



Master of Science (Zoology)
M.Sc. Zoology Semester II

Course Code	PS02CZOO52	Title of the Course	Ethology
Total Credits of the Course	04	Hours per Week	04

Course Objectives:	<ol style="list-style-type: none">1. To correlate behavioral types and neural as well as hormonal interactions2. To study the evolutionary significance of communication in invertebrates and vertebrates3. To get acquainted lab-based and field techniques to observe animal behavior4. To comprehend different dimensions of ecology, evolution, development, physiology, endocrinology with behavioral aspects5. To explain importance of group behavior and reproductive strategies in different animals6. To understand law of association and correlation with cognitive skills and memory7. To learn about biological rhythms and patterns of migration in fish and birds
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Course Content		
Unit	Description	Weightage* (%)
1.	Introduction: Ethology as a branch of biology. Classification of behavioral patterns. Perception of the Environment: Sensory mechanisms: Mechanical, Electrical, Chemical, Olfactory, Auditory and Visual. Neural and Hormonal Control of behavior. Role of nervous system in emergence of behavioral patterns. Role of endocrine secretions in behavioral expressions.	25
2.	Communication: Importance, types, components and evolution of communication. Role of Visual and auditory systems, hormones and pheromones. Language of communication in invertebrates and vertebrates.	25
3.	Social Behavior: Aggregations – Schooling in fishes, flocking in birds, herding in mammals - group selection, kin selection, altruism, reciprocal altruism, inclusive fitness, social organization in insects and primates. Reproductive Behavior: Evolution of sex and reproductive strategies, Mating systems, courtship, Sexual Selection, parental care.	25





4.	Biological Rhythms: Circadian and Circannual rhythms, Orientation and navigation; Migration of fish and birds. Learning and Memory: Conditioning, Habituation, Insight learning, Association learning, reasoning, cognitive skills.	25
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Teaching-Learning Methodology	Topics will be taught and discussed in interactive sessions using conventional black board and chalk as well as ICT tools such as power point presentations and videos. Practical sessions will be conducted in a suitably equipped laboratory either individually or in groups depending on the nature of exercise as well as availability of infrastructure. Course materials will be provided from primary and secondary sources of information.
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Associate the interrelatedness between neural and hormonal aspects with ethology
2.	Learn about components of communication in eliciting different behaviors
3.	Appreciate observational methodologies in wild and captive conditions
4.	Understand proximate and ultimate causes for any behavior

Suggested References:	
Sr. No.	References
1.	Maning, A., Dawkins, M., S., (2012). An Introduction to Animal Behavior. 6 th Edn. Cambridge University press, United Kingdom.
2.	Alcock, J., (2013). Animal Behavior: An Evolutionary approach. 10 th Edn. Sinauer





	Associates Inc. Sunderland, Massachusetts
3.	McFarland, D., (1999). Animal Behaviour-psychobiology, Ethology and Evolution. 3 rd Edn. Longman Publishers, London
4.	Mathur, R., (2014). Animal Behavior. Rastogi Publications. Meerut
5.	Eibl-Eibesfeldt, I., (1970). Ethology: The Biology of Behavior. Holt, Reinhart & Winston Publications, New York.
6.	Davies, N., B., Krebs, J., R., Stuart, A. W., (2012). An Introduction to Behavioral Ecology. 4 th Edn. Wiley-Blackwell Scientific publications, Oxford.

On-line resources to be used if available as reference material

On-line Resources

Relevant review articles/research papers/handouts of latest development in the subject

