



**PARVATHANENI BRAHMAYYA
SIDDHARTHA COLLEGE OF ARTS & SCIENCE**
Autonomous
Siddhartha Nagar, Vijayawada-520010
Re-accredited at 'A+' by the NAAC

Course Code				23ZOMAL234			
Title of the Course				EVOLUTION AND ZOOGEOGRAPHY			
Offered to: (Programme/s)				BSC. ZOOLOGY			
L	4	T	0	P	0	C	3
Year of Introduction:		2024-25		Semester:			3
Course Category:		MAJOR		Course Relates to:		GLOBAL	
Type of the Course:				SKILL DEVELOPMENT			
Crosscutting Issues of the Course :				Environment and sustainability			
Pre-requisites, if any				Basic knowledge about evolution and zoogeography			

Course Description:

Evolution is a process of gradual change that takes place over many generations, during which species of animals, plants, or insects slowly change some of their physical characteristics. The biogeography concerned with the geographic distribution of animals and especially with the determination of the areas characterized by specific groups of animals and the study of the causes and significance of such groups. A zoogeographical region/realm is a sub-division of the Earth having a unique fauna, i.e. species that are found only in that area. Alfred Russel Wallace introduced six zoogeographical realms: Palearctic, Ethiopian, Oriental, Australian, Neotropical, and Nearctic regions.

Objectives:

S.NO	COURSE OBJECTIVES
1	To provide knowledge on origin of life, theories and forces of evolution
2	To explore the evidences of evolution
3	To Explain the theories of evolution
4	To understand the role of variations and mutations in evolution of organisms
5	To understand the zoogeographical distribution of animals

Course Outcomes: At the end of the course, the student will be able to...

CO No	COURSE OUTCOME	BTL	PO	PSO
CO1	Understand the principles and forces of evolution of life on earth, the process of evolution of new species.	K2	2	1
CO2	Explain the different evidences of evolution	K1	2	1
CO3	Understand the theories of evolution	K1	2	1
CO4	Explain the various tools for evolution	K2	2	1
CO5	Map the distribution of animals according to zoological realms	K4	2	1

For BTL: K1: Remember; K2: Understand; K3: Apply; K4: Analyze; K5: Evaluate; K6: Create

CO-PO MATRIX									
CO NO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1		2						2	
CO2		2						2	
CO3		2						2	
CO4		2						2	
CO5		2						2	

Use the codes 3, 2, 1 for High, Moderate and Low correlation Between CO-PO-PSO respectively

Course Structure:

Unit – 1:

(12Hrs)

1.1 Origin of life: different ancient concepts -Origin of Earth and Solar system: Big Bang theory, Primitive atmosphere, formation of macromolecules

1.2 Biological evolution: Coacervates, Microspheres, formation of Nucleic acids, Nucleoproteins

1.3 Formation of primary organisms, evolution of modes of nutrition, oxygen revolution, presents day atmosphere, evolution of eukaryotes.

1.4 Experimental evidences in support of Biochemical origin of life (Miller and Urey experiment)

Specific Web links:

1. <https://www.sciencedirect.com/topics/earth-and-planetary-sciences/origin-of-life>

2. <https://www.nature.com/scitable/definition/evolution-78/>

Assignment -1 – Origin of life

Assignment - 2- Experimental evidence for biochemical origin of life.

Activities - Report writing after watching any video on the above

UNIT-II

2.1 Paleontological and taxonomical evidences of evolution

2.2 Morphological and anatomical evidences of evolution

2.3 Embryological and physiological evidences of evolution

2.4 Evidences from connecting links, missing links and bio geographical distribution

Web links:

1. <http://www.strangescience.net>
2. <http://paleo.cc/kpaleo/fosshist.htm>.

