

STAFF PROFILE

Name: Syprine A. Otieno

Title/ Qualifications: M.Sc., Ph.D

Department: Zoological Sciences

Position: Lecturer

Area of Specialization: Physiology

Professional affiliation: Kenya DAAD Scholars' Association (KDSA), ARPPIS Scholars' Association (ASA), African Association of Insect Scientists (AAIS)

Research Interests: Biological control of pests, Reproductive Physiology of animals

Consultancies: None

Publications:

Gitau CW, Ngisong, AJ, Overholt, WA and **Otieno, S.A** (2005): Acceptance and Suitability of four Lepidopteran stemborers for the development of the pupal parasitoid, *Xanthopimpla stemmator* (Hymenoptera Ichneumonidae). *Biocontrol Science and Technology* 15(6): 585-600.

Gitau CW, Ngisong, AJ, **Otieno, S.A** and Overholt, WA (2007): Host preference of *Xanthopimpla stemmator* (Hymenoptera Ichneumonidae) and its reproductive performance on selected African Lepidopteran stemborers. *Biocontrol Science and Technology* 17(5): 499-511.

Recognitions: External Examination for Walter Sisulu University, South Africa.

Conference/Workshop Presentations: Participated in a workshop on Agricultural Research Management in Mananga Centre, Mhlume, Swaziland in October 1999.

COURSE OUTLINES

COURSE CODE AND TITLE: SZL 100 GENERAL ZOOLOGY

Required Learning Materials:

Texts:

Hickman Jr., C., Roberts, L.S. and Larson, A. (1997). Integrated Principles of Zoology. McGraw Hill, New York.

Weisshaar, A. and Bres, M. (1998). Thinking about Biology: An introductory Biology Laboratory Manual. Prentice Hall, New Jersey

Hickman, C.P.Jr. , Hickman, F.M. and Kats, L. (2001). Laboratory Studies in Integrated Zoology. 9th Ed. McGraw Hill, New York.

Rowett, H.G.Q. (1982). Guide to Dissection. John Murray, London.

Arms, K. and P.S. Camp (1995). Biology Fourth Edition. Saunders College building.

Equipment: Dissection kit

Recommended Learning Materials

Miller, S.A and Harley, J.B. (1999). Zoology. 4th Ed. McGraw Hill.

Hilderbrand, M. (1995). Analysis of Vertebrate structure. 4th Ed. John Wiley and Sons

Purves, W.K., Sadava, D., Orians, G.H. and Heller, H. C. (2004). Life: The Science of Biology. 7th Edition. Sinauer Associates Inc. Massachusetts, USA

Course Goals:

The goals of the course are to:

- ◆ To equip students with the knowledge of modern scientific methodological procedure.
- ◆ To equip students with the background knowledge to enable them fit all into any other specialized area of Zoology.
- ◆ Enable students to recognize the diversity of animal life.

Learner outcomes

At the end of the course, the student should be able to:

- ◆ Describe the structure and functions of various animals.
- ◆ Describe the habitats of various animals.
- ◆ Classify different animals.
- ◆ Discuss the evolutionary relationships between various animal groups.

Assessment

Assessment will be in the form of two written continual tests (theory) , as indicated in the course calendar. The first CAT will cover the first six topics (5th week) while the second CAT will cover work up to the 11th week. The two CATs are mandatory. Any student who does not meet this requirement will re-take the unit. Students will also compile laboratory reports, to be submitted after every practical session. The final examination will be done from 30th March to 11th April 2009 according to the Kenyatta University 2008-2009 Academic Calendar.

Format of Assessments

The CATs will consist of short answer structured questions. The final examination will be set according to the departmental format for final examinations.

Evaluation Procedure

Average of 2 CATs (theory)	30%
Final examination	70%

Total **100 marks**

Attendance and Tardiness

All students are expected to attend all classes. Practical reports will be accepted only from students present in the practical session. All students must complete all assignments and sit all announced examinations. Any occasional absence must be reported to the Dean of Students and the lecturer informed in advance.

