FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)
DEPARTMENT OF ZOOLOGY
Course Curriculum

PART- A: Introduction				
Program: Bachelor in Life Science *(Certificate / Diploma / Degree/ Honors)*		**Semester - I**		Session: **2024-2025**
1	**Course Code**	**ZOGE - 01T**		
2	**Course Title**	**Life on Earth and Unique Attributes of Animal Kingdom**		
3	**Course Type**	**General Elective**		
4	**Pre-requisite** (if, any)	*As per program*		
5	**Course Learning Outcomes (CLO)**	**After successfully completing this course, the students will be able to-** ➢ Develop an understanding of concepts, mechanisms, evolutionary significance and relevance of Origin of life. ➢ Understand General Idea about Invertebrate and Vertebrate animals with special reference and their specific qualities. ➢ Understand and appreciate diversity of life forms. ➢ Apply the knowledge about animals Sciences in daily life.		
6	**Credit Value**	**3 Credits**	***Credit = 15 Hours - learning & Observation***	
7	**Total Marks**	**Max. Marks:** 100		**Min Passing Marks:** 40

PART -B: Content of the Course

Total No. of Teaching–learning Periods (01 Hr. per period) - 45 Periods (45 Hours)

Unit	Topics (Course contents)	No. of Period
I	**Origin of life: Theories of Origin of life:** **Ancient Theory** Theory of Special Creation (Mythological approach),Theory of Panspermia or Cosmozoic Theory, Theory of Directed Panspermia, Theory of Catastrophism, Theory of Spontaneous Generation (Abiogenesis or Autogenesis), Theory of Biogenesis: Redi's Experiment and Pasture's Experiment. **Modern Theory: Origin of Universe:** Big Bang Hypothesis in Brief, **Origin of Solar System and The Earth:** Nebular hypothesis, **Atomosphere and Eneargy Sources on Primitive Earth, Biochemical Origin of Life:** Oparin and Haldane Theory, **Chemogeny:** Formation of simple and complex organic compounds (Stanely Miller and Ure's Experiment), Formation of Coacervates, Nucleic Acids. **Biogeny:** Origin of primitive prokaryotic cell. **Evolution of modes of Nutrition:** Chemohetertrophs, Anaerobic and Aerobic Photoautotrophs. Evolution of Eukaryotes.	12
II	**Systematics & Unique attributes of Invertebrate and Vertebrate animals with special reference to Coelentrata, Mollusca and Pisces:** Definition and difference between Invertebrate and Vertebrate. **Nomenclature:** Binomial and Trinomial Nomenclature and International code of Nomenclature **Corals:** Meaning of Coral, Structure of Coral polyp, Coral Skeleton, Types of corals: Hydrozoan Coral, Example- Millipora, Octocorallian Coral, Example- Alcyonium, Hexacorallian Corals, Example- Gorgonia. **Torsion in Mollusca:** Definition, Mechanism of Torsion, Effects of Torsion, Significance of Torsion. **Pisces: Migration in fishes:** Catadromous: Eel fish and Anadromous: Salmon fish and **Parental care in fishes:** By nest formation, Coiling round eggs, Attachment to body, Integumentary cups, Shelter in mouth, Brood pouch, Mermaids purses, Viviparity.	11
III	**Unique attributes of Vertebrate animals with special reference to Amphibia & Reptilia:** **Parental care in Amphibia:** by Nest, by Nursery or Shelter and by Parents **Neoteny in Amphibia:** Definition, Partial and Total Neotony, Factors Affecting Neotony, Examples- Axolotal larva, Necturus and Siren. **Reptilia: Venomous & Non-venomous Snakes:** Identification, Poison apparatus: Poison Glands, Poison ducts and Fangs, Biting Mechanism.	11
IV	**Unique attributes of Vertebrate animals with special reference to Aves and Mammals:** **Birds:** Flight Adaptation, Migration and Perching Mechanism, Flightless Birds (Morphology and Special Characters of Emu, Ostrich and Penguins), Discuss-Birds are glorified reptiles: Archaeopteryx. **Monotremes or Egg laying mammals:** Morphology and Special Characters of Echidna and Duck bill platypus. **Aquatic Mammals:** Morphology and Special Characters of Whale and Dolphin. **Mammals: Flying Mammals:** Morphology and Special Characters of Bat.	11
Keywords	*Origin of life, Invertebrate, Vertebrate, Corals, Torsion, parental care, Neotony, Fangs, Aves, Mammals*	

Signature of Convener & Members (CBoS) :

PART–C: Learning Resources

Text Books Recommended

- E. J. W. Barrington , Invertebrate structure and function, English Language Book Society UK
- Robert Barnes, Invertebrate Zoology, Robert Barnes IVth edition Holt Saunders International Edition Japan
- Park Haswell, Marshall and Williams, A textbook on Zoology Invertebrate, AITBS Publishing and Distributers, Delhi
- Park Haswell, Marshall and Williams, A textbook on Zoology Vertebrate, AITBS Publishing and Distributers, Delhi

Reference Books Recommended

- Prof R. L. Kotpal, Protozoa to Echinodermata, Rastogi Publication Meerut
- E.L. Jordan, Dr. P. S. Verma,Invertebrate Zoology , S. Chand Publications, New Delhi
- N. Arumugam, N. C. Nair S. - Invertebrate Zoology, Saras Publication.
- N. Arumugam, N. C. Nair S. - vertebrate Zoology, Saras Publication.
- Barrington E. J. W., Invertebrate Structure and Function, Nelson London
- Barnes, R. D., Invertebrate Zoology –Saunders Philadelphia
- R. L. Kotpal, Invertebrate, Rastogi Publications
- R. L. Kotpal, Vertebrate, Rastogi Publications
- H. S. Bhampah, KavitaJuneja, Recent trends in vertebrates vol 1 – 9, Anmol Publication
- S. N. Prasad, Life of invertebrates, Vikash Publication House Pvt Ltd New Delhi
- G. S. Sandhu, HarshwardhanBhagskar – Advanced invertebrate zoology –Campus books international

Online Resources–

- **https://www.coursera.org/lecture/emergence-of-life/4-5-invertebrates-successes-of-life-without-a-backbone-WQHqS**
- **https://www.shiksha.com/online-courses/introduction-to-biology-biodiversity-course-courl5385**
- **https://www.youtube.com/watch?v=k121Qv6loBA**
- **https://www.youtube.com/watch?v=uK-Xx_OCYcI**
- **https://www.youtube.com/watch?v=vybbBil5Elk**
- **https://www.youtube.com/watch?v=WxMSckEeio4**

PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks:	**100 Marks**
Continuous Internal Assessment (CIA):	**30 Marks**
End Semester Exam (ESE):	**70 Marks**

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): **20** +**20** Assignment / Seminar - **10** Total Marks - **30**	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against **30** Marks
End Semester Exam (ESE):	**Two section – A & B** Section A: **Q1.** Objective – **10 x1= 10** Mark; **Q2.** Short answer type- **5x4 =20 Marks** Section B: Descriptive answer type qts.,**1out of 2** from each unit-**4x10=40 Marks**	

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