

SARDAR PATEL UNIVERSITY
B.Sc. Zoology Semester I
Effective from June 2023
Zoology Core Course

Course Code	US01MAZOO01 (T)	Title of the Course	Animal Diversity and Physiology-1
Total Credits of the Course	04	Hours per Week	04
Programme outcome (PO) for B.Sc.	<ol style="list-style-type: none"> 1. Bachelor of Science degree program provides theoretical and practical knowledge of different Science subjects in consonance with National Education Policy 2020. 2. This programme provides a flexibility to students to acquire certificate course, diploma course, degree programme, honours degree with or without research having multi entry and multi exit facilities. 3. Bachelor of Science programme at Sardar Patel University is designed keeping the overall back ground preparation in mind for the student to either opt for a Master programme or jobs or to become an entrepreneur. 4. At the entry level of the programme, i.e., semester one, various subjects offered as major subject, minor subject, interdisciplinary subject as per choice of the students. 5. In addition to that, some skill enhancement courses, ability enhancement courses and value-added courses are also offered for overall development of the students. 6. After end of the even semesters, the students may take exit after fulfilling the minimum requirements. 7. The students have the enough opportunity to complete four-year graduation programme with any major subject as per their choice. 8. The students, after completion of the program from Sardar Patel University, can opt for the master's degree programme in the subject they have had at the final semester, or in a related discipline. 		
Course Outcome (CO) For Zoology	<ol style="list-style-type: none"> 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. 		

Course Specific Outcome (CPO) For Zoology, Theory and Practicals	<ol style="list-style-type: none"> 1. The students will learn about the Lower and Higher Invertebrates 2. The General account of Protozoan, Sponge and Coelomates 3. The General Account of Higher Invertebrates 4. The Physiology of Digestion and Enzymatic activities and Diseses
Course Objectives:	<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
Unit	Description
1	<p>General characteristics and outline classification of lower Invertebrate Phyla, [up to helminthes]</p> <p>Physiology of Nutrition and reproduction in <i>Protozoa</i></p> <p>Life cycle and pathogenicity of <i>Plasmodium vivax</i> and <i>Entamoeba histolytica</i></p> <p>Sponges: Canal system and Skeleton</p> <p>alternation of generations between sexual and asexual in <i>Obelia</i></p> <p>Life cycle and pathogenicity of <i>Fesciola hepatica</i> <u>and</u> <i>Wuchereria bancrofti</i></p>
2	<p>General characteristics and outline classification of Higher Invertebrate Phyla [up to Echinodermata]</p> <p>General characters of <i>Annelida</i></p> <p>Type Study: <i>Pheritima</i></p> <p>Economic importance of <i>Annelida</i></p>
3	<p>Social Life of Insect</p> <p>Type study: <i>periplaneta</i></p> <p>Economic Importance of <i>Mollusca</i></p> <p>Water vascular system in <i>Asteroidea</i></p>
4	<p>Physiology Of Digestion:</p> <p>Digestive organs and Digestive glands</p> <p>Digestion of food</p> <p>Absorption of food</p> <p>Defecation</p> <p>Disorders: Peptic Ulcer, Ulcerative Colitis, Gastro enteritis.</p>

Reference Books:

- Modern Text book of Zoology – Invertebrate by R.L.Kotpal
- Invertebrate Zoology by- Jordan & Verma
- A Text book of Animal Physiology by A.K.BERRY.
- Animal Physiology by M.P.ARORA.
- Principles of Anatomy & Physiology by TORTORA and GRABOWSKI

SARDAR PATEL UNIVERSITY
B.Sc. FIRST SEMESTER
PRACTICAL - ZOOLOGY
Effective from June 2023
4 Credits, 8 periods per week