Academic Integrity

Plagiarism, fabrication, abuse of internet, cheating and academic misconduct in all assessments and practical reports will not be tolerated. Cheating of any form in any assessment will lead to discontinuation of studies at Kenyatta University.

Course Outline and Calendar

Week	Topic	Detailed outline
Week 1	Introduction to General Zoology. Origin of life; the animal cell, origin of the universe, origin of earth	Theories of origin of life. Spontaneous generation, Cosmozoan, Supernatural, Biochemical theories. Big bang hypothesis, steady state hypothesis. Structure and functions of animal cells. The cell membrane.
Week 2	Evolution	Evolution of oxygen, energy relationships. Events in geological history in relation to the evolution of various animal groups. Adaptive radiations and extinctions during geological history. Meaning of micro- and macro-evolution.
Week 3	Resistance to diseases Classification	Innate and acquired mechanisms of protection against foreign microorganisms. Taxonomy, Ranks of taxa, taxonomic characters, identification keys, phylogeny, kingdoms of life. Kingdom Protista.
Week 4	Kingdom Animalia Phylum Porifera. The Radiate animals: Phylum Cnidaria.	Characteristics of sponges and Cnidarians. Feeding, reproduction, transport, gaseous exchange, coordination and support. Origin of sponges and Cnidarians. Classification of the phyla
Week 5	The acoelomate animals: Phylum Platyhelminthes The pseudocoelomate animals: Phylum Nematoda CAT One (Marked out of 30)	Characteristics of flatworms, classification, nutrition, reproduction and development, gas exchange and transport. Origin of flatworms. Characteristics of nematodes. Nutrition, transport, gas exchange, reproduction and development.
Week 6	The coelomate animals: Phylum Annelida	Functions of the coelom. Characteristics of the annelids. Classification of the phylum. Feeding, gas exchange, transport, support, coordination, reproduction and development.
Week 7	Phylum Mollusca	Distinguishing features of molluscs, their Classification, feeding, support, exchange, transport, reproduction and development. Origin of molluscs.
Week 8	Phylum Arthropoda	Characteristics, habitats of various arthropods, classification of the phylum. Feeding, support, gas exchange, transport, coordination, reproduction and development in arachnids, centipedes, millipedes, insects and crustaceans; Phylogeny
Week 9	Phylum Echinodermata	Characteristics and classification of the phylum.

		Distinguishing features of each class. Feeding, transport, support, coordination, reproduction and development.
	Phylum Hemichordata Phylum Chordata: Urochordates and Cephalochordates	Features of hemichordates. Relationship with the chordates. Feeding and reproduction. Diagnostic chordate features, classification. Feeding, support, transport, reproduction and development of urochordates and cephalochordates
Week 10	Subphylum: Vertebrata-The Pisces Class Amphibia	Characteristics of chordates, their classification. The Agnathans, Chondrichthyes, Osteichthyes and their distinguishing features. Support, transport, gas exchange, reproduction and development Characteristic features, classification, transport, exchange, coordination, reproduction and development. Phylogeny
Week 11	Class Reptilia and Aves	Characteristics of reptiles and birds. Feeding, respiration, support, coordination, circulation, reproduction. Adaptations. Origin of reptiles and of birds
Week 12	Class Mammalia CAT Two (Marked out of 30)	Characteristics, classification, reproduction. Evolutionary adaptations of mammals.

