

Education for Knowledge, Science and Culture”

-Shikshanmaharshi Dr. Bapuji Salunkhe

Shri Swami Vivekanand Shikshan Sanstha's

**Vivekanand College, Kolhapur (Autonomous)**

**Department Of Zoology**

---

## **Annual Teaching Plan 2019-2020**



**Shri Swami Vivekanand Shikshan Sanstha's  
VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)  
DEPARTMENT OF ZOOLOGY  
Academic year: 2019-20**

**Annual teaching plan**

**Teacher Name:** - Dr. K. P. Shinde

**Subject:** Animal diversity

**Course title:** B.Sc. I

**Semester: I**

<b>Month: July</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
3	2	5	Unit I	Kingdom Protista
<b>Month: August</b>			<b>Module unit</b>	<b>Sub unit planned</b>
5	4	9	Unit I	Phylum- Porifera
<b>Month: September</b>			<b>Module unit</b>	<b>Sub unit planned</b>
3	4	7	Unit I	Phylum: Cnidaria

**Subject:** Comparative Anatomy & Developmental Biology of Vertebrates

**Course title:** B.Sc. I

**Semester: II**

<b>Month: November</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit I	Skeletal System, Pectoral girdle
<b>Month: December</b>			<b>Module unit</b>	<b>Sub unit planned</b>
2	4	6	Unit I	pelvic girdle

**Subject:** Physiology and Biochemistry

**Course title:** B.Sc. II

**Semester: III**

<b>Month: July</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit II	Structure of Nephron Mechanism of urine formation
<b>Month: August</b>			<b>Module unit</b>	<b>Sub unit planned</b>
3	4	7	Unit II	Counter current mechanism

**Subject: Cell biology, Genetics and Evolution**

**Course title: B.Sc. II**

**Semester: IV**

<b>Month: November</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit III	Major event in history of life Geological time scale
<b>Month: December</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit III	Introduction to evolutionary theories,
<b>Month: January</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit III	Darwinism & Neo Darwinism

**Subject: Functional anatomy of non-chordate**

**Course title: B.Sc. III**

**Semester: V**

<b>Month: July</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
3	2	5	Unit II	Type study-Leech
<b>Month: August</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit II	Locomotion, Food, feeding & digestive system, Haemo-coelomic system, Excretory system
<b>Month: September</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	7	Unit II	Sense organ, Reproductive system, Copulation & Cocoon formation
<b>Month: October</b>			<b>Module unit</b>	<b>Sub unit planned</b>
2	4	6	Unit II	Parasitic adaption, Economic importance of leech

**Subject: Comparative Anatomy of Vertebrates; Applied Zoology**

**Course title: B.Sc. III**

**Semester: VI**

<b>Month: December</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		

4	4	8	Unit I	Endoskeleton, Vertebral column
<b>Month: January</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit I	Appendicular skeleton
<b>Month: January</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit I	Apiculture

<b>Annual teaching plan (Practical)</b>
-----------------------------------------

Class	Practical No.	Batch	Practical based on paper
B. Sc. I	Practical I Practical II	B6, B4	Animal Diversity (Section I) Comparative Anatomy and Developmental biology of Vertebrates (Section II)
B. Sc. II	Practical II	M1	Cell biology, Genetics, Evolution and Ethology
B. Sc. III	Practical VII	Z1	Comparative Anatomy of Vertebrates and Developmental Biology



**Dr. K. P. Shinde**  
Head,  
Department of Zoology  
Vivekanand College,  
Kolhapur (Autonomous)

**Shri Swami Vivekanand Shikshan Sanstha's  
VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)  
DEPARTMENT OF ZOOLOGY  
Academic year: 2019-20**