Assignment: 1. Morphological and anatomical evidences of evolution
Assignment: 2. Evidences from connecting links, missing links
Activity: Quiz

UNIT -III

3.1 Lamarckism-Neo Lamarckism

3.2 Germplasm theory-August Weismann

3.3 Darwinism-Theory of Natural selection

3.4 Modern synthetic theory of evolution (Neo Darwinism)

Web links:

1. <https://www.amnh.org/exhibitions/darwin/evolution-today/natural-selection>
2. <https://www.utas.edu.au/about/news-and-stories>

Assignment:1. Germplasm theory.

Assignment:2. Modern synthetic theory.

Activity: Students Seminar (PPT presentation)

UNIT-IV

4.1 Variations-types-sources of variations- importance in evolution

4.2 Mutations-classification-causes-significance in evolution

4.3 Isolation mechanisms-role in evolution

4.4 Sewall wright effect, Hardy Weinberg Principle

Specific Web links:

1. <https://www.informatics.jax.org/glossary/gain-of-function>
2. <https://bioprinciples.biosci.gatech.edu/module-1>

Assignment: 1. Variation types and sources

Assignment: 2. Isolation mechanism.

Activity: Report writing after watching any video on the above topics.

UNIT-V

5.1 Animal distribution and barriers of distribution

5.2 Zoogeographical realms – Palearctic & Nearctic regions

5.3 Zoogeographical realms – Neotropical & Ethiopian regions

5.4 Zoogeographical realms – Oriental & Australian regions

Specific Web links:

1. <https://www.scribd.com/document/495161880/ETHIOPIANREGION>
2. https://gdeplnr.edu.in/admin/uploads/8219Australian%20Region_240420_PB-converted.pdf

Assignment: 1. Zoogeographical realms - Ethiopian regions.

Assignment: 2. Zoogeographical realms - Australian regions.

Activity: Case study on the observation of fauna in the college locality

Text Books:

1. Philip J. Darlington, 2017, zoogeography, Academic publishers.
2. Frank Evers Beddard, 2019, A text book of zoogeography, creative media partners.

REFERENCES BOOKS:

1. Ridley, M. (2004). Evolution. III Edition. Blackwell Publishing
2. Hall, B. K. and Hallgrimsson, B. (2008). Evolution. IV Edition. Jones and Bartlett Publishers
3. Douglas, J. Futuyma (1997). Evolutionary Biology. Sinauer Associates.



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SEMESTER -END MODEL QUESTION PAPER

Course Code &	23ZOMAL234
Title of the Course:	Evolution and zoogeography
Offered to:	B.Sc. Honours Zoology
Category: Major	SEMESTER: 3
Max. Marks	70
Max. Time	3 Hrs.

Section – A

Answer All questions.

Each question carries 4 Marks.

Marks: 20

- Q1 (a) Describe the primitive atmosphere. K1
OR
(b) Describe the formation of nucleic acid. K1
- Q2 (a) illustrate the taxonomical evidence of evolution. K3
OR
(b) Distinguish the physiological evidence of evolution. K2
- Q3 (a) Illustrated the theory of natural selection. K3
OR
(b) Demonstrate modern synthetic theory. K3
- Q4 (a) Review the variations in evolution. K2
OR
(b) Elaborate about mutations. K2
- Q5 (a) Describe the animal distribution. K1
OR
(b) Describe zoogeographical realms of Australian region. K1

Section B

Answer all questions. Each question carries 10 Marks. Marks: 50

- Q6 (a). Explain origin of life and different ancient concepts. K2
OR
(b). what is the primary organisms and explain detailed. K1
- Q7.(a). Explain the morphological and anatomical evidence of evolution. K2
OR
(b). What is embryological evidence explain with suitable examples. K1
- Q8.(a). Describe Lamarckism and neo-Lamarckism. K1
OR
(b). Explain modern synthetic theory. K2
- Q9. (a) Describe the isolating mechanism with examples. K1
OR
(b). what is mutation write classifications, causes and significances in evolution. K1
- Q10. (a). Illustrate the animal distribution. K3
OR
(b). Describe the zoogeographical differences between Ethiopian and Australian regions. K1