

# **Sardar Bhagwan Singh University, Balawala, Dehradun**

## **Syllabus for Ph.D. Zoology entrance examination 2021**

**Origin and diversification of eukaryotes:** origin of cells and first organisms; evolution of eukaryotic cell from prokaryotes.

**Internal Transport and Gas Exchange:** Systems of circulation, Peripheral circulation, Regulation of heart beat and blood pressure, Transport and exchange of gases, Gas exchangers, Circulatory and respiratory responses to extreme conditions, Acid –base balance, Regulation of body pH.

**Muscle physiology:** Types of muscle, structure, properties, function & control and contraction, Muscle Energetic, Muscle Adaptations.

**Basic concepts of developmental biology:** cell division, cell differentiation, signaling, patterning; Evolution of developmental patterns.

**Overview of the immune system:** Components of the immune system, principles of innate and adaptive immunity, antigen and immunogenicity, Evolution of immune system.

**Ecosystem** - Nature of ecosystem, production, food webs, energy flow through ecosystem, bio-geochemical cycles, resilience of ecosystem, ecosystem management. The biosphere, biomes and impact of climate on biomes.

**Climate change** - Environmental Stresses and their management, global climatic pattern, global warming, atmospheric ozone, acid and nitrogen deposition, coping with climatic variations.

**Biodiversity** – assessment, conservation and management, biodiversity act. Sustainable development, natural resource management in changing environment.

**Blood parasites:** Various diseases caused by parasitic insects: Epidemiology, mode of infection, detection, immunity and immune evasion mechanisms.

**Chronobiology:** Introduction, History, Clocks, Rhythm and Calendar, The biological timing system: Concepts and methods, Types: Ultradian, circadian and circannual rhythms.

**Concept of Endocrinology:** Introduction to the endocrine system, Classes of hormones, Modes of hormone secretion.

**Insect Society:** Harm full insects, social insects and their social life. Evolution of sociality; Social organization and social behaviour in honey bee, ants, termites, aphids and wasps

**Fish & Fisheries:** Fresh and marine water fishes, fish Culture, Breeding techniques.