**Annual teaching plan**

**Teacher Name :-** Dr. T. C. Gaupale

**Subject:** Animal diversity

**Course title:** B.Sc. I

**Semester: I**

<b>Month: July</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit I	Phylum Platyhelminthes
<b>Month: August</b>			<b>Module unit</b>	<b>Sub unit planned</b>
3	4	7	Unit I	Phylum-Nemathelminthes
<b>Month: September</b>			<b>Module unit</b>	<b>Sub unit planned</b>
3	4	7	Unit II	Phylum-Annelida
<b>Month: October</b>			<b>Module unit</b>	<b>Sub unit planned</b>
2	4	6	Unit II	Metamerism in Annelida

**Subject: Comparative Anatomy & Developmental Biology of Vertebrates**

**Course title:** B.Sc. I

**Semester: II**

<b>Month: November</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit IV	Chick Embryology
<b>Month: December</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit IV	Fertilization in chick
<b>Month: January</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit IV	Development up to 72 hrs

**Subject: Physiology and Biochemistry**

**Course title:** B.Sc. II

**Semester: III**

<b>Month: July</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		

2	2	4	Unit III	Endocrinology- Pituitary , Thyroid gland
<b>Month: August</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit III	parathyroid, pancreas, adrenal gland
<b>Month: September</b>			<b>Module unit</b>	<b>Sub unit planned</b>
3	4	7	Unit III	Hypothalamus, Testes, Ovary
<b>Month: October</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit IV	Mechanism of enzyme action

**Subject: Cell biology, Genetics and Evolution**

**Course title: B.Sc. II**

**Semester: IV**

<b>Month: November</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit III	Organic variation, Isolating mechanism
<b>Month: December</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit III	Natural selection
<b>Month: January</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit III & IV	Artificial selection, Mass extinction
<b>Month: February</b>			<b>Module unit</b>	<b>Sub unit planned</b>
2	4	6	Unit IV	Role of extinction in evolution

**Subject: Endocrinology, Env. Bio. & toxicology**

**Course title: B.Sc. III**

**Semester: V**

<b>Month: July</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit I	Endocrinology
<b>Month: August</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit I	Thyroid gland & parathyroid-
<b>Month: September</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit I	Adrenal gland & islets of Langerhans
<b>Month: October</b>			<b>Module unit</b>	<b>Sub unit planned</b>

2	4	6	Unit I	Hormones receptor & mechanism of hormonal action, Prostaglandins
---	---	---	--------	------------------------------------------------------------------

**Subject: Developmental Biology; Applied Zoology**

**Course title: B.Sc. III**


**Semester: VI**

<b>Month: November</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit II	Introduction to Developmental biology
<b>Month: December</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit II	Fertilization in chick
<b>Month: January</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit II	Development up to 72 hrs.
<b>Month: February</b>			<b>Module unit</b>	<b>Sub unit planned</b>
3	2	5	Unit II	Fisheries

**Annual teaching plan (Practical)**

<b>Class</b>	<b>Practical No.</b>	<b>Batch</b>	<b>Practical based on paper</b>
B. Sc. I	Practical I Practical II	B1, B5	Animal Diversity (Section I) Comparative Anatomy and Developmental biology of Vertebrates (Section II)
B. Sc. II	Practical I	M1	Mammalian Physiology and Biochemistry
B. Sc. III	Practical VIII	Z1	Physiology and Applied Zoology

  
**Dr. T. C. Goupale**

  
**Dr. K. P. Shinde**  
Head,  
Department of Zoology  
Vivekanand College,  
Mumbai (Autonomous)

**Shri Swami Vivekanand Shikshan Sanstha's  
VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)  
DEPARTMENT OF ZOOLOGY  
Academic year: 2019-20**

**Annual teaching plan**

**Teacher Name:** -Ms. Najnin A. Patel

**Subject:** Animal diversity

**Course title:** B.Sc. I

**Semester: I**

<b>Month: July</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit IV	Class-Reptiles
<b>Month: August</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit IV	classification up to order in class reptiles Venomous and non-venomous snake
<b>Month: September</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit IV	Class Aves
<b>Month: October</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
4	4	8	Unit IV	Class Mammals

