



B.Sc. Zoology Semester I
US01MAZOO01 (T) Animal Diversity and Physiology-1
Effective from June 2024
Zoology Major Course

Course Code	US01MAZOO01[T]	Title of the Course	Animal Diversity and Physiology-1
Total Credits of the Course	04	Hours per Week	04

Course Objectives:	<p>To make students familiar with:</p> <ol style="list-style-type: none"> 1.To understand the Zoological concepts of Animal with particular emphasis on their experimental outcomes. 2.To understand the basic concepts of types of Invertebrates. The unit also introduces understanding of general aspects of Invertebrate Phyla and Animals. 3. To provide exposure to Digestion process
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Course Content		
Unit	Description	Weightage* (%)
1.	<ul style="list-style-type: none"> • General characteristics and outline classification of lower Invertebrate Phyla, [up to Helminthes] • Physiology of Nutrition and reproduction in Protozoa • Life cycle and pathogenicity of Plasmodium vivax and Entamoeba histolytica. • Sponges: Canal system and Skeleton. • Alternation of generations between in Obelia. • Life cycle and pathogenicity of Fasciola hepatica and Wuchereria bancrofti. 	25%
2.	<ul style="list-style-type: none"> • General characteristics and outline classification of Higher Invertebrate Phyla [up to Echinodermata] • Type Study: Pheritima • Economic importance of Annelida 	25%
3.	<ul style="list-style-type: none"> • Social Life of Insect 	25%



	<ul style="list-style-type: none"> Type study: Periplaneta Economic Importance of Mollusca Water vascular system in Asteroidea 	
4.	<p>Human Physiology Of Digestion:</p> <ul style="list-style-type: none"> Digestive organs and Digestive glands Digestion of food Absorption of food Defecation Disorders: Peptic Ulcer, Ulcerative Colitis, Gastro enteritis. 	25%

Teaching-Learning Methodology	<ul style="list-style-type: none"> Class room interactions By chalk –duster method By using OHP- Powerpoint presentation By Giving project work By giving Students seminar, unit test, assignment Question bank circulation Arranging guest talk
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Marks-Exam Pattern: Class test-15marks(30%), Quiz-15marks(30%), Active learning-5marks(10%),Home assignment-5marks(10%), Class assignment-5marks(10%),Attendance-5marks(10%)	50% (50 Marks)
2.	External Marks (10marks MCQs + 10marks descriptive Questions From each 4- unit)	50% (50 Marks)

Course Outcomes:	
1.	To improve the scientific awareness among the students.
2.	To make students to understand the role and contribution of Zoology in the development



	of science.
3.	To improve scientific attitude and to give emphasis on the development of experimental skills, data analysis, calculations, and also on the limitations of the experimental method and Scientific data as well as results obtained.
4	To help students in understanding the concepts of Zoology.

Sr. No.	Reference Books:
1.	Modern Text book of Zoology – Invertebrate by R.L.Kotpal
2.	Invertebrate Zoology by- Jordan & Verma
3	A Text book of Animal Physiology by A.K.BERRY.
4	Animal Physiology by M.P.ARORA.
5	Principles of Anatomy & Physiology by TORTORA and GRABOWSKI

On-lineResources :
https://www.biologydiscussion.com/zoology/
https://www.slideshare.net/





B.Sc. FIRST SEMESTER
US01MAZOO02, PRACTICAL – MAJOR ZOOLOGY

Effective from June 2024

Course Code	US01MAZOO02 (P)	Title of the Course	Animal Diversity and Physiology-1
Total Credits of the Course	04	Hours per Week	08

Course Objectives:	To make students familiar with: 1. To understand the Zoological concepts of Animal with particular emphasis on their experimental outcomes. 2. To understand the basic concepts of types of Invertebrates. The unit also introduces understanding of general aspects of Invertebrate Phyla and Animals. 3. To provide exposure to Digestion process.
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Course Content		
Unit	Description	Weightage* (%)
Part-1.	<ul style="list-style-type: none"> • Classification upto class using Permanent slides and Specimen of Entamoeba histolytica, Plasmodium Vivax, Leucosolenia, Sycon, Hydra viridis, Jellyfish(Aurelia), Sea anemone (Metridium), • Classification upto class using Permanent slides and Specimen of Tap worm (Tenia Solium), Liver fluke (Fasciola hepatica)Ascaris Lumbricoides, Filaria (Wuchereria bancrofti) • Reproduction like Binary Fission Amoeba, Euglena, Paramecium, Ceratium, Conjugation in Paramecium • Permanent Slides, Sponges Canal system Asconoid, Syconoid and Leuconoid and all types of Spicules • Study of Obelia with permanent slides • Life cycle and pathogenicity of Fasciola hepatica and Wuchereria bancrofti • On field study of vermiculture <p>(Specimen other than the list can be exhibit to the students as per the availability in</p>	50%



