

# MAHATMA GANDHI UNIVERSITY, NALGONDA

## B.Sc(Zoology) -I

### I-Semester Syllabus

#### PAPER -I

#### ANIMAL DIVERSITY - INVERTEBRATES

Lecturer	Topic	Remarks
<b>UNIT -I</b>	<b>BRIEF HISTORY OF INVERTEBRATES PROTOZOA, PORITERA</b>	
Lecturer-1	kingdom Animalia Introduction	
Lecturer-2	Brief history of Invertebrates	
Lecturer-3	General Characters of protozoa	
Lecturer-4	Classification upto classes with examples	
Lecturer-5	Type Study - Elphidium	
Lecturer-6	Life Cycle Plasmodium	
Lecturer-7	Life Cycle Plasmodium	
Lecturer-8	Locomotio Reproduction of protozoa	
Lecturer-9	Diseases of protozoa	
Lecturer-10	General Characters of porifera	
Lecturer-11	Classification of porifera upto classes with examples	
Lecturer-12	Types Study - Sycon ( External & Internal Morphology)	
Lecturer-13	Canal System in sponges	
Lecturer-14	Canal System in sponges	
Lecturer-15	Spicules in sponges	
<b>UNIT-II</b>	<b>CNIDARIA , PLATHYHELMINTHIS , NEMATHEHELMINTHIS</b>	
Lecturer-16	General Characters of Cnidaria and classification of cnidaria	
Lecturer-17	Types study - Obelia	
Lecturer-18	Polymorphism in hydrozoa	
Lecturer-19	Polymorphism in hydrozoa	
Lecturer-20	Corals and Coral reef formation	
Lecturer-21	General Characters of Platyhelminthis	
Lecturer-22	Classification of Platyhelminthis	
Lecturer-23	Type Study-Schistosoma (Structure)	
Lecturer-24	Type Study-Schistosoma (Life Cycle)	
Lecturer-25	General characters of nemathehelmintis	
Lecturer-26	Classification of Nemathihelminthis	
Lecturer-27	Type Study - Drcunculus ( Structure)	
Lecturer-28	Type Study - Drcunculus (Life Cycle)	
Lecturer-29	Parasitic Adaptation in helminthis	
Lecturer-30	Parasitic Adaptation in helminthis	
<b>UNIT -III</b>	<b>ANNELIDA , ARTHROPODA</b>	
Lecturer-31	General characters and classification of annelida	
Lecturer-32	Types of Study - Hirudinaria granulosa ( External Morphology)	
Lecturer-33	Hirudinaria Granulosa - Digestive , Respiration system	

Lecturer-34	Hirudinaria Granulosa - Nervous system	
Lecturer-35	Hirudinaria Granulosa - Reproductive system and Excretory	
Lecturer-36	Evolution significance of cocolame and colomoducts	
Lecturer-37	Metamerism	
Lecturer-38	General characters and classification of arthropoda	
Lecturer-39	Types of study -Prawn ( External morphology)	
Lecturer-40	Prawn , Digestive , Respiratory system	
Lecturer-41	Prawn - Excretory , Reproductive system	
Lecturer-42	Prawn - Nervous system	
Lecturer-43	Mouth parts of insects	
Lecturer-44	Mouth parts of insects	
Lecturer-45	Peripatus - structure and affinities	
<b>UNIT-IV</b>	<b>MOLLUSCA , ECHINODERMATA , HEMICHORDATA</b>	
Lecturer-46	General Characters of mollusca	
Lecturer-47	Classification of mollusca	
Lecturer-48	Type study - Pila(External Morphology)	
Lecturer-49	Type study - Pila , Digestive system	
Lecturer-50	Pila - Respiratory system	
Lecturer-51	Pearl formation	
Lecturer-52	Torsion and detorsion in gastropods	
Lecturer-53	General characters of Echinodermata	
Lecturer-54	Classification of Echinodermata	
Lecturer-55	Water vascular system in star fish	
Lecturer-56	Echinoderm larvas	
Lecturer-57	General characters of Hemichordata	
Lecturer-58	Classification of Hemichordata	
Lecturer-59	Balanoglossus - Structure	
Lecturer-60	Balanoglossus- Affinities	

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- 2.Kotpal,R.L.1988 -1992 protozoa,porifera,colenterata ,Helminthes,Arthropoda,Mollusca,Echinodermata,Rastogi Publications,Meerut.
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- 4.R.D. Barnes 'Invertebrates Zoology' by : W.B.Saunders CO.1986
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**MAHATMA GANDHI UNIVERSITY, NALGONDA**