**Subject:** Comparative Anatomy & Developmental Biology of Vertebrates

**Course title:** B.Sc. I

**Semester: II**

<b>Month: November</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit II	Sense organs & types of receptors
<b>Month: December</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit III	Early embryonic development Gametogenesis- Spermatogenesis, Oogenesis
<b>Month: January</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit III	External fertilization (Amphibia), internal fertilization mammals
<b>Month: February</b>			<b>Module unit</b>	<b>Sub unit planned</b>
2	2	4	Unit III	Fate map & Neurulation in frog embryo

**Subject:** Physiology and Biochemistry

**Course title:** B.Sc. II

**Semester: III**

<b>Month: July</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit III	Carbohydrate metabolism, Glycolysis
<b>Month: August</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit III	Kreb cycle, Pentose phosphate pathway



				Gluconeogenesis, Glycogen metabolism
<b>Month: September</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit III Unit IV	Review of electron transport chain Lipid metabolism Biosynthesis of fatty acids
<b>Month: October</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit IV	Beta oxidation of palmitic acid
<b>Month: November</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit IV	Protein metabolism

**Subject: Cell biology, Genetics and Evolution**

**Course title: B.Sc. II**

**Semester: IV**

<b>Month: November</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit I	Ultra-structure of cell organelles Prokaryotic & Eukaryotic cell
<b>Month: December</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit I	Ultra-structure & function of plasma membrane, Nucleus, Mitochondria Golgi Apparatus
<b>Month: January</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit I	Endoplasmic reticulum, Ribosome Mendel's work on transmission of traits Genetic variation

**Subject: Biostatistics, Bioinformatics & medical zoology; Molecular biology, Biotechnology & Biotechniques**

**Course title: B.Sc. III**

**Semester: V**

<b>Month: July</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
3	2	5	Unit II	Bioinformatics- Study of computer & its devices
<b>Month: August</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit II	Biotechnology- rDNA technology Restriction enzymes- DNA ligase, DNA polymerase, Cloning vectors
<b>Month: September</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit III	DNA probes, PCR, Southern blotting, Separation techniques- TLC, gel electrophoresis
<b>Month: October</b>			<b>Module unit</b>	<b>Sub unit planned</b>

4	4	8	Unit III	Animal cell culture, stem cells
---	---	---	----------	---------------------------------

**Subject: Developmental Biology**

Course title: B.Sc. III

Semester: VI

Month: November			Module unit	Sub unit planned
Lectures	Practical	Total		
2	2	4	Unit I	Gametogenesis Process of fertilization
Month: December			Module unit	Sub unit planned
Lectures	Practical	Total		
4	4	8	Unit I	Structure & types of eggs, Cleavage
Month: January			Module unit	Sub unit planned
Lectures	Practical	Total		
4	4	8	Unit I	Acadian tadpole & retrogressive metamorphosis
Month: February			Module unit	Sub unit planned
Lectures	Practical	Total		
2	2	4	Unit III	Development of Amphioxus upto coelom formation

**Annual teaching plan (Practical)**

Class	Practical No.	Batch	Practical based on paper
B. Sc. I	Practical I Practical II	B6	Animal Diversity (Section I) Comparative Anatomy and Developmental biology of Vertebrates (Section II)
B. Sc. II	Practical I	B1	Mammalian Physiology and Biochemistry
B. Sc. III	Practical V	Z1	Functional Anatomy of Non-Chordates and Biostatistics, Bioinformatics & Medical Zoology.



Ms. N. A. Patel



Dr. K. P. Shinde

Head,  
Department of Zoology  
Vivekanand College,  
Kolhapur (Autonomous)

**Shri Swami Vivekanand Shikshan Sanstha's  
VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)  
DEPARTMENT OF ZOOLOGY  
Academic year: 2019-20**

**Annual teaching plan**

**Teacher Name:** -Ms. Geetanjali B. Satale

**Subject:** Comparative Anatomy & Developmental Biology of Vertebrates

**Course title:** B.Sc. I

**Semester: II**

<b>Month: November</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit I	Integumentary system- Derivatives of integuments w.r.t. glands
<b>Month: December</b>			<b>Module unit</b>	<b>Sub unit planned</b>
2	4	6	Unit I	Digital tips

