Programme Outcomes of B.Sc. (Ag) Entomology

PO1. Students gain comprehensive knowledge on the evolutionary and ecological relationships of insects with other life forms.

PO2. Analyse complex interactions among the phylum Arthropoda, their distribution and their relationship with the environment.

PO3. Students acquire knowledge on basic concepts of insect morphology, anatomy and physiology.

PO4. Gain knowledge about classification of insects and their taxonomy keys.

PO5. Understands the distribution, life cycle and nature of damage of the pest.

PO6. Understands the integrated pest management and modern techniques of insect control.

PO7. Gain knowledge about beneficial and economic importance insects.

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

Paper title: FUNDAMENTALS OF ENTOMOLOGY-I **Paper code:** AG-203

CO1. Theory Classification of phylum Arthropoda upto classes. Relationship of class Insecta with other classes of Arthropoda.

CO2. Structure and functions of insect cuticle and moulting. Body segmentation. Structure of Head, thorax and abdomen. Structure and modifications of insect antennae, mouth parts, legs, wing venation, modifications and wing coupling apparatus. Structure of male and female genital organs.

CO3. Metamorphosis and diapausein insects. Types of larvae and pupae. Structure and functions of digestive, circulatory,excretory, respiratory, nervous, secretary (Endocrine) and reproductive systems in insects. Types of reproduction in insects. Major sensory organs like simple and compound eyes and chemorcceptors.

CO4. Taxonomy- importance, history and development and binomialnomenclature. Definitions of Biotype, Sub-species, Species, Genus, Family and Order.

CO5. Classification of class Insecta upto Orders, basic groups of present day insects with special emphasis to orders and families of Agricultural importance like Orthoptera: Acrididae. Dictyoptera: Mantidae, Odonata; Isoptera: Termitidae; Thysanoptera: Thripidae; Hemiptera: Pentatomidae, Coreidae, Cimicidae, Pyrrhocoridae. Lygaeidae, Cicadellidae, Delphacidae, Aphididae, Coccidae, Lophophidae, Aleurodidae, Pseudococcidae; Neuroptera: Chrysopidae; Lepidoptera: Pieridae, Papiloinidae, Noctuidae, Sphingidae, Pyralidae, Gelechiidae, Arctiidae, Saturnidae, Bombycidae; Coleoptera: Coccinellidae, Chrysomelidae, Cerambycidae, Curculionidaee, Bruchidae, Scarabaeidae; Hymenoptera: Tenthridinidae, Apidae. Trichogrammatidae, Ichneumonidae, Braconidae, Chalcididae; Diptera: Cecidomyiidae, Tachinidae, Agromyziidae, Culicidae, Muscidae, Tephritidae.

Course Outcomes of B.Sc. (Ag) III sem. (Entomology)

Paper title: FUNDAMENTALS OF ENTOMOLOGY-II **Paper code:** AG-312

CO1. 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.

CO2. Categories of pests. Concept of IPM, Practices, scope and limitations of IPM. CO2. CO2. CO3. Classification of insecticides, toxicity of insecticides and formulations of insecticides.

Chemical control- importance, hazards and limitations.

CO4. Recent methods of pest control,repellents, antifeedants, hormones. attractants, gamma radiation. Insecticides Act 1968- Important provisions.

CO5. Application techniques of spray fluids. Symptoms of poisoning, first aidand antidotes. Survey, surveillance and forecasting of insect pests. Safety issues of pesticides uses.

Course Outcomes of B.Sc. (Ag) V sem. (Entomology)

Paper title: PESTS OF FIELD CROPS, STORED GRAINS AND THEIR MANAGEMENT **Paper code:** AG-503

CO1. General account on nature and type of damage by following insect pests arthropods pests. Scientific name, order, family, host range, distribution, biology and bionomics. nature of damage, and management of major pests and scientific name, order, family, host range, distribution, nature of damage and control practice other important arthropod pests(mites) of various field crops.

CO2. Factors affecting losses of stored grain and role of physical, biological, mechanical and chemical factors in deterioration of grain. Insect pests, mites, rodents, birds and microorganisms associated with stored grain and their management. Storage structure and methods of grain storage and fundamental principles of grain store management.

CO3. Paddy: *Leptocorisa varicornis, Hieroglyphus Spp., Nilaparvata lugens, Nephotetix spp.,Mythimna separata.* Sorghum and Maize: *Chilo partel1us. Atherigona variasoccata, Scirpophaga excerpatalis. Chilo infuscatelles.* Sugarcane: *Top borer, Pyrilla, Early Shoot borer and white fly*

CO4. Cotton: *Pectinaphora gossypiella. Earias Spp, Sylepta derogata, Dysdercus Spp, Bemisia- tabaci, Amrasca bigutulla bigutulla.* Oilseeds: *Lipaphis erysimi, Athalia proxima, Bagrada cruciferum, Dasyneura lini.* Pulses: *Helicoverpa armigera Agrotis Spp., Etiella zinckenella.*

CO5. Pests of Stored Grains: *Sitophilus oryzae, Trogoderma granarium, Sitotroga cerealella,Callosobruchus chinensis.* Polyphagous pests: *Odontotermes obesus, Holotrichia consanguinea, Spilosoma obliqua,Spodoptera litura.*

Course Outcomes of B.Sc. (Ag) VI sem. (Entomology)

Paper title: BENEFICIAL INSECTS and PESTS OF HORTICULTURAL CROPSAND THEIR MANAGEMENT **Paper code:** AG-608

CO1. Types of silkworm, voltinism and biology of silkworm. Mulberry cultivation, mulberry varieties, methods of harvesting and preservation of leaves. Rearing of mulberry silkworm, rearing appliances, mounting and harvesting of cocoons. Pests and diseases of silkworm, management, and methods of disinfection.

CO2. Importance of beneficial insects. bee keeping, pollinating plants and their cycle, bee biology, commercial methods of rearing, equipment used and seasonal management. Bee pasturage. bee foraging and communication. Insect pests and diseases of honey bee.

CO3. Species of lac insect, morphology, biology. host plant and lac production- Processing of lac - seed lac, button lac. shellac and lac- products. Identification of major parasitoids and predators commonly used in biological control.