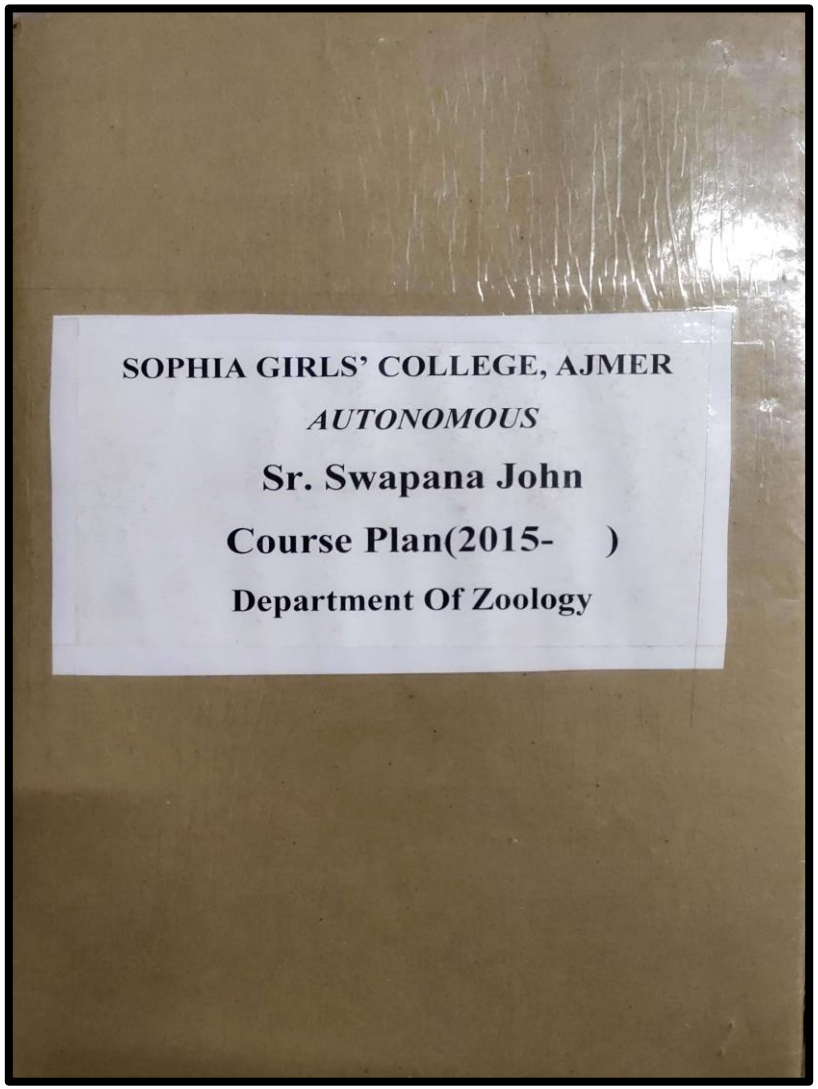
SOPHIA GIRLS' COLLEGE(AUTONOMOUS), AJMER



COURSE PLAN

U.G Programs

2018-19

SOPHIA GIRL'S COLLEGE, AJMER (*AUTONOMOUS*)

B.Sc. I (SEMESTER I) **Course plan 2018-19** **ZOOLOGY (PAPER I) (ZOO-101)**

(Invertebrates: Classification and special features)

Max. Marks :75 (50Ext; 25 Int) Min. Marks: 30(20 Ext;10 Int) Credit: 03

COURSE PLAN

SEM I Month	UNIT/TOPIC	Concepts/facts	Teaching Pedagogy	Learning Outcomes	Questions	Marks Weightage (%)
SEM I JULY	UNIT I **Invertebrate classification**: salient features of various phyla and their classification upto Classes: Protozoa,Porifera,Colenterata,Aschelminthes,Platyhelminthes,Annelida,Arthropoda,Mollusca, Echinodermata. **General principles of taxonomy** - concept of the Five Kingdom	1.Basis of Classification.	PPT, Chart, Pictures, G.D, Lecture method Google Class room	1.classify Invertebrate phyla demonstrating its characters upto class 2.Concept on Parazoa, Metazoa. 3.Develop an idea of the special adaptationin Invertebrates	*Knowledge Based* -What is Five Kingdom Classification? -Illustrate five characters of the phylum Porifera. *Understanding Based* -Compare parazoa, metazoa -Classify the phylum	Knowledge--60 Understanding-30 Higher Order-10