**Subject:** Physiology and Biochemistry

**Course title:** B.Sc. II

**Semester: III**

<b>Month: July</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit I	Nerve & Muscle Structure of Neuron
<b>Month: August</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit I	Resting membrane potential Origin of action potential & its propagation
<b>Month: September</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit I	Ultra-Structure of skeletal muscle muscle contraction

**Subject:** Cell biology, Genetics and Evolution

**Course title:** B.Sc. II

**Semester: IV**

<b>Month: November</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit I	Linkage & crossing over Types of linkage
<b>Month: December</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit I	Mechanism of crossing over Coupling & repulsion theory
<b>Month: January</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit II	Mutation

**Subject:** Functional anatomy of non-chordates

**Course title:** B.Sc. III

**Semester: V**

<b>Month: July</b>			<b>Module unit</b>	<b>Sub unit planned</b>
--------------------	--	--	--------------------	-------------------------

Lectures	Practical	Total		
2	2	4	Unit I	Protozoa, Nutrition in protozoa
<b>Month: August</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit I	Reproduction in protozoa, Canal system Coelenterata-polymorphism in obelia
<b>Month: September</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit I	polymorphism in porpita
<b>Month: October</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit I	Insect metamorphosis & hormonal control, Mollusca- Torsion & detortion

**Subject: Developmental Biology; Physiology**

**Course title: B.Sc. III**

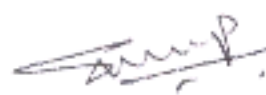
**Semester: VI**

<b>Month: November</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit III	Organizer- Concept & process of induction
<b>Month: December</b>			<b>Module unit</b>	<b>Sub unit planned</b>
3	4	7	Unit I	Study of fetal membrane, Placenta types
<b>Month: January</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit III	Significance of placenta, Cloning techniques
<b>Month: February</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit III	Nerve & Muscle physiology

**Annual teaching plan (Practical)**

Class	Practical No.	Batch	Practical based on paper
B. Sc. II	Practical II	B2	Cell biology, Genetics, Evolution and Ethology
B. Sc. III	Practical VII	Z2	Comparative Anatomy of Vertebrates and Developmental Biology

  
Ms. G. B. Satale

  
Dr. K. P. Shinde  
Head,  
Department of Zoology  
Vivekanand College,  
Jinapur (Autonomous)

**Shri Swami Vivekanand Shikshan Sanstha's  
VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)  
DEPARTMENT OF ZOOLOGY  
Academic year: 2019-20**

**Annual teaching plan**

**Teacher Name:** -Ms. Kranti L. Kamble

**Subject:** Animal diversity

**Course title:** B.Sc. I

**Semester: I**

<b>Month: July</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit II	Phylum Arthropoda
<b>Month: August</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit II	Phylum Mollusca
<b>Month: September</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit II	Phylum Echinodermata

**Subject:** Comparative Anatomy & Developmental Biology of Vertebrates

**Course title:** B.Sc. I

**Semester: II**

<b>Month: November</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit I	Brief account of gills
<b>Month: December</b>			<b>Module unit</b>	<b>Sub unit planned</b>
3	4	7	Unit I	Lungs, air sacs & swim bladder

**Subject:** Biostatistics, Bioinformatics & Medical Zoology

**Course title:** B.Sc. III

**Semester: V**

<b>Month: July</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit III	Medical Zoology Pathogenicity & prophylaxis of microbes
<b>Month: August</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit III	Pathogenicity & prophylaxis of virus- Herpes, Rabies, Ebola, Spirochetes
<b>Month: September</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit III	Bacteria- <i>Salmonella typhi</i> , <i>Mycobacterium tuberculosis</i> Pathogenic protozoan & their control
<b>Month: October</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit III	Pathogenic helminthes & their control Mosquito as vector of disease

<b>Month: November</b>			<b>Module unit</b>	<b>Sub unit planned</b>
3	4	7	Unit III	Study of Antibiotics w.r.t. Chemical nature & action

