St. Aloysius College (Autonomous), Jabalpur
Department of Higher Education, Govt. of M.P.

Under Graduate Syllabus for B.Sc. (Bio)

As recommended by Central board of Studies in Zoology

Class - B.Sc. III Year

(Session 2023-24)

Theory Paper

Part A Introduction			
Program: Degree	Calss : B.Sc	Year :III	Session :2023-24
Subject : Zoology			
1	Course Code	S3-ZOOL3D	
2	Course Title	Insect Taxonomy and Applied Entomology (Paper-I) Group-B	
3	Course Type (Core Course /Elective/Generic Elective/ Vocational/...)	Discipline Specific Elective (DSE)	
4	Pre-requisite (if any)	To study this course ,a student must have had the subject Zoology in Diploma.	
5	Course Learning Outcome (CLO)	On completion of this course, learners will be able to- 1 Learn about the taxonomy, Morphology and Anatomy of Insect 2 Identify the importance of insect as Beneficial and Harmful Pests of different crops, forest, medical and veterinary field with their control measures. 3 Get Self Employment in the field of Silk, Honey and Lac Production 4 Identify the nutritive value of the insects. 5 Identify ecological services of insects and its role in agriculture.	
6	Credit Value	4	
7	Total Marks	Max. Marks : 30+70	Min. Passing Marks - 35

Part B- Content of the Course

Total No. of Lectures – Tutorials – Practical (2 hour per week): L-T-P: 60

Unit	Topic	No. of Lectures
I	1. Introduction of Insect 1.1 History of Insect biology, Identifying characters and outline classification of class - Insecta upto orders. a. Diagnostic features with example of Insect orders - Isoptera, Orthoptera, Hemiptera, Coleoptera, Hymenoptera, Lepidoptera, Diptera. 2. General Morphology of an insect (Periplaneta) Antennae, Mouth parts, Legs, Wings, Genetalia. 1. General Anatomy of an insect (Periplaneta) -Digestive System, Excretory System, Nervous System and Reproductive system. 2. Ecological services of Insect.	14

14/4/23 14/4/23

	3. Role of Insect in Agriculture (Direct & Indirect)	
II	Beneficial Insects 1. Sericulture 1.1 History of Sericulture, Systematic position, Silk producing moths (mulberry and non mulberry) 1.2 Mulberry Silkworm - lifecycle of Bombyx mori 1.3 Sericulture Industry and its management. 1.4 Diseases and enemies of silkworm. 1.5 Uses of Silk and Sericulture in India. 2 Apiculture 2.1 History of Apiculture, classification and species of Honeybee. 2.2 Social organization, division of labor and lifecycle of Honeybee. 2.3 Bet keeping methods and equipments. 2.4 Diseases and enemies of Honeybee. 2.5 Products, its uses and Apiculture in India. 3 Lac Culture 3.1 History of Lac cutlure, Systematic position, structure of lac insect. 3.2 Lifecycle of lac insect and host plants. 3.3 Varieties and crops of lac. 3.4 Cultivation of lac and enemies of lac insect. 3.5 Uses of lac and Lac industry in India. 4 Edible Insects - Locust, Termite, Grasshopper, Beetles, Caterpillars and Bees. Keywords: Sericulture, Apiculture, Lac culture, Edible Insects	14
III	Important Insect pest of Crop and Forestry Classification, Lifecycle, Diseases and Control measures- 1. Crop pest 1.1 Sugarcane pest - Pyrilla perpusilla 1.2 Fruit pest - Amritodus alkensoni 1.3 Polyphagus pest - Schistocerca gregaria 2 Forest pest 2.1 Sal borer - Hoplocerambyx spinicornis 2.2 Bamboo borer - Dinoderus brevis 2.3 Common forest beetle - Sinoxylon sps. 3 Insect and Plant interaction Keywords: Crop Insect pest, Forest Insect pest.	10
IV	Pests of Medical and Veterinary Importance 1. Pests of Medical importance 1.1 Mode of transmission 1.2 Common vector insect distribution, host, characters, lifecycle, diseases and their control. a. Housefly Musca domestica b. Mosquitoes - Culex, Anopheles and Aedes 1.3 Distinguished characters of Culex, Anopheles and Aedes.	10

	2. Pests of Veterinary importance 2.1 Insect parasitism 2.2 Distribution, host, characters, lifecycle, host pest interaction, diseases and their control. a. Horsefly - Tabanus sps. b. Stable fly - Stomoxys sps. c. Cattle blood sucking louse - Linognathus sps. Keywords Pests of Medical importance, Pest of veterinary importance.	
V	1. Insect pest control 1.1 Natural control 1.2 Artificial (applied/chemical) control 1.3 Biological control 1.4 Integrated pest management. (IPM) 1.5 Equipment for insecticidal application and their maintenance. 1.6 Safety precautions by insecticides. Keywords: Insect pest control, Biological control, IPM.	12

Practical Paper

Part A Introduction			
Program: Degree	Class : B.Sc	Year :III	Session :2023-24
Subject : Zoology			

1	Course Code	S3-ZOOL3Q
2	Course Title	Applied Entomology(Paper-I) Group-B
3	Course Type (Core Course /Elective/Generic Elective/ Vocational/...)	Discipline Specific Elective (DSE)
4	Pre-requisite (if any)	To study this course ,a student must have had the subject Zoology in Diploma.
5	Course Learning Outcome (CLO)	On completion of this course, learners will be able to: 1. Identify and Comment on insects of different orders and their morphology through study of museum specimens / collection/ w.m. slides. 2 Gain knowledge of morphological parts and internal body system of insects through dissection. 3 Gather understanding of Veterinary and Medical important insect pests those harm humans and domestic animals. 4. Identify insect pests that harm Crop and Forests. 5. Practical understanding and thorough knowledge of Beneficial insects which can be cultured and also provide self employment opportunities. 6. Enhance Collaborative Learning and Communication Skills through Practical Work, Team Work, Group Discussion, Assignment and Project.
6	Credit Value	2
7	Total Marks	Max. Marks : 100 / Min. Passing Marks – 35

14/7/23 14/7/23 Reena 14/7/23

Part B- Content of the Course

Total No. of Lectures – Tutorials – Practical (2 hour per week): L-T-P: 30

Unit	Topic	No. of Lectures
I	Identification and Comments on common insects of different orders of Class-Insecta	04
II	Demonstration of Morphological parts of insect -**Grasshopper/ Cockroach)**Antennae, Mouth parts, Wings,Legs and Genetalia	04
III	Demonstration by Dissection - Internal system of Periplaneta (Cockroach)	04
IV	Techniques – a) Mounting of Morphological parts b) To calculate the Total Haemocyte Count (THC) c) To determine the Differential Haemocyte Count (DHC)	03
V	Study the Life cycle of Beneficial Insects - a) Bombyx mori b) Apis indica c) Laccifer lacca	02
VI	Identification, Characters and Control Measures of Crop and Forestry Important Pests	02
VII	Identification, Characters, Diseases and Control of Medical and Veterinary Important Pests	02
VIII	Study and Application of Collection and Insecticidal Equipment's	03
IX	Collection and Preservation Techniques of different Insects according to Orders	03
X	Physical/ Virtual Visit to Crop Field/Forest Site/ Insect Culture Site/ Veterinary Institute and Submit a Visit Report to Supervisor	03

Keywords/Tags: Insect Taxanomy, Morphology and Anatomy, Haemocyte Count, Beneficial Insects, Insect Pests

14/7/23

14/7/23