

# ZOH451: COMPARATIVE ANIMAL PHYSIOLOGY

Teaching Hours 10/unit

## COURSE OUTCOME

1. The teaching session is involved in making students to understand different physiological systems and their functional role in human and other animals.
2. Students are also taught about various disorders due to functional and cellular defect in different physiological pathways.
3. Importance of hormones and their functions.
4. The reproductive physiology of both invertebrates and vertebrates are discussed.
5. The complete gastrointestinal physiology is dealt in great details to make students aware of molecular and physiological aspects of gut functions and its abnormality.
6. The studies on respiratory, reproductive and osmoregulation physiology are discussed.

### UNIT I

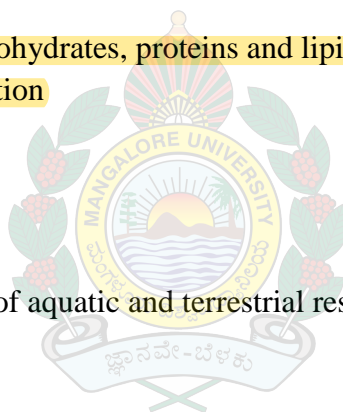
Digestion - Digestive Enzymes

Digestion and absorption of carbohydrates, proteins and lipids

Regulatory mechanisms of digestion

Gastro-intestinal motility

Gastro-intestinal disorders



### UNIT II

Respiration- Comparative study of aquatic and terrestrial respiration

Respiration in insects and birds

Transport of O<sub>2</sub> and CO<sub>2</sub>

Role of Blood as a buffer

Haemodynamics

### UNIT III

Osmoregulation- Ionic and water balance in tissues

Osmoregulation in aquatic, amphibious and terrestrial animals

Patterns of N<sub>2</sub> excretion

Urine formation in a nephron

Regulation of renal function

### UNIT IV

Hormones - Principles of Endocrinology

Mechanisms of water- and lipid soluble hormone action

Hormonal regulation of fuel metabolism

Estrous cycle and its hormonal basis

Endocrine regulation of insect metamorphosis

## UNITV

### Reproductive Physiology-

Spermatogenesis and oogenesis in mammals

Molecular mechanisms of fertilization in mammals.

Oral contraceptives and their hormonal basis.

Insect reproductive systems

Hormonal regulation of reproduction in insects

## REFERENCES

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2. Campbell et.al (1984) Clinical physiology 5<sup>th</sup> edition. Blackwell Scientific Publications, Oxford.
3. Dacie, I.V. and Lewis S.M. (1984) Practical Haematology, 6<sup>th</sup> edition. (International student Edition) Churchill Livingstone, Edinburgh.
4. Ganong, U.F. (1989) Review of Medical Physiology, Lange, California.
5. Guyton, A.C. (1991) Text Book of Medical Physiology, 8<sup>th</sup> edition. Saunders Co., Jovanovich
6. Jensen, D. (1976) The Principles of Physiology, Appleton Century Crafts, New York.
7. Louco, G.N. (1993) Physiological Animal Ecology, Longman Scientific and Technical, Essex.
8. Kay, I. (1998) Introduction to Animal Physiology, Bios Scientific Publishers, UK
9. Oser, B.L. (1976) Hawkins Physiological Chemistry 14<sup>th</sup> edition. (Indian Edition) Tata McGraw-Hill Pub.Co, New Delhi.
10. Paganelli, C.V. and Farhi L.E. (1989) Physiological Function in Special Environments, Springer Verlag, New York.
11. Schmidt Nilsen K. (1994) Animal Physiology, 4<sup>th</sup> edition. Cambridge University Press, New York.
12. Schmidt-Nielsen, K. (1995) Animal Physiology, Adaptation and Environment. Cambridge University Press.
13. Shepherd, G.M. (1994) Neurobiology, 3<sup>rd</sup> edition, Oxford University Press, USA.
14. Wilson, I.A. (1979) Principles of Animal Physiology 2<sup>nd</sup> edition. Macmillan Pub. Co. Inc. New York.