**Subject: Applied Zoology**  
**Course title: B.Sc. III**


**Semester: VI**

<b>Month: November</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit II	Pest & its management
<b>Month: December</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit II	Dairy Farming
<b>Month: January</b>			<b>Module unit</b>	<b>Sub unit planned</b>
3	4	7	Unit II	Poultry Farming

**Annual teaching plan (Practical)**

Class	Practical No.	Batch	Practical based on paper
B. Sc. I	Practical I	B3, B8, B9	Animal Diversity (Section I) Comparative Anatomy and Developmental biology of Vertebrates (Section II)
B. Sc. II	Practical I	B2	Mammalian Physiology and Biochemistry
B. Sc. III	Practical VIII	Z2	Physiology and Applied Zoology

  
**Ms. K. L. Kamble**

  
**Dr. K. P. Shinde**  
 Head,  
 Department of Zoology  
 Vivekanand College,  
 Kolhapur (Autonomous)

**Shri Swami Vivekanand Shikshan Sanstha's  
VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)  
DEPARTMENT OF ZOOLOGY  
Academic year: 2019-20**

**Annual teaching plan**

**Teacher Name:** -Dr. Tejashri C. Patil

**Subject:** Comparative Anatomy & Developmental Biology of Vertebrates

**Course title:** B.Sc. I

**Semester:** II

<b>Month: November</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit III	Late embryonic development- Implantation of embryo in human
<b>Month: December</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit III	Formation of human placenta & its function
<b>Month: January</b>			<b>Module unit</b>	<b>Sub unit planned</b>
2	4	6	Unit III	Types of placenta in mammals

**Subject:** Physiology and Biochemistry

**Course title:** B.Sc. II

**Semester:** III

<b>Month: July</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit I	Physiology of Digestion in Alimentary Canal
<b>Month: August</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit I	Absorption of Carbohydrate, proteins & lipids

**Subject:** Cell biology, Genetics and Evolution

**Course title:** B.Sc. II

**Semester:** IV

<b>Month: November</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit IV	Direct evidences of evolution,
<b>Month: December</b>			<b>Module unit</b>	<b>Sub unit planned</b>

4	4	8	Unit IV	Process of fossilization, Dating of fossils Geiger-Muller Counter
<b>Month: January</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit IV	Species concept , Biological species concept, Modes of speciation
<b>Month: February</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit IV	Macroevolution , Macro evolutionary principals, Darwin finches

**Subject: Functional anatomy of non-chordates; Endocrinology, Env. Bio. & toxicology; Biostatistics, Bioinformatics & medical zoology**

**Course title: B.Sc. III**

**Semester: V**

<b>Month: July</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit III	Structure & phylogenetic importance Bipinaria & tornaria larva
<b>Month: August</b>			<b>Module unit</b>	<b>Sub unit planned</b>
3	4	7	Unit III	Minor phyla
<b>Month: September</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit III	Toxicology, Classification of toxicant Toxic agent & mode of action of pesticides
<b>Month: October</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit I	Toxic agent & mode of action of metals & mycotoxins
<b>Month: November</b>			<b>Module unit</b>	<b>Sub unit planned</b>
2	4	6	Unit III	Application of Biotechnology

**Subject: Physiology; Applied Zoology**

**Course title: B.Sc. III**

**Semester: VI**

<b>Month: November</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit I	Nutritional requirement & balanced diet



<b>Month: December</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit III	Digestion & absorption
<b>Month: January</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit III	Vitamins, Excretion
<b>Month: February</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit III	Goat Farming

**Annual teaching plan (Practical)**

Class	Practical No.	Batch	Practical based on paper
B. Sc. I	Practical I Practical II	B2	Animal Diversity (Section I) Comparative Anatomy and Developmental biology of Vertebrates (Section II)
B. Sc. II	Practical I Practical II	BT1, B3	Mammalian Physiology and Biochemistry Cell biology, Genetics, Evolution and Ethology