	scheme.				Coelenterata and compare its classes giving example? *Higher Order Thinking Skills Based* -Justify the fact that special character follow the general character with reference to the various level of organization? -Critically Evaluate the concepts of Coelom giving example?	
	Concept of Protozoa, Parazoa, Metazoa, Eumetazoa and levels of organization.	1. concept of Parazoa, metazoa and Eumetazoa	Quiz, Demonstration, PPT			
	Basis of classification of non-chordata: Symmetry, coelom, segmentation and embryogeny.	Levels of organization in increasing order of complexity	Charts, Ppt, Guest lecture			
AUGUST	UNIT II **Protozoa**: Reproduction and Mode of locomotion:Cilia, Flagella and pseudopodia.	Asexual and sexual mode	Diagrams, Charts, Microscopic Slides	Illustrate the different forces acting over the earth		
	Porifera: Spicules: calcareous, silicious. Canal system: Ascon, Sycon and Leucon	Development of Spicules and canal system	Diagrams, Charts, Test			
SEPTEMBER-	UNIT III **Annelida:**	Special features in each phylum	Demonstration through			

OCTOBER	Reproduction with reference to Earthworm. Locomotion:Setae and Parapodia **Arthropoda:** Metamorphosis:Ametabolous,Hemimetabolousand Holometabolous Social organization in termites and Bees :Life Cycle.Caste System and its Economic Importance		powerpoint presentation Visit of the campus to locate social insects	Compare and analyze the different special features present in different phylum		
	Mollusca: Foot and shells, Torsion with reference to Pila **Echinodermata:** Water vascular system and its function	Concept of torsion in pila and locomotion in Echimoderms	PPT, Demonstration on water vascular system through you tube video , Revision			

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SOPHIA GIRL'S COLLEGE, AJMER (*AUTONOMOUS*)

B.Sc. I (SEMESTER I) **Course Plan 2018-19** **ZOOLOGY (PAPER II) (ZOO-102)**

(Structure And Function Of Invertebrates)

Max. Marks :75 (50 Ext; 25 Int) Min. Marks: 30 Credit: 03

COURSE PLAN

SEM I Month	UNIT/TOPIC	Concepts/facts	Teaching Pedagogy	Learning Outcomes	Questions	Marks Weightage (%)
SEM I JULY	1 **Skeleton:** Endoskeleton (spicules of *Sycon)* exoskeleton, chitinous *(Palaemon).*	1.Basic concept of skeleton	PPT, Chart, Pictures, G.D Google Classroom	1. Describe the basic structures of the different invertebrate phyla. 2. To understand the functioning of the various systems 3. To analyze	*Knowledge Based* -What is Mixotrophic Nutrition ? -Illustrate the development of Spicules	Knowledge --60 Understanding-30 Higher Order-10
	Food, Feeding, Digestive structures and Digestion: Autotrophic *(Euglena),* heterotrophic- through food vacuole *(Paramecium)* and in hydroid and medusoid zooids	2. concept of nutrition and types	Demonstration, PPT, Guest lecture			

AUGUST	(*Obelia*), parasitic, (*Taenia, Hirudinaria*), predatory (*Palaemon,*). **3. Respiration:** anaerobic (Fasciola), parapodia (Nereis), Aquatic general body surface (Pheretima), trachea (Insect), gills (Pila), aerial, pulmonary sac (Pila), dermal branchiae (Asterias)			the evolution of systems from lower to higher phyla	*Understanding Based* -Compare Endoskeleton and Exoskeleton - Compare the various types of nutrition
	4. **Nervous System:** Sensory and nerve cells (*Obelia);* brain ring and longitudinal nerves (*Fasciola*). brain and ventral	Evolution in the mode of respiration	Diagrams, Charts, Microscopic Slides		*Higher Order Thinking Skills Based* - Justify euglena has plant like characters based on its feeding habits
	nerve cord (*Palaemon*), nervous system of *Pila*	Development in the complexity of brain and	Diagrams, Charts,Test Diagram		-Critically Evaluate the concepts of Cyclosis in Paramecium

