Lecture Plan

Name of the College: Government College of Arts, Science and Commerce. Sanquelim - Goa

Name of Faculty: Mrs.Preethi Pednekar	**Subject:** Zoology	
Paper code: ZOO 305 (Evolution)	**Program: B.Sc**	**Division: A**
Academic year: 2025-26	**Semester: VI**	**Total Lectures: 45**

Course Objectives -1.Understand the principles of evolutionary biology and its application to the diversity and adaptation of animal species.
2. Develop an understanding of genetic variability, isolating mechanisms and natural selection within a population.
3. Learn how changes in the gene pool leads to evolution of species.
4. Understand the Geo-biological history of earth and evolution of horse and man.

Course Outcome: 1.Knowledge of Origin of earth and life, Concept and Theories of Evolution, Mechanisms of Evolution: Variability and Mutations, Natural selection, Isolation, Adaptations, Speciation and Population genetics, : Study of Fossils, Geological time scale, Evolution of Horse, Evolution of Man, Mass extinctions
2. Understanding of Origin of earth and life, Concept and Theories of Evolution, Mechanisms of Evolution: Variability and Mutations, Natural selection, Isolation, Adaptations, Speciation and Population genetics, : Study of Fossils, Geological time scale, Evolution of Horse, Evolution of Man, Mass extinctions Knowledge and understanding of Origin of earth and life, Concept and Theories of Evolution, Mechanisms of Evolution: Variability and Mutations, Natural selection, Isolation, Adaptations, Speciation and Population genetics, : Study of Fossils, Geological time scale, Evolution of Horse, Evolution of Man, Mass extinctions
3.Application of the concepts of Knowledge and understanding of Origin of earth and life, Concept and Theories of Evolution, Mechanisms of Evolution: Variability and Mutations, Natural selection, Isolation, Adaptations, Speciation and Population genetics, : Study of Fossils, Geological time scale, Evolution of Horse, Evolution of Man, Mass extinctions
4.Analyse the significance of the various aspects of Knowledge and understanding of Origin of earth and life, Concept and Theories of Evolution, Mechanisms of Evolution: Variability and Mutations, Natural selection, Isolation, Adaptations, Speciation and Population genetics, : Study of Fossils, Geological time scale,

Evolution of Horse, Evolution of Man, Mass extinctions							
Student Learning Outcome: Gaining Knowledge,Understanding,Application and analysis of the tennets of evolution their examples and significance.							
Month	**Lecture From**	**Lecture To**	**No. of lectures allotted**	**Topic, Subtopic to be covered**	**Exercise/ Assignment**	**ICT Tools**	**Reference books**
December	1/12/25	6/12/25	3	Origin of earth: Nebular hypothesis and Planetesimal hypothesis; Atmosphere and Energy Sources on Primitive earth.		Power point presentations/videos	R. Mathur, B. S. Tomar, and S. P. Singh, Evolution and Behaviour, Rastogi Publication, 2017. 7. Rastogi VB (2018). Organic Evolution (Evolutionary biology). 13th Edition. MedTech, New Delhi. 8. V. B. Rastogi, Organic Evolution, 3rd Edition, MedTech, 2018. 9. M. Ridley, Evolution, 3rd Edition, Blackwell Publishing, 2004. 10. P. S. Verma, Cell Biology, Genetics,
	8/12/25	13/12/25	3	Origin of Life on Earth (Biopoiesis): • Theory of Special Creation, Theory of Catastrophism, Cosmozoic Theory, Theory of Abiogenesis .			
	15/12/25	23/12/25	1	Theory of Biogenesis.			
January	2/1/26	10/1/26	3	Chemogeny; Biogeny; Cognogeny. Definitions of Evolution, Organic evolution and Evolutionary Biology. Importance of Evolution.			

	12/1/26	17/1/26	3	Concise information about- - Pre-Darwinian theories of organic evolution: Francis Bacon’s theory, Erasmus Darwin’s theory and Lamarck's Theory of inheritance of Acquired Characters			Molecular Biology, Evolution and Ecology, S. Chand Limited, 2004.
	19/1/26	24/1/26	3	Evolutionary theories since Darwin: Charles Darwin’s Theory of Natural Selection, Weismann’s theory of continuity of Germplasm, De Vries Theory of Mutation and Modern synthetic theory of evolution (Neo-Darwinism).			
	26/1/26	31/1/26	3	Variations: Definition; Nature, kind and sources of variations; Role of variability in evolution. • Natural selection: Definition; Types, nature and working of natural selection; Role of natural selection in evolution.			
February	2/2/26	7/02/26	3	Isolation: Definition, Brief explanation about isolating mechanism; Role of isolations in evolution. • Adaptations (Brief explanation about all types),			

				Significance in evolution.			
	9/02/26	14/02/26	3	• Basic Pattern of evolution: Microevolution, Macroevolution and Megaevolution; Convergent and Divergent evolution; Monophyletic & Polyphyletic evolution; Anagenesis			
	16/02/26	21/02/26	3	Cladogenesis and Stasigenesis; Bradytelic, Tachytelic and Horotelic mode of evolution. • Speciation: Definition of species and sub species category, Allopatric, Sympatric and Parapatric speciation. • Population genetics: Gene pool, Allele frequency, Genotype frequency, Genetic drift and Hardy-Weinberg equilibrium			
	22/02/26	28/02/26	3	Study of Fossils: Definition; types; formation; determination of age of fossils (Stratigraphy and radioactive clock method); interpretation of fossil records and significance of study of fossils.			

March	2/03/26	7/03/26	3	Concept of “ontogeny recapitulates phylogeny”. • Introduction to Geological time scale: Palaeozoic, Mesozoic and Coenozoic Era. • Evolution of Horse: Place and time of origin, Characteristic features of Dawn horse and Modern horse and Evolutionary trends. Successive stages of horses in Eocene, Oligocene, Miocene Pliocene and Pleistocene periods			
	9/03/26	14/03/26	3	Evolution of Man: Time and place of origin of Man; Characteristic features of Primates; Characteristic features of Ape and Man; Evolutionary trends (Ape like form to Man); Compelling causes of evolution of man. • Common ancestors of apes and man in Oligocene, Miocene and Pliocene: Propliopithecus, Proconsul, Dryopithecus, Ramapithecus, Sahelanthropus tchadensis			

	16/03/26	21/03/26	3	Pleistocene: Australopithecus, Homo habilis, Homo erectus (Java man and Peking Man), Homo sapiens (Neanderthal man, Rhodesian man, Cro-Magnon Man) and Homo sapiens sapiens			
	23/03/26	31/03/26	3	Brief explanation about Mass extinctions: Names of five major extinctions and causes; Role of extinction in evolution			

Assessment Rubrics

Component	Max Marks
ISA 1	7.5
ISA 2	7.5
Practical	25
Project	nil
Semester End Exam	60