Gyanmanjari Innovative University

Course Syllabus
Gyanmanjari Science College
Semester-1(B.Sc)

Subject : Fundamental Zoology-BSCZO11303

Type of course: Minor

Prerequisite: Basic knowledge of Zoology.

Rationale: This course has been designed to make the students know about basic principles of Zoology. The students learn history of Classification, type's study of invertebrate animal, also learn about brief introduction of genetics and Wild life.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks					Total Marks
				SEE		CCE			
CI	T	P	C	Theory	Practical	MSE	LWA/ V	ALA	
3	0	2	4	75	25	30	20	50	200

Legends: CI-Class Room Instructions; T -- Tutorial; P - Practical; C – Credit; SEE - Semester End Evaluation; MSE- Mid Semester Examination; LWA - Lab Work Assessment; V – Viva voce; CCE-Continuous and Comprehensive Evaluation; ALA- Active Learning Activities.

3 Credits * 25 Marks = 75 Marks (each credit carries 25 Marks) Theory

1 Credits * 25 Marks = 25 Marks (each credit carries 25 Marks) Practical

SEE 100 Marks will be converted in to 50 Marks

CCE 100 Marks will be converted in to 50 Marks

It is compulsory to pass in each individual component.

GYANMANJARI INNOVATIVE UNIVERSITY BHAVNAGAR

Sr. No	Active Learning Activities	Marks
1	**Quiz** Faculty will assign 10 MCQs per unit. Faculty will conduct the particular chapter test that will be arranged in the class and marks will be uploaded to the Moodle.	10
2	**Topic based diagram** Faculty will assign topic and students will prepare Diagram and upload to Moodle.	10
3	**Counting of Animal Biodiversity** Faculty will assign the area and students will Count the animal Biodiversity and prepare a report in 100 words and upload it to Moodle.	10
4	**Prepare Chart of Food Chain / Food Web** Faculty will assign Field/Area and students will prepare chart and upload to Moodle.	10
5	**Attendance**	10
Total		50

Course Content:

Unit No	Course content	Hrs	% Weightage
1	**Chapter:1 Diversity of Life** Classification of the following animals up to the classes: ➢ Classification of phylum Protozoa with examples. ➢ Classification of phylum Porifera with examples. ➢ Classification of phylum Coelenterata with examples. ➢ Classification of phylum Platyhelminthes with examples. ➢ Classification of phylum Nemathelminthes with examples. ➢ Classification of group Protochordata up to sub phylum With Examples. ➢ Classification of class Cyclostomata up to order with examples. ➢ Classification of super class Pisces with examples.	14	25%
2	**Chapter: 2 General Morphology and functional anatomy Hydra:**	13	25%

	➢ Habits and habitat ➢ Different methods of locomotion. ➢ Different methods of Reproduction. ➢ Body wall. ➢ Cnedoblast. **Chapter: 3 Ecology:** ➢ Food chain: Detritus and grazing food chains, Linear and Yshaped ,food chains,Food web, Energy flow through the ,ecosystem,Ecological pyramids and Ecoogical efficiencies. ➢ Nutrient and biogeochemical cycle with one example ofNitrogen cycle.		
3	**Chapter:4 Ultra Structure of Following Organelles.** ➢ Cell Membrane and it's Permeability, Endoplasmic Reticulum, Golgi Body, Mitochondria, Lysosome, Nucleus and Nucleolus, Chromosome and types.	8	25%
4	**Chapter:5 Genetics** ➢ Introduction to Gene ➢ Introduction to Mendelian laws of Heredity. ➢ Monohybrid and Dihybrid cross. ➢ Incomplete dominance (e.g. Mirabilis Jalapa). ➢ Co-dominance (e.g. Roan cattle). ➢ Multiple alleles e.g. ABO blood group in humans ➢ Rh factor- Erythroblastosis fetalis ➢ Polygenic inheritance (e.g. skin colour in humans) ➢ Lethal Genes (e.g. yellow coat colour in mice, thalassaemia). **Chapter:6 Wildlife Biology:** ➢ Introduction & Importance of Wildlife. ➢ Difference between National Parks & Sanctuaries Wildlife in Gujarat: ➢ National Parks: ➢ Gir National Park ➢ Blackbuck National Park, Velavadar ➢ Santuaries : ➢ Kutch desert wildlife sanctuary. ➢ Barda wildlife sanctuary. ➢ Nalsarovar bird sanctuary. ➢ Khijadia bird sanctuary.	10	25%
	Total	**45 Hrs**	

Suggested Specification table with Marks (Theory):75

Distribution of Theory Marks **(Revised Bloom's Taxonomy)**						
Level	Remembrance (R)	Understanding (U)	Application (A)	Analyze (N)	Evaluate (E)	Create (C)
Weightage	20%	40%	40%	-	-	-

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Course Outcome:

After learning the course the students should be able to:	
CO1	Understand about Diversity of Living Organisms & Structure
CO2	Learn about the anatomy of Phylum Coelenterata with reference to animal model of Hydra and also learn about ecology.
CO3	Know about the different Organelles of the Animal Cell.
CO4	Learn about the genetics, National Park Sanctuaries.