	UNIT III	nervous system	s, Models,			
					-Critically evaluate the functions of Nuchal organ and statocysts	
SEPTEMBER - OCTOBER	**5.Circulation**: Cyclosis (*Paramecium),* diffusion (*Sycon, Taenia),* open circulatory system (*Palaemon),* closed circulatory system (*Nereis).* **6.Excretion:** General body surface (Paramecium), protonephridial system and flame cells (Fasciola), nephridia (Earthworm), malpighian tubules (insect), organ of Bojanus (Pila). **7.Reproduction:** Asexual (Paramecium, Sycon), alternation of generation (Obelia), sexual (Fasciola, Neries)	Various Asexual and Sexual mode of reproduction	Demonstration through powerpoint presentation insects, ppt, Assignments, Revision		- Compare and analyze the different asexual mode of reproduction present in *Paramecium*	

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B.Sc. II (SEMESTER III) **Course Plan 2018-19** **ZOOLOGY (PAPER I)**

(Structure And Function Of Invertebrates)

Max. Marks :75 (50 Ext; 25 Int) Min. Marks: 30 Credit: 03

COURSE PLAN

SEM I Month	UNIT/TOPIC	Concepts/facts	Teaching Pedagogy	Learning Outcomes	Questions	Marks Weightage (%)
SEM I JULY	1 **Skeleton:** Endoskeleton (spicules of *Sycon)* exoskeleton, chitinous *(Palaemon).*	1.Basic concept of skeleton	PPT, Chart, Pictures, G.D Google Classroom	1. Describe the basic structures of the different invertebrate phyla. 2. To understand the functioning of the various systems 3. *To analyze*	*Knowledge Based* -What is Mixotrophic Nutrition ? -Illustrate the development of Spicules	Knowledge --60 Understanding-30 Higher Order-10
	Food, Feeding, Digestive structures and Digestion: Autotrophic *(Euglena),* heterotrophic- through food vacuole *(Paramecium)* and in hydroid and medusoid zooids	2. concept of nutrition and types	Demonstration, PPT, Guest lecture			

AUGUST	(*Obelia*), parasitic, (*Taenia, Hirudinaria*), predatory (*Palaemon,*). **3. Respiration:** anaerobic (Fasciola), parapodia (Nereis), Aquatic general body surface (Pheretima), trachea (Insect), gills (Pila), aerial, pulmonary sac (Pila), dermal branchiae (Asterias)			the evolution of systems from lower to higher phyla	*Understanding Based* -Compare Endoskeleton and Exoskeleton - Compare the various types of nutrition
	4. **Nervous System:** Sensory and nerve cells (*Obelia);* brain ring and longitudinal nerves (*Fasciola*). brain and ventral	Evolution in the mode of respiration	Diagrams, Charts, Microscopic Slides		*Higher Order Thinking Skills Based* - Justify euglena has plant like characters based on its feeding habits
	nerve cord (*Palaemon*), nervous system of *Pila*	Development in the complexity of brain and	Diagrams, Charts,Test Diagram		-Critically Evaluate the concepts of Cyclosis in Paramecium

	UNIT III	nervous system	s, Models,			
					-Critically evaluate the functions of Nuchal organ and statocysts	
SEPTEMBER - OCTOBER	**5.Circulation:** Cyclosis (*Paramecium),* diffusion (*Sycon, Taenia),* open circulatory system (*Palaemon),* closed circulatory system (*Nereis).* **6.Excretion:** General body surface (Paramecium), protonephridial system and flame cells (Fasciola), nephridia (Earthworm), malpighian tubules (insect), organ of Bojanus (Pila). **7.Reproduction:** Asexual (Paramecium, Sycon), alternation of generation (Obelia), sexual (Fasciola, Neries)	Various Asexual and Sexual mode of reproduction	Demonstration through powerpoint presentation insects, ppt, Assignments, Revision		- Compare and analyze the different asexual mode of reproduction present in *Paramecium*	

