

RAJARSHI SHAHU (AUTONOMOUS) MAHAVIDYALAYA, LATUR.

Semester wise course structure

B.Sc. S.Y. Sub: - Zoology (Semester -III)

Skill Enhancement Course (SECZ-I)

Clinical Haematology

Learning Objective:

- To understand Perform staining and counting technique for identification of different type of blood cells.
- To understand collection methods of blood sample.
- To understand separation techniques of blood sample components.
- To understand diagnosis of different blood related diseases.

Learning Outcomes:

- After completion of this course students should be able to:
 - Perform staining and counting technique for identification of different type of blood cells.
 - Collect blood sample by different methods.
 - Separate different components of blood
 - Estimation of Hb from blood samples
 - Diagnosis of various blood diseases like anaemia
-

UNIT – I

1. The components of blood

- Plasma
- Red blood cells
- White blood cells
- Platelets

2. Collection of Blood

- Criteria for sample collection
- Collection of capillary blood (Peripheral Blood) blood by skin punctures
- Collection of venous blood by Venipuncture,
- Collection of arterial blood,

3. Practical:

- Collection Blood by Skin puncture and Venipuncture.
- Separation of Blood components Plasma, Serum and Corpuscles

UNIT – II

1. Haemoglobin

- Structure and function of Haemoglobin
- Anemia Causes, Effect and Control
- Types of anemia
- Causes and Symptoms of anemia
- Control measure of anemia
- Diagnosis of anemia

Practical

- Estimation of Haemoglobin

UNIT – III.

- Haemopoiesis, erythropoiesis and leucopoiesis

Practical:

- Complete Blood Count (CBC)
- RBC Counting
- WBC Counting
- Platelet count and Hamatocrit

UNIT – IV

- Blood Clotting,
- Mechanism of Clotting
- Extrinsic and Intrinsic Mechanism
- Blood cholesterol and Urea and Creatine

Practical:

- Clotting and bleeding time of blood.
- Study of Blood Smear for differential WBC Count - Preparation and Staining of smears,
- Counting Methods, Morphology of White cells, Types of White Cells, Abnormalities in
- morphology of blood cells and related diseases.

Practical – Determination of differential WBC Count by blood Smear.

REFERENCE BOOKS:

1. Medical Laboratory Technology - Ramnik Sood
2. Medical Lab Technology Vol. I, II & III – Kanai Mukherjee
3. Hand Book of Medical Technology - Mrs. Chitra
4. Medical Laboratory Technology – A. Ananthanarayan
5. Manual for Laboratory Technician of Primary Health by Minister of Health
6. Human Physiology Vol. I & II – C. C. Chatterjee

RAJARSHI SHAHU (AUTONOMOUS) MAHAVIDYALAYA, LATUR.
Semester wise course structure
B.Sc. T.Y. Sub: - Zoology (Semester -VI)
Skill Enhancement Course
Bee keeping and Honey processing

Learning Objective:

- To inculcate importance of Bee keeping and honey processes in relation with entrepreneurship development.
- To give students knowledge about various techniques of Bee keeping and honey processing and its marketing to make them self sustainable after graduation.
- To teach techniques of construction of Bee Hives and its maintenance.
- To teach students about Honey production and health related problems with Honey bees. Importance of honey
- Students will learn important steps in bee keeping and bee hive handling without fear.
- Students will learn the use of different equipments in bee keeping.

Learning Outcomes:

- The learner will be able to differentiate in different types of honey bee castes.
- Learner will be able to use the artificial hive for beekeeping
- Learner will be able to use the technique of honey purification and processing.
- Learner will be able to construct the artificial honey hive and maintain it.
- Learner if is not employed can find own employment by doing Bee keeping
- Lerner can start own beekeeping equipment agency for farmers or beekeepers.

UNIT-I

Introduction to Apiculture/Bee keeping - scope, importance (6L) Definition and role of bee keeping in India as a source of employment. Traditional bee keeping, Modern beekeeping. Role of Central Honey Bee Research & Training Institute, Pune..

Practical :-

- Handling of parts of artificial hive / Bee box,
- Different tools used in Bee keeping.
- Identification of Queen cells, Drone cells & Brood cells.

UNIT – II

- Honey Bee morphology, Anatomy and Life cycle (6L)
- Morphology of Honey bees – Difference in indigenous and exotic honey bees, Life cycle and Parthenogenesis in honey bees.
- Honey bee identification and systematic position.
- Colony life and social organization in honey bees– Queen, drone, worker. Honey bee as a pollinator.

Practical :-

- Methods of Extraction of Bees wax, Royal Jelly and Bee venom.

UNIT – III

Honeybee Enemies and Diseases (6L) Bee enemies– Wax Moth, Ants, Wasps, Bacterial disease - American Foulbrood. Viral disease - Deformed Wing Virus / Kashmir Bee Virus , Fungal disease - Chalkbrood, Protozoan disease - Nosemosis,

Practical:-

Extraction of Honey using Honey extractor, moisture reduction, packing and storing of Honey study of natural enemies and predators of Honey Bees - management involved.

UNIT – IV

Honey processing and its properties and application in various fields (6 L) Honey - its medicinal properties -- other valuable by products of honey bees. Modern method of honey processing , Packing and Marketing. • Value added honey products , Nutrients and composition of honey, Acid content and flavor effects. • Types of value added honey products

Practical:-

Honey testing kit - Physical and chemical methods of analysis.

Compulsory visit to a Bee keeping centre

Note: At least 4 Practicals are Compulsory.