

SARDAR PATEL UNIVERSITY
THIRD SEMESTER
ZOOLOGY-US03CZ01
INVERTIBRATA AND VERTIBRATA.
EFFECTIVE FROM JUNE 2011.
(THREE CREDITS-3 PERIODS/WEEK)

UNIT-1

LOCOMOTION AND REPRODUCTION IN PROTOZOA.
CANAL SYSTEM IN PORIFERA.
TYPE: SYCON

UNIT-2

TYPE-OBELIA.
TYPE- LIVER FLUKE

UNIT-3

TYPE-NEREIS.
MOUTH PARTS OF INSECTS AND ADAPTATION.

UNIT-4

TYPE-LABEO ROHITA (EXCLUDE- ENDO SKELETONE)

UNIT-5:

TYPE- FROG: HABIT, HABITAT AND EXTERNAL CHARACTERS, DIGESTIVE SYSTEM, REPARATORY SYSTEM, BLOOD VASCULAR SYSTEM.

UNIT- 6:

TYPE FROG: NERVOUS SYSTEM, SENSE ORGANS ,URINOGENITAL SYSTEM, DEVELOPMENT.

REFERENCES:

MODERN TEXT BOOK OF ZOOLOGY- INVERTEBRATE BY R.L. KOTPAL.
MODERN TEXT BOOK OF ZOOLOGY- VERTEBRATE BY R.L. KOTPAL.
INVERTEBRATE ZOOLOGY BY JORDAN AND VERMA.
CHORDATE ZOOLOGY BY JORDAN AND VERMA.

SARDAR PATEL UNIVERSITY
THIRD SEMESTER
ZOOLOGY-US03CZ02
ANIMAL PHYSIOLOGY AND ADAPTATION
EFFECTIVE FROM JUNE 2011.
(THREE CREDITS,3 PERIODS/WEEK)

UNIT-1 HUMAN PHYSIOLOGY.
FORMATION OF BLOOD CELLS
COAGULATION OF BLOOD AND TYPES OF ANTI COAGULANTS.
TYPES OF HEART-STRUCTURE AND WORKING MECHANISM OF HUMAN HEART.
CARDIAC CYCLE AND ECG.
BLOOD GROUP ABO SYSTEM, RH FACTOR

UNIT-2
HUMAN RESPIRATORY SYSTEM.
RESPIRATORY ORGANS.
PULMONARY VENTILATION.
LUNG VOLUMES AND CAPACITY
TRANSPORT OF GASES
REGULATION OF RESPIRATION

UNIT-3
DISEASES:
AIDS, STD, (GONORRHEA, SYPHILIS, GENITAL HERPES)
CORONARY HEART DISEASES: BYPASS, B.P. , ATHEROSCLEROSIS,
DISORDERS OF REPARATORY SYSTEM.
DISORDER OF LIVER AND PANCREASE.

UNIT-4
ADAPTATION :
TERRESTRIAL: DESERT , BURROWING, CURSOREAL, ARBOREAL, VOLANT ,
HIGH ALTITUDE , COLD REGION.

UNIT-5:
ADAPTATION :
AQUATIC: FRESH WATER ,MARINE WATER.
SPECIAL: MIMICRY, CAMOUFLAGE , ECHOLOCATION, ELECTRIC ORGAN,
BIOLUMINATIONS, PHOSPHOLUMINESCENCE,

UNIT-6.
PARASITOLOGY:
E.HISTOLYTICA, BALANTIDIUM COLI, TRYPANOSOMA.
HOOK WORM(ANCYLOSTOMA),PIN WORM(OXYURIS) ,TRICHINELLA SPIRALIS,
DRACUNCULUS, SCHISTOSOMA.

REFERENCES :

A TEXT BOOK OF ANIMAL PHYSIOLOGY BY A K BERRY.

ANIMAL PHYSIOLOGY BY M. P. ARORA.

PRINCIPLES OF ANATOMY AND PHYSIOLOGY BY TORTORA GRABOWSKI.

ZOOLOGY FOR IAS BY SATGURU PRASAD.

ANIMAL ECOLOGY BY M.P.ARORA.

MEDICAL PARASITOLOGY BY RAJESH KARYAKARTE, AJIT DAMLE.

ECONOMIC ZOOLOGY BY SHUKLA AND UPADHYAY.

SARDAR PATEL UNIVERSITY
THIRD SEMESTER
PRACTICAL ZOOLOGY-US03CZ03
EFFECTIVE FROM JUNE 2011.
(THREE CREDITS, 6 PERIODS/WEEK)