Course Code	US01MAZOO02 (P)	Title of the Course	Animal Diversity and Physiology-1
Total Credits of the Course	04	Hours per Week	04
Part-1	<ul style="list-style-type: none"> • Classification upto class using Permanent slides and Specimen of <i>Entamoeba histolytica</i>, <i>Plasmodium Vivax</i>, Leucosolenia, Sycon, <i>Hydra viridis</i>, Jellyfish(<i>Aurelia</i>), Sea anemone (<i>Metridium</i>), • Classification upto class using Permanent slides and Specimen of Tap worm (<i>Tenia Solium</i>), Liver fluke (<i>Fasciola hepatica</i>)<i>Ascaris Lumbricoides</i>, Filaria (<i>Wuchereria bancrofti</i>) • 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 <i>Obelia</i> with permanent slides • Life cycle and pathogenicity of <i>Fasciola hepatica</i> <u>and</u> <i>Wuchereria bancrofti</i> • On field study of vermiculture <p><i>(Specimen other than the list can be exhibit to the students as per the availability in the Institutes)</i></p>		
Part-2	<ul style="list-style-type: none"> • Classification upto Class. Earthworm(<i>pheretimaposthuma</i>), Neries, Leech(<i>hirudinariagranulose</i>), Cockroach (<i>Periplanetaamericana</i>), Locust (swarming grasshopper), Prawn (<i>Palaemon</i>), Sea Cucumber(<i>HolothuriaLinnaeus</i>), Starfish (asteroid). • Permanent slides, Chaetae (setae), jaws of leech, parapodia of Nereis, mouth parts of Cockroach, Spiracles, Trachea • <i>Social organization of Honey Bee</i> • <i>Complete Metamorphosis in Insects</i> • To Study Amylase effect on Starch • To Study Tripsin effect on Protein • On field study of Insect Diversity <p><i>(Specimen other than the list can be exhibit to the students as per the availability in the Institutes)</i></p>		

Reference Books:

- A Manual of Practical Zoology- Invertebrate by P.S.VERMA
- Practical Physiology, Anatomy & Biochemistry by SHAH, PATEL& GOEL
- Practical Zoology Invertebrate by S.S. LAL

SARDAR PATEL UNIVERSITY
B.Sc. Zoology Semester I
US01MIZOO01 (T) Invertebrate Diversity
Effective from June 2023
Zoology Core Course

Course Code	US01MIZOO01 (T)	Title of the Course	Invertebrate Diversity
Total Credits of the Course	02	Hours per Week	02
Programme outcome (PO) for B.Sc.	<ol style="list-style-type: none"> 1. Bachelor of Science degree program provides theoretical and practical knowledge of different Science subjects in consonance with National Education Policy 2020. 2. This programme provides a flexibility to students to acquire certificate course, diploma course, degree programme, honours degree with or without research having multi entry and multi exit facilities. 3. Bachelor of Science programme at Sardar Patel University is designed keeping the overall back ground preparation in mind for the student to either opt for a Master programme or jobs or to become an entrepreneur. 4. the entry level of the programme, i.e., semester one, various subjects offered as major subject, minor subject, interdisciplinary subject as per choice of the students. 5. In addition to that, some skill enhancement courses, ability enhancement courses and value-added courses are also offered for overall development of the students. 6. After end of the even semesters, the students may take exit after fulfilling the minimum requirements. 7. The students have the enough opportunity to complete four-year graduation programme with any major subject as per their choice. 8. The students, after completion of the program from Sardar Patel University, can opt for the master's degree programme in the subject they have had at the final semester, or in a related discipline. 		
Course Outcome (CO) For Zoology	<ol style="list-style-type: none"> 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. 		
Course Specific Outcome (CPO) For Zoology, Theory and Practicals	<ol style="list-style-type: none"> 1. The students will learn about the Lower and Higher Invertebrates 2. The General account of Protozoan, Sponge and Coelomates 3. The General Account of Higher Invertebrates 4. The Physiology of Digestion and Enzymatic activities and Dyes 		

Course Objectives:	<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
Unit	Description
1	<p>General characteristics and outline classification of lower Invertebrate Phyla, [up to helminthes]</p> <p>Physiology of Nutrition and reproduction in <i>Protozoa</i></p> <p>Life cycle and pathogenicity of <i>Plasmodium vivax</i> and <i>Entamoeba histolytica</i></p> <p>Sponges: Canal system and Skeleton</p> <p>Life cycle and pathogenicity of <i>Fesciola hepatica</i> <u>and</u> <i>Wuchereria bancrofti</i></p>
2	<p>General characteristics and outline classification of Higher Invertebrate Phyla [up to Echinodermata]</p> <p>General characters of <i>Annelida</i></p> <p>Economic importance of <i>Annelida</i></p> <p>Social Life of Insect</p> <p>Economic Importance of <i>Mollusca</i></p> <p>Water vascular system in <i>Asteroidea</i></p>

Reference Books:

- Modern Text book of Zoology – Invertebrate by R.L.Kotpal
- Invertebrate Zoology by- Jordan & Verma
- A Text book of Animal Physiology by A.K.BERRY.