SZL 410: NEUROENDOCRINOLOGY

1. Introduction: The concept of Neuroendocrinology
2. Neurophysiology
 - Structure of the nervous system
 - Impulse transmission
 - Synapses
 - Neurotransmitters
 - Integrative functions of the central nervous system
3. Locomotion
 - Structure and functions of the skeletal system
 - Structure and functions of the skeletal muscles
 - Mechanisms of muscle contraction and regulation
4. Sensory reception
 - Photoreception
 - Chemoreception
 - Mechanoreception
 - Touch

CAT ONE

5. Neuroendocrine interrelationships
6. Neurosecretions
 - Invertebrate neuroendocrine system
 - Hypothalamus
7. Endocrine glands and hormonal integration
 - Pituitary gland
 - Thyroid glands
 - Parathyroids
 - The adrenals
 - The Gonads
 - Placenta
 - Pineal gland
 - The Pancrease
 - Gastrointestinal tract hormones
 - Urophysis

CAT TWO

REFERENCES

1. Burkitt, H.G., Young, B and Heath, J.W (1993). Wheater's functional Histology. A text and colour Atlas 3rd Ed.
2. Turner, C.D and Bagnara J.F. (1976) General Endocrinology 6th Ed. Saunders Co.
3. Farner, D.S. and Lederis, K (1981). Neurosecretion: Molecular, Cell.
4. Hadley, Mac E (1996) Endocrinology, 4th Ed. Prentice Hall
5. Martin, C.R. (1985). Endocrine Physiology. Oxford University Press, N.7.
6. Scharrer, E and Scharrer, B (1963) Neuroendocrinology Columbia Unw. Press
7. Schmidt, R. F. (1985) Fundamentals of Neurophysiology. 3rd Ed. Springer-Verlag.

SZL 416: PHYSIOLOGY OF WILD MAMMALS

1. **Introduction**
 - Scope
 - Significance
2. Gastrointestinal system
 - Adaptations of digestive systems
 - Comparative gastric morphology and function
 - Dentition and its importance in identification
 - Adaptive radiation of teeth
3. Respiratory systems
 - Significance of respiration
 - Structure of the respiratory system
 - Adaptations
 - Regulation of breathing

4. The cardiovascular system
 - Functions of blood
 - The heart
 - Adaptive hypertension
 - Diving mammals
 - Regulation of the cardiovascular system

5. Thermoregulation
 - Thermoregulatory taxonomy
 - Reactions of mammals to cold stress
 - Adaptive hypothermia
 - Reactions of mammals to heat stress
 - Adaptive hyperthermia

CAT ONE

6. Skeletomuscular system
 - Structure and functions of the skeletal system
 - Structure and functions of the muscular system
 - Locomotor adaptations

7. Reproduction
 - Reproduction in non-placental mammals
 - Reproduction in placental mammals
 - Estrous cycles
 - Pregnancy
 - Parturition
 - Lactation
 - Neuroendocrine interrelationships

8. Sexual behaviour
 - Courtship and mating
 - Mating strategies

9. Fertility

10. Sterility

11. Efficiency of reproduction

CAT TWO

REFERENCES

1. Herbat, J. (1972). Behavioural patterns: In "Reproduction in mammals Reproductive patterns". (Austin, C.R. and Short R.V. Eds) Cambridge University presses. London.
2. Keverne, B. K. (1984). Reproductive behaviour in "Reproduction in mammals Vo.l 4: Reproductive fitness" (Austin C. R. and short R.V. Eds) 2nd Edition Cambridge University press.
3. Gordon M.S. (1977). Animal Physiology: Principles and adaptation 3rd Edition. Macmillan Publishing Co. New York.
4. Hoar, W.S. (1983). General and comparative physiology. 3rd Edition Prentice Halls. New Jersey.
5. Schmidt-Nielsen, K. (1990). Animal Physiology: Adaptation and Environment – 4th Ed. Cambridge University Press. New York.
6. Nalbandov, A.V. (1970). Reproductive Physiology. D.B. Taraporevala Sons and Co. Ltd. Bombay.
7. Vaughan T. A. (1978). Mammalogy. 2nd Ed. Saunders Co. London.
8. Gunderson, H (1976). Mammalogy McGraw-Hill Book Co. New York
9. Yough J. Z. (1981). The life of mammals. Oxford University Press, New York.
10. Hutchinson, J.S.M. (1993). Controlling reproduction. Chapman and Hall, New York.