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B.Sc. II (SEMESTER IV) **Course Plan 2018-19** **ZOOLOGY (PAPER I) (ZOO-201)**

(Cell Biology)

Max. Marks :75 (50Ext; 25 Int) Min. Marks: 30(20 Ext;10 Int) Credit: 03

COURSE PLAN

SEM IV Month	UNIT/TOPIC	Concepts/facts	Teaching Pedagogy	Learning Outcomes	Questions	Marks Weightage (%)
SEM IV December	**1.Introduction to Cell:** Morphology, size, shape and characteristics of Prokaryotic, Eukaryotic Cell (animal cell). Basic idea of Virus and Cell Theory **2.Cell-membrane:** Characteristics of cell membrane molecules, Concept of unit membrane. **3.Fluid-mosaic model** of Singer and Nicolson.	1 basic difference between a prokaryotic and Eukaryotic cel 2. concept of cell membrane	PPT, Demosntration ,G.D, model	Infer the basic structure of the cell and the various organelles	*Knowledge Based* -what are the characteristi c features of an eukaryotic cell.	Knowledge--60 Understanding -30 Higher Order-10

	4.Cell-membrane transport: Passive (diffusion and osmosis) and active transport. 5.Structure and functions of **cilia, flaella .**	1. selective transport across the plasma membrane	Match the following, Quiz, Ppt,		-Illustrate the role of fluid and mosaic pattern of protein and lipids in the cell membrane	
January	UNIT II 1.Structure and biogenesis of **mitochondria**; electron transport chain and generation of ATP molecules. 2.Structure and functions of **endoplasmic reticulum, ribosomes** (prokaryotic and eukaryotic) and **Golgi complex** **3.Chromosomes**: Morphology, chromonema, chromomeres, telomeres, primary and secondary	1.power house of cell - production of ATP 2. Chromosome and its structure	Diagrams, Charts, ppt, open book test	Discover the fundamental functions carried out by the cell.	*Understanding Based* -Analyse the production of ATP by Mitochondria -Justify the the difference	

	constrictions, chromatids, prokaryotic chromosome **4.Giant Chromosomes**: Polytene and Lampbrush chromosomes. **5.Chromosomal organizations**: Euchromatin, Heterochromatin, nucleosome concept.				between the prokaryotic and eukaryotic ribosomes *Higher Order Thinking Skills Based* -Justify the structure of nucleolus -Critically Evaluate the role of primary and secondary lysosomes - Compare and analyze the basic difference	
February March	**Unit III** **Nucleus**: Structure and function of nuclear envelope, nuclear matrix and nucleolus.	1.detailed study of the nucleus 2. cell division	Demonstration through powerpoint presentation	Compile the Physiological and Biochemical functions carried by the cell.		
	Structure and function of **Lysosomes, Centrioles** and **Basal Bodies.** **Mitosis**: Phases and process of mitosis, structure and function of spindle apparatus, anaphasic		PPT, Demonstration			

	movement. **Meiosis**: Phases and process of meiosis, synapses and synaptonemal complex, formation and fate of chiasmata and significance of crossing over				between mitosis and meiosis	
April: Revision, Practicals and End Semester Examination						

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B.Sc. II (SEMESTER IV) **Course Plan 2018-19** **ZOOLOGY (PAPER I) (ZOO-401)**

(Animal Physiology)

Max. Marks :75 (50Ext; 25 Int) Min. Marks: 30(20 Ext;10 Int) Credit: 03

COURSE PLAN

SEM IV Month	UNIT/TOPIC	Concepts/facts	Teaching Pedagogy	Learning Outcomes	Questions	Marks Weightage (%)
SEM IV December	**Physiology of Digestion:** nature of food stuff, various types of digestive enzymes and their digestive action in the alimentary canal.	1 various digestive enzymes and its effect on the process of digestion in mammals	PPT, Demosntration ,Google Class room	1. Develop an idea of various physiological activities prevalent in animals	*Knowledge Based* -what are the various digestive enzymes found in stomach -Illustrate the role of Bile in digestion.	Knowledge--60 Understanding-30 Higher Order-10