	the Institutes)	
Part-2.	<ul style="list-style-type: none"> • Classification upto Class. <ul style="list-style-type: none"> • Earthworm(pheretimaposthuma),Neries, Leech(Hirudinaria granulose),Cockroach (Periplanetaamericana), Locust (swarming grasshopper), Prawn (Palaemon), Sea Cucumber(HolothuriaLinnaeus), Starfish (asteroid). • Permanent slides, Chaetae (setae), jaws of leech, parapodia of Nereis, mouth parts of Cockroach, Spiracles, Trachea • Social organization of Honey Bee • Complete Metamorphosis in Insects • To Study Amylase effect on Starch • To Study Trypsin effect on Protein • On field study of Insect Diversity (Specimen other than the list can be exhibit to the students as per the availability in the Institutes)	50%

Teaching-Learning Methodology	<ul style="list-style-type: none"> • Using student's Microscope • Observation of specimens • Using certain chemicals for test • Learn through chart /Model/ Video/ ppt • Field visit, Project submission • Preparing journal through various diagrams & description
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Examination evaluation includes Lab Work Assignment-20 marks(40%), Viva-voce/Lab Quiz-20marks(40%),Attendance-10marks(20%)which makes total 50 Marks.	50%
2.	External Examination Evaluation includes Lab work Assignment-20 marks(40%), Viva-voce/Lab Quiz-20marks(40%),Attendance-10marks(20%)which makes total 50 Marks.	50%



Course Outcomes:

1.	To improve the scientific awareness of animals among the students.
2.	To make students to understand the role of animals and their importance in life.
3.	To improve scientific attitude and to give emphasis on the development of experimental skills, data analysis, calculations, and also on the limitations of the experimental method and Scientific data as well as results obtained.
4.	To help students in understanding the concepts of Zoology.
5.	Understand how to demonstrate factors affecting enzyme activity

Suggested Reference Books:

Sr. No.	Reference Books
1.	A Manual of Practical Zoology- Invertebrate by P.S.VERMA
2.	• Practical Physiology, Anatomy & Biochemistry by SHAH, PATEL& GOEL
3.	• Practical Zoology Invertebrate by S.S. LAL

On-line resources :

<https://www.biologydiscussion.com/zoology/>

<https://www.slideshare.net/>



B.Sc. Zoology Semester I
US01MIZOO01 (T) Invertebrate Diversity
Effective from June 2024
Zoology Minor Course

Course Code	US01MIZOO01 (T)	Title of the Course	Invertebrate Diversity
Total Credits of the Course	02	Hours per Week	02

Course Objectives:	To make students familiar with: 1. To understand the Zoological concepts of Animal with particular emphasis on their experimental outcomes. 2. To understand the basic concepts of and general account of lower and higher Invertebrate phyla.
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Course Content		
Unit	Description	Weightage* (%)
1.	<ul style="list-style-type: none">• General characteristics and outline classification of lower Invertebrate Phyla, [up to Helminthes]• Physiology of Nutrition and reproduction in Protozoa• Life cycle and pathogenicity of Plasmodium vivax and Entamoeba histolytica• Sponges: Canal system and Skeleton• Life cycle and pathogenicity of Fasciola hepatica and Wuchereria bancrofti	50%
2.	<ul style="list-style-type: none">• General characteristics and outline classification of Higher Invertebrate Phyla [up to Echinodermata]• Economic importance of Annelida• Social Life of Insect• Economic Importance of Mollusca• Water vascular system in Asteroidea	50%

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Teaching-Learning Methodology	<ul style="list-style-type: none"> • Class room interactions • By chalk –duster method • By using OHP- Powerpoint presentation • By Giving project work • By giving Students seminar, unit test, assignment • Question bank circulation • Arranging guest talk
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Evaluation Pattern

Sr. No.	Details of the Evaluation Internal and/or External Examination Evaluation	Weightage
1.	Internal Examination Evaluation includes Class test-10 marks(40%), Quiz -5 marks(20%), Home assignment-5 marks (20%), Attendance-5 marks(10%) which makes total 25 marks	50%
2.	External Examination [MCQs (5marks from all units) + Descriptive Questions(10 marks from each unit) total -25marks	50%

Course Outcomes:

1.	To improve the scientific awareness among the students.
2.	To make students to understand the role and contribution of Zoology in the development of science.
3.	To improve scientific attitude and to give emphasis on the development of experimental skills, data analysis, calculations, and also on the limitations of the experimental method and Scientific data as well as results obtained.
4.	To help students in understanding the concepts of Zoology.