- DISSECTION :
 - NEREIS: EXTERNAL CHARACTERS, DIGESTIVE SYSTEM, NERVOUS SYSTEM. MOUNTINGS: JAWS, PARAPODIA.
 - FISH: EXTERNAL CHARACTERS, DIGESTIVE SYSTEM, URINOGENITAL SYSTEM, BRAIN.
 - MOUNTINGS: SCALES, MUSCLE FIBER, NERVE FIBER, GILLS.
 - FROG : EXTERNAL CHARACTERS, DIGESTIVE SYSTEM, URINOGENITAL SYSTEM, BRAIN, METAMORPHOSIS
 - MOUNTINGS: MUSCLE FIBER, NERVE FIBER, INNER EAR. STUDY OF BONES.
 - CLASSIFICATION : (UPTO ORDER)
 - PROTOZOA: CERATIUM, ARCELLA, POLYSTOMELLA, EUGLINA, TRYPANOSOMA, PARAMOECIUM, OPALINA, VORTICELLA, PLASMODIUM.
 - PORIFERA: SYCON, HYLONEMA, SPONGILLA, CLIONA.
 - COELENTRATA: OBELIA, MILIPORA, PHYSALIA, AURELIA, TUBIPORA, GORGONIA, PENNATULA, SEA ANEMONE, ZOANTHUS, CERIANTHUS.
 - PLATYHELMINTHES: PLANNERIA, BIPALIUM, .
 - NEMANTHELMINTHES: HOOK WORM , PINWORM, GUINEA WORM, TRICHINELLA SPIRALIS, ASCARIS.
 - PROTOCHORDATA: HERDMANIA, DOLIOLUM, SALPA, AMPHIOXUS.
 - CYCLOSTOMATA: LAMPREY.
 - PISCES : SHARK, STING RAY, ELECTRIC RAY, SEA HORSE, EEL, CAT FISH, SUCKER FISH, FLYING FISH, LABEO, ANABUS, SYNAPTEURA,
 - AMPHIBIA: ICHTHYOPHIS, SALAMANDER, AXOLOTLARVA, ALYTES, FROG.
 - LIFE HISTORY OF LIVER FLUKE.
 - PARASITOLOGY: HOOK WORM , PINWORM, GUINEA WORM, TRICHINELLA SPIRALIS, SCHISTOSOMA, E. HISTOLYTICA, BALANTIDIUM COLI, TRYPANOSOMA.
 - ADAPTATION : AS PER SYLLABUS.
 - MOUTHPARTS OF INSECTS
 - WBC COUNTING.
 - DIFFERENTIAL COUNTING OF WBCS
 - RBCS COUNTING
 - EFFECT OF OSMOTIC PRESSURE ON RBCS
 - ESR (DEMO) , SPHYGNOMANOMETER AND ITS USE (DEMO)
- REFERENCES:

A MANUAL OF PRACTICAL ZOOLOGY-INVERTEBRATE. BY P.S.VERMA.

A MANUAL OF PRACTICAL ZOOLOGY-CHORDATE BY P.S.VERMA.

PRACTICAL PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY. BY SHAH PATEL AND GOEL

SARDAR PATEL UNIVERSITY
SECOND YEAR B.Sc. (THIRD SEMESTER)
BOTANY
US03CBO01 (Lower Cryptogams and Plant Pathology)
(Three Credit Course, Three hours per week)
(Effective from June – 2011)
(Total Marks-100, Internal-30 marks, External -70 marks)

Unit: I

- Algae- Classification ,distribution,morphology and life cycle of : *Scytonema*, *Gloeotrichia*, *Rivularia* ,*Spirulina*, *Gleocapsa*
- Economic importance of algae.

Unit: II

- Algae- Classification,distribution,morphology and life history of: *Cladophora*, *Vaucheria*, *Polysiphonia*, *Sargassum*

Unit III

- Mycology: Classification , distribution , morphology and life history of : *Albugo* , *Pythium*,*Peronospora*,*Saprolegnia*
- Mycorrhizae
- Economic importance of fungi

Unit IV

- Mycology: Classification, distribution, morphology and reproduction of: *Aspergillus*, *Pezizza*, *Alternaria*, *Colletrotrichum* and *Fusarium*

Unit V

- Principles of plant pathology- Concept of plant pathology, Classification of plant diseases, Symptoms of plant diseases, Dissemination of plant diseases, Host parasite interaction.

Unit VI

- Plant diseases and their control - Early and late blight of potato, White rust of crucifers, Red rust of wheat, Tikka diseases of ground nut, Foot rot of papaya, Citrus canker

Suggested readings:

- College Botany Vol 2 : Gangulee and Kar
- Algae by B. R. Vashistha
- Fungi by B. R. Vashistha
- Plant Pathology by Singh R. S.
- Botany by A. C. Dutta

SARDAR PATEL UNIVERSITY
SECOND YEAR B.Sc. (THIRD SEMESTER)
BOTANY

US03CBO02 (Plant Physiology, Anatomy and Taxonomy)
(Three Credit Course, Three hours per week)
(Effective from June – 2011)
(Total Marks-100, Internal-30 marks, External -70 marks)

Unit I

- Plant Histology -
 - Meristem: Introduction, classification ,cytological characters
 - Parenchyma: Shape and arrangement, structure and contents
 - Collenchyma: Position in the plant body, structure and arrangement
 - Sclerenchyma: structure and types
 - Xylem: cell types and their cytology
 - Phloem : cell types and their cytology

Unit II

- Plant Taxonomy- Biological concept of species
- Characters , examples and economic importance of :Annonaceae,Meliaceae,Leguminosae Rubiaceae,Lamiaceae,Euphorbiaceae,Asteraceae,Brassicaceae, Myrtaceae and Liliaceae.