**Dr. T. C. Patil**



**Dr. K. P. Shinde**

Head,  
Department of Zoology  
Vivekanand College,  
Kolhapur (Autonomous)

**Shri Swami Vivekanand Shikshan Sanstha's  
VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)  
DEPARTMENT OF ZOOLOGY  
Academic year: 2019-20**

**Annual teaching plan**

**Teacher Name:** -Ms. Sneha S. Desai

**Subject:** Animal diversity

**Course title:** B.Sc. I

**Semester: I**

<b>Month: July</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit III	Phylogenetic tree in Chordate
<b>Month: August</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit III	Protochordata
<b>Month: September</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit III	Class: Pisces
<b>Month: October</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit III	Class-Amphibia

**Subject:** Comparative Anatomy & Developmental Biology of Vertebrates

**Course title:** B.Sc. I

**Semester: II**

<b>Month: November</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit I	Digestive system of Fish, Amphibia
<b>Month: December</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit I	Digestive system of reptiles, aves & mammals and its comparative account
<b>Month: January</b>			<b>Module unit</b>	<b>Sub unit planned</b>
2	4	6	Unit I Unit II	Digestive gland Introduction to Urinogenital system
<b>Month: February</b>			<b>Module unit</b>	<b>Sub unit planned</b>
2	2	4	Unit II	Archenephros, pronephros, mesonephros & metanephros, Evolution of uriogenital ducts

**Subject:** Physiology and Biochemistry

**Course title:** B.Sc. II

**Semester: III**

<b>Month: August</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		

3	4	7	Unit II	Respiration, Pulmonary ventilation, respiratory volumes & capacity
<b>Month: September</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit II	Transport of oxygen, carbon dioxide
<b>Month: October</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit II	Cardiovascular system, Composition of blood, Structure of heart, cardiac cycle
<b>Month: November</b>			<b>Module unit</b>	<b>Sub unit planned</b>
2	4	6	Unit II	Heart diseases & heart attack

**Subject: Cell biology, Genetics and Evolution**

**Course title: B.Sc. II**

**Semester: IV**

<b>Month: November</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit I	Mendelian genetics & its extension
<b>Month: December</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit I	Chromosomal theory of inheritance Incomplete dominance & codominance
<b>Month: January</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit I	Multiple alleles w.r.t. ABO , Rh factor
<b>Month: February</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	2	6	Unit II	Sex determination, Dosage compensation

**Subject: Biostatistics, Bioinformatics & Medical Zoology**

**Course title: B.Sc. III**

**Semester: V**

<b>Month: July</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit I	Biostatistics, Classification, collection of data, types of classification
<b>Month: August</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit I	Frequency distribution, principle of frequency distribution, graphical representation
<b>Month: September</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit I	Histogram, Ogive curve , Polygonal frequency curve, Tabulation
<b>Month: October</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit II	Measures of central tendency, Correlation & its types

**Subject: Comparative Anatomy of Vertebrates; Applied Zoology**

**Course title: B.Sc. III**

**Semester: VI**

<b>Month: November</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit I	Evolution of heart
<b>Month: December</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit I	Aortic arches & portal system
<b>Month: January</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit I Unit II	Excretory system- Evolution of Kidney & ducts
<b>Month: February</b>			<b>Module unit</b>	<b>Sub unit planned</b>
3	4	7	Unit II	Pearl & Prawn culture

**Annual teaching plan (Practical)**

<b>Class</b>	<b>Practical No.</b>	<b>Batch</b>	<b>Practical based on paper</b>
B. Sc. I	Practical I	B8, B7	Animal Diversity (Section I) Comparative Anatomy and Developmental biology of Vertebrates (Section II)
B. Sc. II	Practical I	B3	Mammalian Physiology and Biochemistry
B. Sc. III	Practical VI	Z1	Molecular Biology, Biotechnology and Biotechniques and Endocrinology, Environmental Biology and Toxicology



**Dr. S. S. Desai**



**Dr. K. P. Shinde**

Head,  
Department of Zoology  
Vivekanand College,  
Nihapur (Autonomous)