Suggested Reference Books:

Sr. No.	Reference Books
1.	Modern Text book of Zoology – Invertebrate by R.L.Kotpal



2.	Invertebrate Zoology by- Jordan & Verma
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On-line resources
https://www.biologydiscussion.com/zoology/
https://www.slideshare.net/



**B.Sc. FIRST SEMESTER
US01MIZOO02, Minor Zoology Practical
Effective from June 2024**

Course Code	US01MIZOO02 (P)	Title of the Course	Invertebrate Diversity
Total Credits of the Course	02	Hours per Week	04

Course Objectives:	To make students familiar with: 1. To understand the Zoological concepts of Animal with particular emphasis on their Experimental outcomes. 2. To understand the basic concepts of types of Invertebrates. The unit also introduces understanding of General Aspects of Invertebrate Phyla and Animals.
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Course Content	
	Practicals
	Classification upto class using Permanent slides and Specimen of Entaoeba histolytica, Plasmodium Vivex, Leucosolenia, Sycon, Hydra viridis, Jellyfish(Aurelia), Sea anemone (Metridium), Tap worm (Tenea Solium), Liver fluke (Fasciola hepatica)Ascaris Lumbricoides, Filaria (Wuchereria bancrofti) • Classification upto Class. Earthworm(pheretimaposthuma), Neries,



	<p>Leech(hirudinariagranulose), Cockroach (Periplanetaamericana), Locust (swarming grasshopper), Prawn (Palaemon), Sea Cucumber(HolothuriaLinnaeus), Starfish (asteroid).</p> <ul style="list-style-type: none"> • Reproduction like Binary Fission Amoeba, Euglena, Paramecium, Ceratium, Conjugation in Paramecium • Permanent Slides, Sponges Canal system Asconoid, Sycanoid and Leuconoid and all types of Spicules • Permanent slides, Chaetae (setae), jaws of leech, parapodia of Nereis, mouth parts of Cockroach, Spiracles, Trachea • Social organization of Honey Bee • Complete Metamorphosis in Insects • Field Study 	
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Teaching-Learning Methodology	<ul style="list-style-type: none"> • Using student's Microscope • Observation of specimens • Using certain chemicals for test • Learn through chart /Model/ Video/ ppt • Field visit, Project submission • Preparing journal through various diagrams & description
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Examination Evaluation includes--Lab work Assignment-10marks (40%), Viva-voce/Lab quiz-10 marks(40%), Attendance-5marks (20%) which makes total 25 marks	50%
2.	External Examination Evaluation includes- --Lab work Assignment-10marks (40%), Viva-voce/Lab quiz-10 marks(40%), Attendance-5marks (20%) which makes total 25 marks	50%

Course Outcomes:	
1.	To improve the scientific awareness of animals among the students.



2.	To make students to understand the role of animals and their importance in life.
3.	To improve scientific attitude and to give emphasis on the development of experimental skills, data analysis, calculations, and also on the limitations of the experimental method and Scientific data as well as results obtained.

Suggested Reference Books:

Sr. No.	Reference Books
1.	A Manual of Practical Zoology- Invertebrate by P.S.VERMA
2.	Practical Zoology Invertebrate by S.S. LAL

On-line resources

<https://www.biologydiscussion.com/zoology/>

<https://www.slideshare.net/>

B.Sc. Zoology Semester I
US01IDZOO01 (T) Invertebrates
Effective from June 2024
Zoology Inter disciplinary Course

Course Code	US01IDZOO01 (T)	Title of the Course	Invertebrates
Total Credits of the Course	02	Hours per Week	02
Course Objectives:	To make students familiar with: 1. To understand the Zoological concepts of Animal with particular emphasis on their experimental outcomes. 2.To understand the basic concepts of andgeneral account of lower and higher Invertebrate phyla.		