**B.Sc(Zoology) -II**

**II-Semester Syllabus**

**PAPER -II**

**ECOLOGY ZOOGEOGRAPHY & ANIMAL BEHAVIOUR**

<b>Lecturer</b>	<b>TOPIC</b>	<b>Remarks</b>
<b>UNIT -I</b>	<b>ECOLOGY - I</b>	
Lecturer-1	Ecosystem structure and functions ( Introduction)	
Lecturer-2	Types of ecosystem - Aquatic	
Lecturer-3	Terrestrial Ecosystem	
Lecturer-4	Biogeochemical cycles - Nitrogen cycle	
Lecturer-5	Carbon Cycle	
Lecturer-6	Phosphorous cycle	
Lecturer-7	Water cycle	
Lecturer-8	Food Chain	
Lecturer-9	Food web	
Lecturer-10	Ecological pyramids	
Lecturer-11	Ecological pyramids	
Lecturer-12	Animal association - Mutualism	
Lecturer-13	Commensalism	
Lecturer-14	Parasitism	
Lecturer-15	Competition, predation	
<b>UNIT-II</b>	<b>ECOLOGY - II</b>	
Lecturer-16	Concept of Species	
Lecturer-17	Population dynamics	
Lecturer-18	Growth curves	
Lecturer-19	Community structure and dynamics	
Lecturer-20	Ecological succession	
Lecturer-21	Ecological succession	
Lecturer-22	Ecological adaptation	
Lecturer-23	Environmental Pollution - sources effects and control measures of air	
Lecturer-24	Water pollution	
Lecturer-25	Soil pollution	
Lecturer-26	Noise pollution	
Lecturer-27	Wildlife conservation - National parks and sanctuaries of india	
Lecturer-28	Endangered species	
Lecturer-29	Biodiversity	
Lecturer-30	Hot spots biodiversity in India	
<b>UNIT -III</b>	<b>ZOOGEOGRAPHY</b>	
Lecturer-31	Zoogeographical regions - Palaeartic region	
Lecturer-32	Palaeartic region	
Lecturer-33	Oriental region	
Lecturer-34	Oriental region	
Lecturer-35	Australian region	
Lecturer-36	Ethiopian region	
Lecturer-37	Ethiopian region	
Lecturer-38	Nearctic region	
Lecturer-39	Neotropical region	
Lecturer-40	Wallace line	

Lecturer-41	Wallace line	
Lecturer-42	Discontinuous distribution	
Lecturer-43	Discontinuous distribution	
Lecturer-44	Continental Drift	
Lecturer-45	Continental Drift	
<b>UNIT-IV</b>	<b>ANIMAL BEHAVIOUR</b>	
Lecturer-46	Types of Behaviour - Innate	
Lecturer-47	Acquired Behaviour	
Lecturer-48	Instinctive Behaviour	
Lecturer-49	Motivated Behaviour	
Lecturer-50	Taxes	
Lecturer-51	Reflexes	
Lecturer-52	Tropism	
Lecturer-53	Physiology and phylogeny of learning	
Lecturer-54	Trial and error learning	
Lecturer-55	Imprinting , habituation	
Lecturer-56	Classical conditioning	
Lecturer-57	Instrumental Conditioning	
Lecturer-58	Social Behaviour	
Lecturer-59	Communication	
Lecturer-60	Pheromones	

#### **REFERENCE BOOKS :**

- 1.M.P. Arora , ' Ecology' Himalaya Publishing company
- 2.P.D Sharma , Environmetnal Biology'
- 3.P.R.Trivedi and Gurdeep Raj.'Environmental Ecology'
- 4.Budhadev Sarma and Tej Kumar , Indian Wildlife Threats and Preservation
- 5.Chapman J.L. and Reiss M.J, Ecology Principles and Applications , Second Ed., Cambridge University Press,London.
- 6.Benny Joseph, Environmental Studies , TATA Mgraw Hill Com., New Delhi.
- 7.Eugene P.Odum, Fundamentals of Ecology Third Ed., Nataraj Publishers, Dehradun.
- 8.Veer Bala Rastogi,"Ecology and Animal Distribution"
- 9.P.K.Gupta , "Text Book of Ecology and Environment"
- 10.Bhatnagar and Bansal,"Ecology and Wildlife Biology
- 11.Dasmann,"Wild life Biology"
- 12.Reena Mathur , " Animal Behaviour"
- 13.Alocock," Animal Behaviour -an Evolutionary Approach

