

ENTOMOLOGY

Course Code : ENT 201

Course Title : Introductory Entomology

Credit Hours : 3 (2+1) Full Marks: 75 Theory: 50 Practical: 25

OBJECTIVES

Upon the completion of this course, the students will be able to understand the fundamentals of entomology, and know the economically important insects.

I. SYLLABUS

Introduction; benefits and harms of insects; morphological features: – cuticle, head, thorax and abdomen; internal anatomy–different systems; metamorphosis and development; classification and study of economically important orders and families of insects

II. COURSE OUTLINE

A. Lecture

S.N.	Topic	No. of Lecture
1	Introduction	
1.1	Introduction–definition, scope and importance of insects and entomology, disciplines of entomology	1
1.2	Specialties of insects and the causes of success of insects over other creatures	1
1.3	Origin, evolution and position of insects in animal kingdom	1
1.4	Benefits and harms of insects: insect ledger	1
2.	External morphology	
2.1	Insect body regions-head, thorax and abdomen	1
2.2	Insect cuticle, sclerites and external processes	1
2.3	Head: Segmentation, structure, modifications	1
2.4	Insect mouth parts and their modifications	1
2.5	Insect antennae and their modifications, photoreceptors (compound and simple eyes)	1
2.6	Thorax: Segmentation, structure, legs and their modifications, wing venation, wings and their modifications	1

3.	Basic life processes and their physiology	
3.1	Internal anatomy and physiology of feeding, digestion and excretion	1
3.2	Internal anatomy and physiology of respiration and circulation	1
3.3	Basics on sense organs, nervous system and nerve impulse transmission	1
3.4	Bioluminescence and sound production in insects	1
3.5	Introduction to life cycles and life-history	1
3.6	Insect metamorphosis and development	1
4.	Insect classification and preservation	
4.1	Classification of insects: Introduction to insect orders, their characteristics and keys	1
4.2	Classification and characteristics of economically important families of insect orders – Thysanura, Odonata, Orthoptera, Dictyoptera, Isoptera	1
4.3	Classification and characteristics of economically important families of insect orders – Isoptera, Mallophaga, Siphunculata (Anoplura)	1
4.4	Classification and characteristics of economically important families of insect orders – Thysanoptera, Hemiptera (Heteroptera) and Homoptera	1
4.5	Classification and characteristics of economically important families of insect orders – Siphonaptera, Coleoptera and Lepidoptera	1
4.6	Classification and characteristics of economically important families of insect orders –Diptera and Hymenoptera	1
4.7	Focus on major entomophagous insect orders	1
4.8	Collection, killing and preservation of insects	1
5.	Miscellaneous aspects of entomology	
5.1	Sprayers: their parts and calibration; and calculation of pesticides	1
5.2	Introduction to industrial insects: honey bees, silkworms and lac insects	1
5.3	Introduction to veterinary insects	1
5.4	Insects of public health importance	1
5.5	Insects with forensic and nutritional importance	1
5.6	Recent advances, innovations and implications of entomology	1
Total		30

B. Practical

S.N.	Topic	No. of Practical
1.	Study of microscope	1
2.	Collection and preservation of insects	1
3.	External morphology of an insect	1
4.	Insect mouth parts of cockroach/grasshopper and plant bugs	1
5.	Insect mouth parts of butterflies/moths and honey bees	1
6.	Insect antennae and their modifications	1
7.	Insect legs and their modifications	1
8.	Insect wings and their modifications	1
9.	Insect dissection and study of insect systems (Digestive, Reproductive, Nervous, Circulatory and Respiratory)	1
10.	Life-cycle of honeybee, silkworms and lac insects	1
11.	Types of larvae and pupae	1
12.	Identification of important apterygote insects	1
13.	Identification of economically important exopterygote insects	1
14.	Identification of economically endopterygote insects	1
15.	Sprayers and their calibration	1
Total		15

REFERENCES

Singh, R. S. 2004. Elements of Entomology. Rastogi Publications, Meerut, India.

Pedigo, L. P. 2002. (4th ed.) Entomology and Pest Management. Prentice Hall of India Private Limited, New Delhi, India

Borer, D. J., D. M. DeLong and C. A. Tripplehorn. 1976. An Introduction to the Study of Insects. Holt. Rinehart and Winston, Inc., New York, USA.

Richards, O. W., and R. G. Davies. 1977. Imm's general t TextBook of Entomology. Vol. I and II. Chapman and Hall, London