Unit III

- Economic botany - A general account of Fibers (Cotton and Jute) Oil (Mustard and Ground Nut), Pulses (Gram and Mung), Cereals (Rice, Wheat, Maize) of Gujarat.

Unit IV

- Microscopy
 - Principles and working of light microscopes: Bright field and phase contrast
 - Principles , working and application of electron microscopes: TEM and SEM

Unit V

- Plant Physiology –
 - Transpiration and Guttation
 - Photosynthesis: Photosynthetic pigments, photophosphorylation, Calvin cycle ,C4 path way, CAM Pathway, Factors affecting photosynthesis
 - Mineral nutrition: Mineral uptake, Essential macro (Sodium, Potassium, Nitrogen) and micro (Iron, Nickel, Zinc, Cobalt) nutrients and their role, Deficiency symptoms.

Unit VI

- Plant Physiology
 - Seed dormancy and germination
 - Photoperiodism
 - Post harvest physiology of fruits

Suggested readings:

- College Botany Vol 1: Gangulee , Das and Dutta
- Taxonomy of angiosperms :B.P.Pandey
- Plant Physiology : V.Verma
- Cell and Molecular Biology : De Robertis and De Robertis
- Economic botany : Hill

SARDAR PATEL UNIVERSITY
SECOND YEAR B.Sc. (THIRD SEMESTER)
BOTANY
US03CBO 03
(Three Credit Course, Six hours per week)
(Effective from June – 2011)
(Total Marks-100, Internal-30 marks, External -70 marks)

1. Study of Scytonema ,Gleotrichia and Ulothrix
2. Study of Spirulina and Gloeocapsa
3. Study of Cladophora and Vaucheria
4. Study of Chara and Polysiphonia and Sargassum
5. Study of white rust of crucifers
6. Study of early and late blight of potato
7. Study of Penicillium and Pezziza
8. Study ofAspergillus and Fusarium
9. Study of Alternaria and Colletrotichum
10. Study of rust of wheat
11. Study of Tikka disease of ground nut
12. Preparation of potato dextrose culture medium and slants
13. Study of mitosis in onion root tips using squash preparation
14. Study of parenchyma, chrorenchyma and aerenchyma using free hand sectioning
15. Histochemical localization of lignin, crystals and Callose
16. Study of collenchymas in the young stem of sunflower and localization of cellulose
17. Study of Sclerenchyma in maceration
18. Study of xylem cells in maceration
19. Study of diagnostic characters of the members of Annonaceae ,Meliaceae and Rubiaceae
20. Study of diagnostic characters of the members of Leguminosae
21. Study of diagnostic characters of the members of Lamiaceae, Euphorbiaceae & Asteraceae
22. Study of diagnostic characters of the members of Brassicaceae and Myrtaceae
23. Separation of chlorophyll pigments using paper chromatography
24. To compare the rate of transpiration using Farmer/Ganong photometer

Note: To provide flexibility up to the maximum of 20% of total experiments can be replaced/ added to the list by the Board Of Studies.

SARDAR PATEL UNIVERSITY
S.Y.B.SC. (SEMESTER – III)
USO3EZ01

(Invertebrate, Physiology, Biotechnology & Parasitology)
2hr / week, 2 credit, Total Marks – 100, (External – 70, Internal – 30)
Effective from June 2011

- Unit 1 Type Study :
- 1) Nereis (exclude development)
 - 2) Liverfluke
- Unit 2 Circulation :
- Circulatory media, Types of Circulatory system, Types of heart, Structure and working of human heart, structure of blood vessels, Anticoagulants. Blood groups – ‘ABO’ system, Rh factor, Blood transfusion, lymph & lymphatic system.
- Unit 3 Endocrinology :
- Hormones – Introduction, Classification of hormone, mechanism of action (lipid and water soluble hormone), hormonal secretions and functions:
- 1) Pituitary gland
 - 2) Thyroid gland
 - 3) Adrenal gland
 - 4) Parathyroid gland
- Unit 4 Biotechnology & Parasitology
- Lab. facilities for tissue culture, types of culture media for cells & tissue, culture procedure, transgenic animals, forensic medicine.
- Parasitology : Structure, pathogenecity, prevention and control of following parasites
- Protozoa: Balantidium coli, leishmania donavani, Trypanosoma gambiense
- Helminthes : Ancylostoma, pin-worm, Dracunculus medinensis.
- Diseases: AIDS, STD (GONORRHEA, SYPHILIS, GENITAL HERPES), Coronary heart diseases (atherosclerosis)

Reference Books:

- 1) Invertebrate zoology : R.L. Kotpal
- 2) Invertebrate zoology : H.C.Nigam
- 3) Invertebrate zoology : Jordan & Verma
- 4) Animal Physiology : A.K.Berry
- 5) Animal Physiology : Verma, Tyagi, Agarwal
- 6) Elements of Biotechnology : P.K.Gupta
- 7) Economic Zoology : Sukla & Upadhyay
- 8) Medical parasitology : Dey and Dey