# MAHATMA GANDHI UNIVERSITY, NALGONDA

## B.Sc(Zoology) -III III-Semester Syllabus

### PAPER -III ANIMAL DIVERSITY - INVERTEBRATES AND DEVELOPMENT BIOLOGY

Lecturer	TOPIC	Remarks
<b>UNIT-I</b>	<b>UROCHORDATA , CEPHALOCHORDATA , CYCLOSTOMATA</b>	
Lecturer-1	Salient features of Urochordata.	
Lecturer-2	Retrogressive metamorphosis and its significance in Urochordata.	
Lecturer-3	Salient features and affinities of cephalochordata.	
Lecturer-4	General characters of cyclostomata, Comparison of the petromyzon and Myxine.	
Lecturer-5	General character and classification of chordata up to order with examples.	
Lecturer-6	General character of fishes, Classification of fishes up to order level with examples.	
Lecturer-7	Classification of fishes up to order level with examples.	
Lecturer-8	Scoliodon - Respiratory system.	
Lecturer-9	Scoliodon - Circulatory system heart structures Arterial system.	
Lecturer-10	Scoliodon - Arterial , venous system.	
Lecturer-11	Scoliodon - Nervous system (Brain structure)	
Lecturer-12	Scoliodon - Cranial nerves, Spinal nerves.	
Lecturer-13	Scoliodon - Cranial nerves, Spinal nerves.	
Lecturer-14	Types of Scales.	
Lecturer-15	Types of Fins.	
<b>UNIT-II</b>	<b>AMPHIBIA</b>	
Lecturer-16	General Character of Amphibians.	
Lecturer-17	Classification of amphibians up to orders with examples.	
Lecturer-18	Rana tigrina - Respiratory system.	
Lecturer-19	Rana tigrina - Circulatory system(heart structure, Arterial system.)	
Lecturer-20	Rana tigrina - Circulatory system(Venous system) Nervous system.	
Lecturer-21	Rana tigrina - Nervous system.(Central , peripheral).	
Lecturer-22	Parental care in Amphibia.	
Lecturer-23	Neotany and Paedogenesis.	
Lecturer-24	General Characters of Reptilia and classification of Reptilia up to order with examples.	
Lecturer-25	Calotes - Respiratory system.	
Lecturer-26	Calotes - Circulatory system(heart structure, Arterial system).	
Lecturer-27	Calotes - Circulatory system(Venous system) Nerves system(Brain).	
Lecturer-28	Calotes - Nervous system.	
Lecturer-29	Temporal fosse in reptiles, Poisonous and non Poisonous snakes.	
Lecturer-30	Rhyncho cephalia.	
<b>UNIT -III</b>	<b>AVES - MAMMELS</b>	
Lecturer-31	General characters of Aves, Classification of Aves.	
Lecturer-32	Classification of Aves, Digestive system of Columbalivia.	
Lecturer-33	Columba livia - Circulatory system(heart structure Arterial system).	
Lecturer-34	Columba livia - Circulatory system(Venous system).	
Lecturer-35	Columba livia - Respiratory system.	
Lecturer-36	Columba livia - Nervous system.	
Lecturer-37	Migration in Birds, Flight adaptation in Birds.	
Lecturer-38	General Characters of Mammalia, Classification of mammalia up to orders with examples.	
Lecturer-39	Classification of Mammalia, Rabbit - Digestive system.	
Lecturer-40	Rabbit - Respiratory system.	
Lecturer-41	Rabbit - Circulatory system (heart, structure.)	

Lecturer-42	Rabbit - Circulatory system.(Arterial system,Venous system)	
Lecturer-43	Rabbit - Nervous system.	
Lecturer-44	Rabbit - Nervous system.	
Lecturer-45	Dentition in mammals, Aquatic adaptaties in mammals.	
<b>UNIT - IV</b>	<b>DEVELOPMENT BIOLOGY AND EMBRYOLOGY</b>	
Lecturer-46	Gametogenesis - Spermatogenesis.	
Lecturer-47	Gametogenesis - Oogenesis.	
Lecturer-48	Fertilization, Types of eggs.	
Lecturer-49	Types of eggs.	
Lecturer-50	Types of Cleaveges.	
Lecturer-51	Types of Cleaveges.	
Lecturer-52	Development of frag up to formation of primary gernolayers.	
Lecturer-53	Development of frag up to formation of primary gernolayers.	
Lecturer-54	Formation of foetal membrane in chick embryo.	
Lecturer-55	Formation of foetal membrane in chick embryo functions.	
Lecturer-56	Types of placenta.	
Lecturer-57	Types of placenta.	
Lecturer-58	Types of placenta.	
Lecturer-59	Regeneration in Turbellaria.	
Lecturer-60	Regeneration in Lizards.	