SARDAR PATEL UNIVERSITY
B.Sc. FIRST SEMESTER
PRACTICAL - ZOOLOGY
US1MIZOO02 (P) Invertebrate Diversity
Effective from June 2023

Course Code	US01MIZOO02 (P)	Title of the Course	Invertebrate Diversity
Total Credits of the Course	02	Hours per Week	04
	<ul style="list-style-type: none"> • Classification upto class using Permanent slides and Specimen of <i>Entamoeba histolytica</i>, <i>Plasmodium Vivax</i>, Leucosolenia, Sycon, <i>Hydra viridis</i>, Jellyfish(<i>Aurelia</i>), Sea anemone (<i>Metridium</i>), Tap worm (<i>Tenia Solium</i>), Liver fluke (<i>Fasciola hepatica</i>)<i>Ascaris Lumbricoides</i>, Filaria (<i>Wuchereria bancrofti</i>) • Classification upto Class. Earthworm(<i>Pheretima posthuma</i>), Neries, Leech(<i>Hirudinaria granulosa</i>), Cockroach (<i>Periplaneta americana</i>), Locust (swarming grasshopper), Prawn (<i>Palaemon</i>), Sea Cucumber(<i>Holothuria Linnaeus</i>), 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, mouth parts of Cockroach, Spiracles, Trachea • <i>Social organization of Honey Bee</i> • <i>Complete Metamorphosis in Insects</i> • <i>Field Study</i> 		

Reference Books:

- A Manual of Practical Zoology- Invertebrate by P.S.VERMA
- Practical Zoology Invertebrate by S.S. LAL

SARDAR PATEL UNIVERSITY
B.Sc. Zoology Semester I
US01IDZOO01 (T) Invertebrates
Effective from June 2023
Zoology Core Course

Course Code	US01IDZOO01 (T)	Title of the Course	Invertebrates
Total Credits of the Course	02	Hours per Week	02
Programme outcome (PO) for B.Sc.	<ol style="list-style-type: none"> 1. Bachelor of Science degree program provides theoretical and practical knowledge of different Science subjects in consonance with National Education Policy 2020. 2. This programme provides a flexibility to students to acquire certificate course, diploma course, degree programme, honours degree with or without research having multi entry and multi exit facilities. 3. Bachelor of Science programme at Sardar Patel University is designed keeping the overall back ground preparation in mind for the student to either opt for a Master programme or jobs or to become an entrepreneur. 4. the entry level of the programme, i.e., semester one, various subjects offered as major subject, minor subject, interdisciplinary subject as per choice of the students. 5. In addition to that, some skill enhancement courses, ability enhancement courses and value-added courses are also offered for overall development of the students. 6. After end of the even semesters, the students may take exit after fulfilling the minimum requirements. 7. The students have the enough opportunity to complete four-year graduation programme with any major subject as per their choice. The students, after completion of the program from Sardar Patel University, can opt for the master's degree programme in the subject they have had at the final semester, or in a related discipline. 		
Course Outcome (CO) For Zoology	<ol style="list-style-type: none"> 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. 		
Course Specific Outcome (CPO) For Zoology, Theory and Practicals	<ol style="list-style-type: none"> 1. The students will learn about the Lower and Higher Invertebrates 2. The General account of Protozoan, Sponge and Coelomates 3. The General Account of Higher Invertebrates 4. The Physiology of Digestion and Enzymatic activities and Dyes 		

