

**UNIVERSITY OF NAIROBI**  
**SCHOOL OF BIOLOGICAL SCIENCES**  
**SZL 309: ARTHROPOD BIOLOGY**

**A. PRE-REQUISITES**

SZL 101: Invertebrate Zoology

**B. PURPOSE**

To give the learner a comprehensive knowledge of selected aspects of the biology of arthropods

**C. COURSE UNIT OBJECTIVES**

The objectives of this course unit are:

1. To expose learners to arthropods, their characteristic features, evolution and classification
2. To give comprehensive knowledge of the process of arthropodization
3. To learn the morphological features arthropod groups and life cycles of selected representatives of economic importance
4. To give comprehensive knowledge on postembryonic development in insect and its hormonal control
5. To learn about the ecological roles of, and services provided by, arthropods in terrestrial and soil ecosystem

**D. EXPECTED LEARNING OUTCOMES**

It is expected that by the end of the course unit the learner should be able to:

1. Discuss arthropods in general highlighting their success, characteristic features, origin and importance
2. Discuss the phylogeny and classification of arthropods
3. Describe and critically analyse the process of arthropodization
4. Describe the general morphology, life history of selected arthropods of economic importance from the major groups of arthropods:
  - Chelicerata: Ticks, mites, spiders
  - Crustaceans: Copepods, Decapods
  - Uniramia: Insecta: Mosquitoes, tsetse, sandflies, blackflies,
5. Critically evaluate the importance of arthropods
6. Demonstrate a comprehensive understanding of the ecological role of arthropods in the terrestrial ecosystem
7. Describe postembryonic development in insects

## **E. COURSE CONTENT**

General introduction to arthropods: characteristics of arthropods; importance of arthropods; Arthropodization; Arthropod phylogeny and general classification; The Chelicerate Arthropods (fossil history, characteristics, classification); Class Arachnida: The Acari – (Family Ixodidae and family Argasidae: Ticks and Mites): general classification, morphological features, lifecycles, importance and control; The Crustaceans: characteristics, general classification, morphology, lifecycle, & importance of crustaceans inhabiting freshwater and marine ecosystems; Class Copepoda (The Copepods): general classification, morphology, lifecycle, economic importance); The Uniramia: Myriapodous arthropods – class Diplopoda and Chilopoda: general morphology and ecology; Class Insecta (The Insects): importance, classification, biological supremacy, insect morphology, lifecycles); Post embryonic growth and development in insects; Arthropods and the environment: soil arthropods; arthropods as bioindicators of environmental health/quality.

## **F. TEACHING / LEARNING METHODOLOGIES**

Lectures, Power point presentations, Class and group discussion, Handouts, Charts, Images, laboratory and field practical exercises

## **G. INSTRUCTIONAL MATERIALS AND EQUIPMENT**

LCD projector and a Laptop PC, Black/white board; Relevant Laboratory equipment and protocols

## **H. COURSE ASSESSMENT**

Examination - 70%; Continuous Assessments (Exercises and Tests) - 30%; Total - 100%

**Continuous Assessment Test:** Students will do at least one sit-in CAT

**Class Presentation:** Students will be given sub-topics from the major phyla to be covered and will give a read, discuss and present to the class.

**Assignment:** Students will be given a question from the course content to evaluate and present a write-up on the same day as the class presentation.

## **I. CONTINUOUS ASSESSMENTS**

This will be distributed as follows: Sit-in CAT, 15%; Class Presentations, 10%; Assignment, 5%. **Total 30%**. Examination: 70%; Continuous Assessments: 30%; Total = 100%

## J. GRADING

<b>Letter Grades</b>	A	B	C	D	E
<b>Grading Scale</b>	70-100	60-69	50-59	40-49	0-39

## K. COURSE DURATION

45 hours (2 lectures and 1 practical (3 hrs) per week for 12 weeks.

## L. RECOMMENDED TEXT BOOKS

1. The Biology of the Arthropoda (1973). K. U. Clarke, ed., American Elsevier Pub. Co. 270 pages
2. Arthropod Relationships (1997). R.A. Forty & R. h. Thomas, Eds., Chapman & Hall. 414 pages
3. Neil Campbell (2009); *Biology*; Pearson Higher Education
4. Peter H Raven, George B Johnson, Jonathan B Losos (2005); *Biology*; Tata Mgraw Hill
5. An Introduction to the Study of Insects by Borror, D, J., Tripplehorn, C.A. and Johnson, N. F.
6. The Biology of the Arthropoda (1973). K. U. Clarke, ed., American Elsevier Pub. Co. 270 pages
7. Arthropod Relationships (1997). R.A. Forty & R. h. Thomas, Eds., Chapman & Hall. 414 pages
8. Medical & Veterinary Entomology (1995). 2<sup>nd</sup> Ed. D. S. Kettle, Ed. University Press, Cambridge
9. V B Awasthi (2007); *Introduction To General And Applied Entomology*; Scientific Publishers (India)
10. Hickman Roberts (2007); *Integrated Principle of Zoology*; M C Graw Hill USA
11. Harold Kuzman (2006); *General Textbook Of Entomology*; Appleacademics

## M. TEXT BOOKS FOR FURTHER READING

1. Hick man Roberst (2001); *Zoology (integrated Principles)*; MC Graw Hill US
2. Medical & Veterinary Entomology (1995). 2<sup>nd</sup> ed. D. S. Kettle, Ed. University Press, Cambridge

3. There is a lot of useful basic information on arthropods in the internet which you could access freely.