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- 1.E.L.Jordan and P.S Verma ' Chordate Zoology'-.S.Chand Publications
- 2.Mohan P.Arora.'Chordata-I,Himalaya Publishing House Pvt.Ltd.
- 3.Marshal, Parker and Haswell ' Text book of Vertebrates '.ELBS and McMillan ,England.  
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- 7.J.W. Young , The life of Vertebrates , 3rd ed, Oxford University press.
- 8.Harvey Pough F,Christine M.Janis , B.Heiser,Vertebrate life,Pearson,6th ed,Pearson Education Inc.2002.

# MAHATMA GANDHI UNIVERSITY, NALGONDA

## B.Sc(Zoology) -IV

### IV-Semester Syllabus

#### PAPER -IV

#### CELL BIOLOGY , GENETICS & EVOLUTION

Lecturer	TOPIC	Remarks
<b>UNIT - I</b>	<b>CELL BIOLOGY</b>	
Lecturer-1	Cell theory.	
Lecturer-2	Differences of Prokaryotic and Eukaryotic cell, Ultra structure of animal cell.	
Lecturer-3	Structure and functions of plasma membrane proteins.	
Lecturer-4	Structure and functions of cell organelles - Endoplasmic Reticulum, Golgi body.	
Lecturer-5	Lysosomes, Centrosomes.	
Lecturer-6	Ribosomes.	
Lecturer-7	Mitochondria.	
Lecturer-8	Nucleus.	
Lecturer-9	Chromosome - structure, type.	
Lecturer-10	Giant Chromosomes.	
Lecturer-11	Cell division - Mitosis.	
Lecturer-12	Cell division - Meiosis.	
Lecturer-13	Cell division - Meiosis.	
Lecturer-14	Cell Cycle its regulation.	
Lecturer-15	Cell cycle and its regulation.	
<b>UNIT -II</b>	<b>MOLECULAR BIOLOGY</b>	
Lecturer-16	DNA - Structure.	
Lecturer-17	DNA - Structure.	
Lecturer-18	RNA - Structure,types.	
Lecturer-19	RNA- Types.	
Lecturer-20	DNA Replication in Prokaryotes.	
Lecturer-21	DNA Replication in Eukaryotes.	
Lecturer-22	Protein Synthesis - Transcription.	
Lecturer-23	Protein Synthesis - Transcription.	
Lecturer-24	Protein Synthesis - Transcription.	
Lecturer-25	Gene Expression - Genetic code.	
Lecturer-26	Operon Concept.	
Lecturer-27	Polymerase chain Reaction.	
Lecturer-28	Polymerase chain Reaction.	
Lecturer-29	Electrophoresis.	
Lecturer-30	Electrophoresis.	
<b>UNIT - III</b>	<b>GENETICS</b>	
Lecturer-31	Mendel's laws of Inheritance.	
Lecturer-32	Non-Mendelian Inheritance.	
Lecturer-33	Linkage.	
Lecturer-34	Linkage.	
Lecturer-35	Crossing over.	
Lecturer-36	Crossing over.	
Lecturer-37	Sex determination.	
Lecturer-38	Sex - linked inheritance.	
Lecturer-39	Chromosomal mutation - Deletion, Duplication.	
Lecturer-40	Chromosomal mutation - Inversion, Translocation.	
Lecturer-41	Aneuploidy and Polyploidy.	

Lecturer-42	Gene mutation - Indueed versus Spontaneous mutation.	
Lecturer-43	Inborn errors of metabolism.	
Lecturer-44	one gene one enzyme theory.	
Lecturer-45	one gene one Polypeptide theory.	
<b>UNIT -IV</b>	<b>EVOLUTION</b>	
Lecturer-46	Theories of Evolution - Lamarckism and Neo - Lamakism.	
Lecturer-47	Theories of Evolution - Drawinism and Neo - Drawinism.	
Lecturer-48	Modern synthetic theory.	
Lecturer-49	Evidence of Evolution.	
Lecturer-50	Hardy weinberg law.	
Lecturer-51	Hardy weinberg law.	
Lecturer-52	Forces of Evolution - Mutation.	
Lecturer-53	Gene flow, genetic drift.	
Lecturer-54	Natural selection.	
Lecturer-55	Isolation - Pre - Mating Mechanism.	
Lecturer-56	Isolation - Post - Mating Mechanism.	
Lecturer-57	Speciation - Methods of Speciation.	
Lecturer-58	Allopatric , Sympotric.	
Lecturer-59	Causes and Role of Extinction in Evolution.	
Lecturer-60	Causes and Role of Extinction in Evolution.	

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- 1.Lodish,Berk , Zipursky,Matsudaria,Baltimore,Darnell 'Molecular Cell Biology' W.H.Free man and company New York.
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