Course Objectives:	<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. To provide exposure to Digestion process
Unit	Description
1	<p>General characteristics and outline classification of lower Invertebrate Phyla, [up to helminthes]</p> <p>Physiology of Nutrition and reproduction in <i>Protozoa</i> pathogenicity of <i>Plasmodium vivax</i> and <i>Entamoeba histolytica</i> Sponges: Canal system and Skeleton pathogenicity of <i>Fasciola hepatica</i> and <i>Wuchereria bancrofti</i></p>
2	<p>General characteristics and outline classification of Higher Invertebrate Phyla [up to Echinodermata]</p> <p>General characters of <i>Annelida</i> Economic importance of <i>Annelida</i> Social Life of Insect Economic Importance of <i>Mollusca</i> Water vascular system in <i>Asteroidea</i></p>

Reference Books:

- Modern Text book of Zoology – Invertebrate by R.L.Kotpal
- Invertebrate Zoology by- Jordan & Verma
- A Text book of Animal Physiology by A.K.BERRY.

SARDAR PATEL UNIVERSITY
B.Sc. FIRST SEMESTER
PRACTICAL - ZOOLOGY
US1IDZOO02 (P) Invertebrates
Effective from June 2023

Course Code	US01IDZOO02 (P)	Title of the Course	Invertebrates
Total Credits of the Course	02	Hours per Week	02
	<ul style="list-style-type: none"> • Classification upto class using Permanent slides and Specimen of <i>Entamoeba histolytica</i>, <i>Plasmodium Vivax</i>, Leucosolenia, Sycon, <i>Hydra viridis</i>, Jellyfish(<i>Aurelia</i>), Sea anemone (<i>Metridium</i>), Tap worm (<i>Tenebrio Solium</i>), Liver fluke (<i>Fasciola hepatica</i>)<i>Ascaris Lumbricoides</i>, Filaria (<i>Wuchereria bancrofti</i>) • Classification upto Class. Earthworm(<i>pheretimaposthuma</i>), Neries, Leech(<i>hirudinariagranulose</i>), Cockroach (<i>Periplanetaamericana</i>), Locust (swarming grasshopper), Prawn (<i>Palaemon</i>), Sea Cucumber(<i>HolothuriaLinnaeus</i>), Starfish (asteroid). • 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 • Permanent slides, Chaetae (setae), jaws of leech, parapodia of Nereis, mouth parts of Cockroach, Spiracles, Trachea • <i>Social organization of Honey Bee</i> • <i>Complete Metamorphosis in Insects</i> • <i>Field Study</i> 		

Reference Books:

- A Manual of Practical Zoology- Invertebrate by P.S.VERMA
- Practical Zoology Invertebrate by S.S. LAL

SARDAR PATEL UNIVERSITY
B.Sc. Zoology Semester II
US1SEZOO01 (T) Wildlife and Techniques
Effective from June 2023
Zoology Core Course

Course Code	US01SEZOO01 (T)	Title of the Course	Wildlife and Techniques
Total Credits of the Course	02	Hours per Week	02
Programme outcome (PO) for B.Sc.	<ol style="list-style-type: none"> 1. Bachelor of Science degree program provides theoretical and practical knowledge of different Science subjects in consonance with National Education Policy 2020. 2. This programme provides a flexibility to students to acquire certificate course, diploma course, degree programme, honours degree with or without research having multi entry and multi exit facilities. 3. Bachelor of Science programme at Sardar Patel University is designed keeping the overall back ground preparation in mind for the student to either opt for a Master programme or jobs or to become an entrepreneur. 4. At the entry level of the programme, i.e., semester one, various subjects offered as major subject, minor subject, interdisciplinary subject as per choice of the students. 5. In addition to that, some skill enhancement courses, ability enhancement courses and value-added courses are also offered for overall development of the students. 6. After end of the even semesters, the students may take exit after fulfilling the minimum requirements. 7. The students have the enough opportunity to complete four-year graduation programme with any major subject as per their choice. <p>The students, after completion of the program from Sardar Patel University, can opt for the master's degree programme in the subject they have had at the final semester, or in a related discipline.</p>		
Course Outcome (CO) For Zoology	<ol style="list-style-type: none"> 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. 		
Course Specific Outcome (CPO) For Zoology, Theory and Practicals	<ol style="list-style-type: none"> 1. The students will learn about the Wildlife Techniques 2. The General Account Techniques 3. The Importance of Wildlife 		

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

Reference Books:

- Modern Text Book of zoology - Vertebrate by R .L. KOTPAL.
- Chordate Zoology by Jordan and Verma.