Course Content		
Unit	Description	Weightage* (%)
1.	<ul style="list-style-type: none"> General characteristics and outline classification of lower Invertebrate Phyla, [up to Helminthes] Physiology of Nutrition and reproduction in Protozoa Life cycle and pathogenicity of Plasmodium vivax and Entamoeba histolytica Sponges: Canal system and Skeleton Life cycle and pathogenicity of Fasciola hepatica and Wuchereria bancrofti 	50%
2.	<ul style="list-style-type: none"> General characteristics and outline classification of Higher Invertebrate Phyla [up to Echinodermata] Economic importance of Annelida Social Life of Insect Economic Importance of Mollusca Water vascular system in Asteroidea 	50%

Teaching-Learning Methodology	<ul style="list-style-type: none"> Class room interactions By chalk –duster method By using OHP- Powerpoint presentation By Giving project work By giving Students seminar, unit test, assignment Question bank circulation Arranging guest talk
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Examination Evaluation includes Class test-10 marks(40%), Quiz -5 marks(20%), Home assignment-5 marks (20%), Attendance-5 marks(10%) which makes total 25 marks	50%



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Syllabus effective from the Academic Year 2024-2025



2.	External Examination [MCQs (5marks from all units) + Discriptive Questions(10 marks from each unit) total -25marks	50%
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Course Outcomes:

1.	To improve the scientific awareness among the students.
2.	To make students to understand the role and contribution of Zoology in the development of science.
3.	To improve scientific attitude and to give emphasis on the development of experimental skills, data analysis, calculations, and also on the limitations of the experimental method and Scientific data as well as results obtained.
4.	To help students in understanding the concepts of Zoology.

Suggested Reference Books:

Sr. No.	Reference Books
1.	Modern Text book of Zoology – Invertebrate by R.L.Kotpal
2.	Invertebrate Zoology by- Jordan & Verma

On-line resources

<https://www.biologydiscussion.com/zoology/>

<https://www.slideshare.net/>



**B.Sc. FIRST SEMESTER
PRACTICAL - ZOOLOGY
US01IDZOO02 (P) Invertebrates
Effective from June 2024**

Course Code	US01IDZOO02 (P)	Title of the Course	Invertebrates
Total Credits of the Course	02	Hours per Week	02
Course Objectives:	<p>To make students familiar with:</p> <ol style="list-style-type: none"> 1. To understand the Zoological concepts of Animal with particular emphasis on their Experimental outcomes. 2. To understand the basic concepts of types of Invertebrates. The unit also introduces understanding of General Aspects of Invertebrate Phyla and Animals. 		

Course Content		
Unit	Description	Weightage* (%)
1.	<p>Classification upto class using Permanent slides and Specimen of Entamoeba histolytica, Plasmodium Vivax, Leucosolenia, Sycon, Hydra viridis, Jellyfish(Aurelia), Sea anemone (Metridium), Tap worm (Tenebrio Molitor), Liver fluke (Fasciola hepatica) Ascaris Lumbricoides, Filaria (Wuchereria bancrofti)</p> <ul style="list-style-type: none"> • Classification upto Class. Earthworm(pheretima posthuma), Neries, Leech(hirudinaria granulosa), Cockroach (Periplaneta americana), Locust (swarming grasshopper), Prawn (Palaemon), Sea Cucumber(Holothuria Linnaeus), Starfish (asteroid). • Reproduction like Binary Fission Amoeba, Euglena, Paramecium, Ceratium, Conjugation in Paramecium • Permanent Slides, Sponges Canal system Asconoid, Sycanoid and Leuconoid and all types of Spicules • Permanent slides, Chaetae (setae), jaws of leech, parapodia of Nereis, 	



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	mouth parts of Cockroach, Spiracles, Trachea • Social organization of Honey Bee • Complete Metamorphosis in Insects. • Field Study	
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Teaching-Learning Methodology	<ul style="list-style-type: none"> • Using student's Microscope • Observation of specimens • Using certain chemicals for test • Learn through chart /Model/ Video/ ppt • Field visit, Project submission • Preparing journal through various diagrams & description
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Evaluation Pattern

Sr. No.	Details of the Evaluation	Weightage
1.	Internal Examination Evaluation includes Class test-10 marks(40%), Quiz -5 marks(20%), Home assignment-5 marks (20%), Attendance-5 marks(10%) which makes total 25 marks	50%
2.	External Examination [MCQs (5marks from all units) + Discriptive Questions(10 marks from each unit) total -25marks	50%

Course Outcomes:

1.	To improve the scientific awareness of animals among the students.
2.	To make students to understand the role of animals and their importance in life.
3.	To improve scientific attitude and to give emphasis on the development of experimental skills, data analysis, calculations, and also on the limitations of the experimental method and Scientific data as well as results obtained.