	Physiology of Respiration: Mechanism of breathing, exchange of gases, transportation of oxygen and carbon dioxide in blood, regulation of breathing.	1. Transport of gases. 2. concept of partial pressure in gases	Match the following, Quiz, Ppt,	with special reference to mammals	*Understanding Based* -Analyse the transport of CO_2 -Justify the oxygen dissociation curve *Higher Order Thinking Skills Based* -Justify the exchange of gases mechanism	
January	UNIT II **Physiology of Circulation**: Composition and function of blood, mechanism of blood clotting, heartbeat, cardiac cycle, blood pressure, body temperature regulation	1.Blood and its utility 2. Heart and its working	Diagrams, Charts, ppt, open book test	Analyze and understand the complexity of the various systems		
	Physiology of Excretion : Kinds of nitrogenous excretory end-products (aminotelic, ureotelic and uricotelic), role of	1.Association of the nitrogenous waste with the habitat.	Diagrams, Charts,Test			

	liver in the formation excretory end products, functional architecture of mammalian kidney tubule and formation of urine, hormonal regulation of water and electrolyte balance.	2Formation of concentrated urine			-Critically Evaluate the role of cardiac cycle in pumping the bood and sustenance of life.	
	Physiology of Muscle Contraction: Functional architecture of skeletal muscle, chemical and biophysical events during contraction and relaxation of muscle fibers.	Bio-physical events in muscle contraction	Diagrams, Models, Demonstration		- Compare and analyze the fuctions of any two endocrine glad	
February March	1.Physiology of Nerve Impulse and Reflex Action: Functional architecture of a neuron	1.Transport of action potential 2.Synapse	Demonstration through powerpoint presentation	Summarize and write about the		

				various physiologic a processes		
	2. Types of Endocrine Glands	1.Glands and its associated functions	PPT, Demonstration			
	3. Hormonal control of male and female reproduction and implantation	1.Male and Female hormine control	PPT, Case Studies, Revision			
April: Revision, Practicals and End Semester Examination						

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B.Sc. III (SEMESTER VI) **Course Plan 2018-19** **ZOOLOGY (PAPER II) (ZOO-602)**

(Ethology, Biostatistics and Applied Zoology)

Max. Marks :75 (50Ext; 25 Int) Min. Marks: 30(20 Ext;10 Int) Credit: 03

COURSE PLAN

SEM VI Month	UNIT/TOPIC	Concepts/facts	Teaching Pedagogy	Learning Outcomes	Questions	Marks Weightage (%)
SEM VI December	1.Introduction and history of Ethology. (Karl Von Frisch, K. Lorenz, N. Tinbergen). 2.Concepts of Ethology: fixed action pattern, sign stimulus, innate releasing mechanism, motivation, imprinting and learning. 3.Methods of studying	1. Brief History into animal behaviour 2.terminologies and its concepts	PPT, Lecture method, live examples, National Geographic Channel	To help students understand animal strategies and interactions and the importance of behaviour for	*Knowledge Based* -Explain imprintimg -Illustrate evolution of studying brain behaviour	Knowledge--60 Understanding-30 Higher Order-10

	behaviour: Neuroanatomical neurophysiological, neurochemical techniques.			survival	*Understanding Based* -Analyse and compare the social behaviour in monkeys and deers -Justify the action of pheromones in animals *Higher Order Thinking Skills Based* -Critically Evaluate the the life cycle of *Apis indica* . - Analyse the ecnomic importance of lac and	
	4. Territory and Home range- Role of pheromones. 5.Social behaviour: Characteristics and advantages with special reference to deer and monkey.	1. concept of pheromones and communication via it	Assignments Quiz, Ppt, role plays			
February March	**Honey bee**: Social life and communication, life history, Apiculture.	1.life cycle and social behaviour	Demonstration through powerpoint presentation	To understand the applied and commercially useful aspect of animals		
	Lac culture: life cycle, lac culture, composition, and uses of lac. **Silk moth**: Life history,	1.Economic importance w.r.t life cycle	PPT, Demonstration Assignments			

	Sericulture, Economic Importance. **Pisciculture**				sericulture	
April: Revision, Practicals and End Semester Examination						

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