ST. JOSEPH’S COLLEGE FOR WOMEN (AUTONOMOUS) VISAKHAPATNAM

III SEMESTER   **ZOOLOGY** TIME:3HRS/WEEK

Z-Ma4-3501(3) **EVOLUTION AND ZOOGEOGRAPHY** MARKS:100

w.e.f 2024-2025 (23AK Batch) **SYLLABUS**

# LEARNING OBJECTIVES:

* To provide knowledge on origin of life, theories and forces of evolution
* To explore the evidences of evolution
* To Explain the theories of evolution
* To understand the role of variations and mutations in evolution of organisms
* To understand the zoogeographical distribution of animals

# LEARNING OUTCOMES:

By the end of the course, students will be able to

CO1 – L1: Identify the basic concepts related to the origin of life and biological evolution.

CO2 – L2: Explain how different types of evidence support the theory of evolution.

CO3 – L3: Apply evolutionary theories to explain biological phenomena.

CO4 – L4: Analyze the principles of isolation mechanisms to explain species evolution.

CO5 - L5: Critically assess the factors influencing animal distribution and the significance of zoogeographical realms.

# SYLLABUS:

**UNIT – I:**

* 1. Origin of life: different ancient concepts -Origin of Earth and Solar system: Big Bang theory, Primitive atmosphere, formation of macromolecules
  2. Biological evolution: Coacervates, Microspheres, formation of Nucleic acids, Nucleoproteins
  3. Formation of primary organisms, evolution of modes of nutrition, oxygen revolution, present day atmosphere, evolution of eukaryotes.
  4. Experimental evidences in support of Biochemical origin of life (Miller and Urey experiment)

# UNIT – II:

* 1. Palaeontological and taxonomical evidences of evolution
  2. Morphological and anatomical evidences of evolution
  3. Embryological and physiological evidences of evolution
  4. Evidences from connecting links, missing links and bio geographical distribution

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# UNIT – III:

* 1. Lamarckism-Neo Lamarckism
  2. Germplasm theory-August Weismann
  3. Darwinism-Theory of Natural selection
  4. Modern synthetic theory of evolution (Neo Darwinism)

# UNIT – IV:

* 1. Variations-types-sources of variations- importance in evolution
  2. Mutations-classification-causes-significance in evolution
  3. Isolation mechanisms-role in evolution
  4. Sewall wright effect, Hardy Weinberg Principle

# UNIT – V:

* 1. Animal distribution and barriers of distribution
  2. Zoogeographical realms – Palearctic & Nearctic regions
  3. Zoogeographical realms – Neotropical & Ethiopian regions
  4. Zoogeographical realms – Oriental & Australian regions

# Co-curricular activities (Suggested)

 Chart on industrial melanism to teach directed selection, Darwin’s finches to teach genetic drift, collection of data on weight of children born in primary health centres to teach stabilizing selection etc.

# REFERENCES BOOKS:

* Ridley, M. (2004). Evolution. III Edition. Blackwell Publishing
* Hall, B. K. and Hallgrimsson, B. (2008). Evolution. IV Edition. Jones and BartlettPublishers
* Douglas, J. Futuyma (1997). Evolutionary Biology. Sinauer Associates.
* Minkoff, E. (1983). Evolutionary Biology. Addison-Wesley.
* Organic evolution by Organic evolution by Dr. Veer Bala Rastogi,2019 Kedar Nath Ramnath
* Palaeontology and Zoogeography Organic evolution by Dr. Veer Bala Rastogi,2019 Kedarnath Ramnath
* Rastogi VB. 1991. *Organic Evolution.* Kedar Nath Ram Nath Publications, Meerut, UttarPradesh, India.
* Stahl FW. 1965. *Mechanics of Inheritance.* Prentice-Hall.
* White MJD. 1973. *Animal Cytology and Evolution.* Cambridge Univ.Press

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