

PROPOSED TEACHING PLAN Spring 2023
Department of Life Sciences

**Khwaja Fareed University of Engineering & Information Technology Rahim
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Teacher's Name	Dr. Muhammad Tariq Rasheed	Email ID	tariq7262@gmail.com
Course Title	Entomology	Program	BS Zoology
Course code	ZOOL-4105	Credit Hours	03

Course learning objectives
The students will learn to identify the pest crop damaging Students will understand methods of population estimation of the pest and application of different control strategies

Course Outlines:

General characteristics of insects. Relationship with other Arthropods, splitting up into different evolutionary lines, Reasons for success of the insects in diverse environments. Hard Parts: General segmentation, tagmatosis and organization. Cuticle: Detailed structure along with its biochemistry. Epidermal layer; its structure and function. Basement membrane. Colors of insects. Cuticular outgrowths and appendages sclerotization. Head: cephalization, sclerites, modifications. Antennae: Different modes of ingestion and types of mouth parts. Neck: Sclerites. Thorax: Sclerites: legs, their different modifications and functions. Wings: Origin; Different regions. Development and basal attachments, main veins and their branches (generalized insects), wing coupling. Abdomen: Secondary appendages and external genitalia, Flight; types of flight. Aerodynamics, fuels, endoskeleton; head, thorax and abdomen. Soft Parts: Muscular system; basic structure, types of muscles; muscle contraction and its energetics, comparative structure of all the systems, e.g., digestive, excretory, respiratory, incubatory, and nervous system and their physiology. Sense organs: sound and light producing organs. Nutritive requirements: Fat body, exocrine and endocrine glands including pheromones and their functions. Reproduction: Reproductive organs and different types of reproduction in insects, egg fertilization and maturation. Development: Embryology up to dorsal closure, different types of metamorphosis,

apolysis and ecdysis and the role of endocrine secretions. Ecology: Carrying capacity 'r' and k selection, Food chains, predation and competition, insect defences and adaptations, diapause insect population and community studies, insect communication.

Grading Breakup and Policy	
Attendance and Participation:	05%
Group discussion:	05%
Midterm Examination:	30%
Final Examination:	50%

Tentative Teaching Plan (Spring-2023)

Week	Topic	Remarks	Assessment method/technique
1	Course introduction, scope and importance of Entomology		Assignment 1 Quiz
2	Introduction; Phylum Arthropoda and its classification		
3	Introduction; Phylum Arthropoda and its classification		
4	General characteristics of insects		
5	Morphology of a typical insect		Assignment 2 Quiz
6	Anatomy of a typical insect		
7	Reasons for success of the insects in diverse environments.		
8	General segmentation, tagmatosis and organization. Cuticle: Detailed structure along with its biochemistry. Epidermal layer; its structure and function. Basement membrane.		
9	Colors of insects. Cuticular outgrowths and appendages sclerotization		Assignment 3 Quiz

10	Head: cephalization, sclerites, modifications. Antennae: Different modes of ingestion and types of mouth parts. Neck: Sclerites. Thorax: Sclerites: legs, their different modifications and functions. Wings: Origin; Different regions. Development and basal attachments, main veins and their branches (generalized insects)		Presentation
11	Wings: Origin; Different regions. Development and basal attachments, main veins and their branches (generalized insects). Types of wings in various insects. Wing coupling apparatus.		Assignment 4 Quiz Presentation
12	Abdomen: Secondary appendages and external genitalia		
13	Muscular system; basic structure, types of muscles; muscle contraction and its energetics.		
14	Comparative structure of all the systems, e.g., digestive, excretory, respiratory, incubatory, and nervous system and their physiology. Sense organs: sound and light producing organs.		
15	Nutritive requirements Reproduction in various insect Metamorphosis and its types		Assignment 5 Quiz Presentation
16	Insect Ecology and Communication		

Recommended Books

1. Tembhare, Db. Modern Entomology. 2002. Himalaya Publishing House. India.
2. Krebs, C. J. Ecology: the experimental analysis abundance. 5th Edition. 2000. Benjamin-Cummings Publishing Company.
3. Chapman, R.F. The insects: structure and function. 2000. Blackwell Science Inc., London.
4. Price, W. Insect ecology. 1997. John Wiley & Sons.
5. Yazdani, S.S., and Agarwal, M.L. 1997. Elements of insect ecology. Narosa Publishing House. India.
6. Wigglesworth, V. B. Insect Physiology 8th Edition. 1984. Springer Publisher.
7. RICHARDS, O. W. and DAVIES, R. G. IMM'S General Textbook of
8. Entomology. Vol.1, 10th Edition. 1977. Chapman & Hall, London,
9. Southood, T.R.E. Ecological Methods. 1978. Chapman and Hall, London.
10. Robert L. Patton. W. B. Insect Physiology. 1963. Saunders Co., Philadelphia.