**Shri Swami Vivekanand Shikshan Sanstha's  
VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)  
DEPARTMENT OF ZOOLOGY  
Academic year: 2019-20**

**Annual teaching plan**

**Teacher Name:** -Ms. Yogita S. Pujari

**Subject:** Comparative Anatomy & Developmental Biology of Vertebrates

**Course title:** B.Sc. I

**Semester:** II

<b>Month: November</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit IV	Fundamental development, process in development, gene activation, specification
<b>Month: December</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
3	4	7	Unit IV	Determination, differentiation, intercellular communication, cell movement & cell death

**Subject:** Endocrinology, Env. Bio. & toxicology

**Course title:** B.Sc. III

**Semester:** V

<b>Month: July</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit II	Environmental biology, Biodiversity Definition & scope
<b>Month: August</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit II	Protection, Conservation strategies Utilization
<b>Month: September</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit II	National Park
<b>Month: October</b>			<b>Module unit</b>	<b>Sub unit planned</b>

2	4	6	Unit III	Characteristic & faunal adaptations w.r.t. Fresh water, marine water & terrestrial habitat
---	---	---	----------	--------------------------------------------------------------------------------------------

**Subject: Physiology**

**Course title: B.Sc. III**

**Semester: VI**

Month: November			Module unit	Sub unit planned
Lectures	Practical	Total		
2	2	4	Unit I	Physiology Carbohydrate metabolism
Month: December			Module unit	Sub unit planned
3	4	7	Unit I	Protein metabolism
Month: January			Module unit	Sub unit planned
3	4	7	Unit I	Lipid metabolism

**Annual teaching plan (Practical)**

Class	Practical No.	Batch	Practical based on paper
B. Sc. II	Practical I Practical II	B1, B4	Mammalian Physiology and Biochemistry Cell biology, Genetics, Evolution and Ethology
B. Sc. III	Practical VI	Z2	Molecular Biology, Biotechnology and Biotechniques and Endocrinology, Environmental Biology and Toxicology

*Y. S. Pujari*  
**Ms. Y. S. Pujari**

*K. P. Shinde*  
**Dr. K. P. Shinde**  
Head,  
Department of Zoology  
Jyotiba Phule Krishi Vignyan  
Mahavidyalaya (Autonomous)

**Shri Swami Vivekanand Shikshan Sanstha's  
VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)  
DEPARTMENT OF ZOOLOGY  
Academic year: 2019-20**

**Annual teaching plan**

**Teacher Name:** -Ms. Jyoti S. Sathe

**Subject:** Functional anatomy of non-chordates

**Course title:** B.Sc. III

**Semester:** V

<b>Month: July</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit III	Echinodermata
<b>Month: August</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit III	Echinodermata
<b>Month: September</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit III	Reproductive system Nervous system & sense organ Haemal & perihemal system

**Subject:** Physiology, Applied Zoology

**Course title:** B.Sc. III

**Semester:** VI

<b>Month: November</b>			<b>Module unit</b>	<b>Sub unit planned</b>
Lectures	Practical	Total		
2	2	4	Unit II	Respiration
<b>Month: December</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit II	Circulation
<b>Month: January</b>			<b>Module unit</b>	<b>Sub unit planned</b>
4	4	8	Unit II	Vermiculture

**Annual teaching plan (Practical)**

<b>Class</b>	<b>Practical No.</b>	<b>Batch</b>	<b>Practical based on paper</b>
B. Sc. I	Practical I Practical II	B2	Animal Diversity (Section I) Comparative Anatomy and Developmental biology of Vertebrates (Section II)
B. Sc. II	Practical II	BT1,B4	Cell biology, Genetics, Evolution and Ethology
B. Sc. III	Practical V	Z2	Comparative Anatomy of Vertebrates and Developmental Biology

  
**Ms. Jyoti. S. Sathe**

  
**Dr. K. P. Shinde**

**Head,  
Department of Zoology  
Vivekanand College  
Kolhapur (Autonomous)**