List of Practical:

Sr. No	Descriptions	Unit No	Hrs
1	**Practical-1A** To Study Bacteria and typical animal cell. **Practical-1B** Classification of Phylum Protozoa Amoeba, Paramecium, Euglena, Arcella, Ceratium, Plasmodiumand Opalina	1	4

2	**Practical –2A** Classification of Phylum Porifera to Coelenterata. **Porifera:** Grantia, Hylonema, Leucosolenia. **Coelenterata:** Hydra, Sea-anemone, Jellyfish, Physalia, Rhizostoma, Gorgonia, Coral **Practical –2B** Classification of Phylum Platyhelminthes and Nemathelminthes. **Platyhelminthes** : Liver fluke, Planaria, Tapeworm. **Nemathelminthes**: Guinea worm, Ascaris (Male & Female) and Filaria.	1	3
3	**Practical –3A** Classification of Protochordata up to sub phylum and Classification of Cyclostomata up to order. **Protochordata**: Ascidia, Amphioxus, Balanoglosus. **Cyclostomata**: Lamprey. **Practical –3B** Classification of super class Pisces (up to class): Scoliodon, Electric ray, Eel, Ophiocephalus, Sea horse.	1	3
4	**Practical –4A** To Study life history of Hydra. **Practical –4B** Study of ABO blood group and Rh- factors. To prepare a temporary slide of blood smear from human blood and study of blood cells (RBC, WBC and Platelets)	2	4
5	**Practical –5A** To solve genetic problem: Mendel's Monohybrid (3:1) Dihybrid ratio.(9:3:3:1) **Practical –5B** To solve genetic problem: Incomplete dominance.(Mirabilis jalapa)1:2:1	2	3
6	**Practical –6A** To solve genetic problem: Co-dominance (Roan Cattle) **1:2:1** **Practical –6B** To solve genetic problem: Polygenic inheritance.(Skin Colour in Human)	4	3

7	**Practical –7A** To solve genetic problem: Lethal gene.(Thalassemia) **Practical –7B** To solve genetic problem: Multiple alleles.(ABO Blood Group	4	3
8	**Practical –8A** Study of various animal cell Organelles. Endoplasmic Reticulum, Golgi body, Mitochondria, Lysosome, Nucleus and Nucleolus. **Practical –8A** To Study Food chain And Food Web by Chart with Example.	3	4
9	**Practical –8A** Study of following wild animals on the basis of zoo-geographical region as per theory. A)Asiatic Lion B) Leopard C) Corals D) Jelly fish E) Chinkara F) Spotted deer G)Greater flamingo H) Painted stork * By photograph, Chart, stuffed animals or multimedia.	4	3
	Total		**30 Hrs.**

Instructional Method:

The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

From the content 10% topics are suggested for flipped mode instruction.

Students will use supplementary resources such as online videos, NPTEL/SWAYAM videos, e-courses, Virtual Laboratory

The internal evaluation will be done on the basis of Active Learning Assignment

Practical/Viva examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

Reference Books:

1.Text book of Zoology R. D. Vidyarthi
2. Animal Ecology S.P.Singh
3. Genetics. P.K. Gupta
4. Ecology Sarus Publication
5. Pranishastra (Gujarati) Ravi Prakashan\
6. Jiv Vignan-2 (Gujarati) Nirav Prakashan
7. A Text Book of General Biology Tomer & Singh
8. Modern Text Book of Zoology(vertebrate) R.L.Kotpal
9. Modern Text Book of Zoology(invertebrate) R.L.Kotpal
10. Concept of Ecology N.Arumugam
11. Economic Zoology G.S.Shukla & V.B.Upadhyay
12. Pruthvanshi Praniyo ane Garbhvidya (Gujarati) A.B.Vyas
13. Utkrushtha Aprushthvanshi Praniyo (Gujarati) U.M.Rawal
14. Invertebrate Zoology E.L.Jordan & P.S.Verma
15. Prani Auotiki (Gujarati) Desai and Akhunji
16. Cell biology Genetics and Molecular Biology V.B. Rastogi
17. Molecular Biology and Saras Publication. Genetic Engineering
18. Cell and Molecular Biology Saras Publication.
19. Animal Diversity. Cleveland P. Hickman, Larry S Roberts, Susan L.