legislative, biological and chemical control.

CO6: Get knowledge about survey surveillance and forecasting of diseases.

**3. Diseases of Field and Horticultural Crops & their Management-I (AG-506) (2+1)**

At the end of the semester the students will:

CO 1: Have a thorough understanding Symptoms, etiology, disease cycle and management of major diseases of following crops:

**Field Crops:** Rice: Blast, Brown spot, Bacterial Blight. Sheath blight, false smut, Khaira and tungro; Maize: stalk rots, downy mildew.; Sorghum: smuts; Bajra: downy mildew and ergot; Groundnut: early and leaf spots; etc.

**Horticultural Crops:** Guava: wilt and anthracnose; Banana: Panama wilt, sigatoka and bunchy top etc.

**Cruciferous vegetable:** Alternaria leaf spot and black rot; Brinjal: phomopsis blight, sclerotinia and little leaf; Tomato: early and late blight, leaf curl and mosaic; Okra: Yellow Vein Mosaic; Beans: Anthracnose and bacterial blight etc.

#### **4. Diseases of Field and Horticultural Crops & their Management-II (AG-605) (2+1)**

At the end of the semester the students will:

CO 1: Learn about Symptoms. etiology. disease cycle and management of major diseases of following crops:

**Field Crops:** Wheat: Rusts, loose smut, karnal bunt, powdery mildew. Alternaria blight and ear cockle; Sugarcane: red rot, smut, wilt and grassy shoot etc.

**Horticultural Crops:** Mango: Anthracnose, malformation, powdery mildew; Citrus: canker and gummosis; Grape vine: Downy mildew powdery mildew; Apple: scab and Fire blight; Potato: Early and late blight, Common scab. powdery scab. black scurf and potato mosaic.

#### **5. Rural Agricultural Work Experience (RAWE) and Agro-industrial Attachment (AIA) subject related work**

At the end of the semester the students will:

CO 1: Get practical experience of the field.

CO 2: Get opportunity to have a close observation of the farmers working in the field.

CO 3: Get attached to various agro-industries and learn about their functioning.