Suggested Reference Books:

Sr. No.	Reference Books
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1.	A Manual of Practical Zoology- Invertebrate by P.S.VERMA
2.	Practical Zoology Invertebrate by S.S. LAL

On-line resources

<https://www.biologydiscussion.com/zoology/>

<https://www.slideshare.net/>



B.Sc. Zoology Semester I
US1SEZOO01 (T) Wildlife and Techniques
Effective from June 2024

Course Code	US01SEZOO01	Title of the Course	Wildlife and Techniques
	[T]		
Total Credits of the Course	02	Hours per Week	02
Course Objectives:	<p>To make students familiar with:</p> <ol style="list-style-type: none"> 1. To understand the Zoological concepts of Animal with particular emphasis on their Fields outcomes. 2. To understand the basic concepts of wildlife and there studies.The students will also learn about importance and Techniques of the Wildlife. 		

Course Content		
Unit	Description	Weightage* (%)
1.	Wild life of India, Sanctuary of India. National parks under special Projects: Tiger, Lion, Elephant, Crocodile, Spotted deer breeding Projects Endangered species	50%
2.	Wildlife Photography Wildlife Handy tools Magnifying glass, Scale, Camera traps GPS collars Telemetry equipment Weatherproof stationery cases and bags Tongs, Hooks Data sheets	50%

Teaching-Learning	<ul style="list-style-type: none"> • Class room interactions • By chalk –duster method
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Methodology	<ul style="list-style-type: none"> • By using OHP- Power point presentation • By Giving project work • By giving Students seminar, unit test, assignment • Question bank circulation • Arranging guest talk • Field visit
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Examination Evaluation includes Class test-10 marks(40%), Quiz -5 marks(20%), Home assignment-5 marks (20%), Attendance-5 marks(10%) which makes total 25 marks	50%
2.	External Examination [MCQs (5marks from all units) + Discriptive Questions(10 marks from each unit) total -25marks	50%

Course Outcomes:	
1.	To improve the scientific Skills and awareness among the students.
2.	To make students to understand the role and contribution of wildlife Zoology in the development of science.
3.	To improve scientific attitude and to give emphasis on the development of experimental skills, data analysis, calculations, and also on the limitations of the experimental method and Scientific data as well as results obtained.
4.	To help students in understanding the concepts of wild life Zoology.

Suggested Reference Books:	
Sr. No.	Reference Books

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1.	Modern Text Book of zoology - Vertebrate by R .L. KOTPAL.
2.	Chordate Zoology by JORDAN AND VERMA
3	IAS ZOOLOGY BY SATGURUPRASAD

On-line resources

<https://www.biologydiscussion.com/zoology/>

<https://www.slideshare.net/>



(Bachelor of Science) (Undergraduate)

B. Sc. (UG) Semester-I

Course Code	US01XXXX51	Title of the Course	XXXXXXXXXXXXX
Total Credits of the Course	XX	Hours per Week	XX
Course Objectives:	To make students familiar with: 1. 2.		

Course Content		
Unit	Description	Weightage* (%)
1.		25%
2.		25%
3.		25%
4.		25%

Teaching-Learning Methodology	
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.		
2.		
3.		



(Bachelor of Science) (Undergraduate)

B. Sc. (UG) Semester-I

Course Code	US01XXXX51	Title of the Course	XXXXXXXXXXXX
Total Credits of the Course	XX	Hours per Week	XX
Course Objectives:	To make students familiar with: 1. 2.		

Course Content		
Unit	Description	Weightage* (%)
1.		25%
2.		25%
3.		25%
4.		25%

Teaching-Learning Methodology	
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.		
2.		
3.		



(Bachelor of Science) (Undergraduate)

B. Sc. (UG) Semester-I

Course Code	US01XXXX51	Title of the Course	XXXXXXXXXXXX
Total Credits of the Course	XX	Hours per Week	XX
Course Objectives:	To make students familiar with: 1. 2.		

Course Content		
Unit	Description	Weightage* (%)
1.		25%
2.		25%
3.		25%
4.		25%

Teaching-Learning Methodology	
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.		
2.		
3.		



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