CURRICULUM AND CREDIT FRAMEWORK FOR UNDERGRADUATE PROGRAMME

Under Graduate Syllabus

Department of Zoology
Nagaland University
Lumami

2023

1.

SKILL ENHANCEMENT COURSE (SEC)

SEC 1 : Aquarium Fish Keeping
SEC 2 : Apiculture
SEC 3 :

SEC 1
(AQUARIUM FISH KEEPING)

(Credits 3)

Unit 1:

The potential scope of aquarium fish industry as a cottage industry, exotic and endemic species of aquarium fishes.

Unit 2:

Common characters and sexual dimorphism of fresh water and marine aquarium fishes such as guppy, molly, sword tail, gold fish, angel fish, blue morph, anemone fish and butterfly fish.

Unit 3:

Use of live fish feed organisms; preparation and composition of formulated fish feeds.

Unit 4:

Live fish transport - fish handling, packing and forwarding techniques.

Unit 5:

General aquarium maintenance – budget for setting up an aquarium fish farm as a cottage industry.

SEC 2 (APICULTURE)

(Credits 3)

Unit 1:

History, classification and biology of honey bees;
Social organization of honey bee.

Unit 2:

Artificial bee rearing (Apiary).
Bee pasturage selection of bee species for apiculture.
Bee keeping equipment.
Methods of extraction of honey (indigenous and modern).

Unit 3:

Bee diseases and enemies.
Control and preventive measures.

Unit 4:

Products of apiculture industry and its uses (honey, bees wax, propolis), pollen.

Unit 5:

Bee keeping industry – recent efforts, modern methods in employing artificial
Beehives.

SUGGESTED READINGS

- Prost, P. J. (1962). Apiculture. Oxford and IBH, New Delhi.
- Bisht D.S., Apiculture, ICAR Publication.
- Singh S., Beekeeping in India, Indian council of Agricultural Research, NewDelhi.

SEC 3 FOOD, NUTRITION AND HEALTH

THEORY **(Credits 3)**

Unit 1:

Food components and food-nutrients.
Concept of a balanced diet, nutrient needs and dietary pattern for various groups- pregnant and nursing mothers, school children, adolescents and elderly.

Unit 2:

Carbohydrates, lipids and proteins - Dietary source and role; vitamins - Dietary source and importance; Minerals - iron, calcium, phosphorus, iodine, selenium and zinc: their biological functions.

Unit 3:

Definition and concept of health.
Major nutritional deficiency diseases - protein energy malnutrition (kwashiorkor and marasmus), vitamin A deficiency disorders, iron deficiency disorders, iodine deficiency disorders- their causes, symptoms, treatment, prevention.

Unit 4:

Life style related diseases- hypertension, diabetes mellitus, and obesity - their causes and prevention.
Social health problems - smoking, alcoholism, drug dependence and Acquired Immuno Deficiency Syndrome (AIDS) - their causes, treatment and prevention.

Unit 5:

Potable water- sources and methods of purification at domestic level.
Food and Water borne infections (transmission, causative agent, sources of infection, symptoms and prevention):

Bacterial infection: cholera, dysentery;
Viral infection: hepatitis, poliomyelitis;
Protozoan infection: amoebiasis, giardiasis;
Parasitic infection: taeniasis and ascariasis.

Brief account of food spoilage: Causes of food spoilage and their preventive measures.

SEC 4.MEDICAL DIAGNOSTICS

THEORY **(Credits 3)**

Unit 1:

Introduction to medical diagnostics and its importance.
Urine analysis: physical characteristics; abnormal constituents.

Unit 2:

Blood composition; preparation of blood smear and Differential Leucocyte Count (D.L.C) using Leishman's stain; platelet count using haemocytometer; Erythrocyte Sedimentary Rate (E.S.R), Packed Cell Volume (P.C.V.).

Unit 3:

Causes, types, symptoms, complications, diagnosis and prevention of diabetes (Type I and Type II); hypertension (Primary and secondary); testing of blood glucose using glucometer/Kit.

Unit 4:

Causes, types, symptoms, diagnosis and prevention of tuberculosis, hepatitis, dengue, malaria, Japanese encephalitis.

Unit 5:

Types of tumours (benign/malignant), detection and metastasis; medical imaging: X-Ray of bone fracture, PET, MRI and CT scan (using photographs).

SUGGESTED READINGS

- Park, K. (2007), Preventive and Social Medicine, B.B. Publishers.
- Godkar P.B. and Godkar D.P. Textbook of Medical Laboratory Technology, II Edition, Bhalani Publishing House.
- Cheesbrough M., A Laboratory Manual for Rural Tropical Hospitals, A Basis for Training Courses.
- Guyton A.C. and Hall J.E. Textbook of Medical Physiology, Saunders.
- Robbins and Cortan, Pathologic Basis of Disease, VIIIEdition, Saunders.

- Prakash, G. (2012), Lab Manual on Blood Analysis and Medical Diagnostics, S. Chand and Co. Ltd.

SEC 5. WILD LIFE CONSERVATION AND MANAGEMENT

(Credits 3)

Unit 1:

Values of wild life - positive and negative; conservation ethics; importance of conservation; causes of depletion; world conservation strategies.

Unit 2:

Habitat analysis: physical parameters - topography, geology, soil and water; biological Parameters - food, cover, forage, browse and cover estimation; remote sensing and GIS. Management of habitats; setting back succession; grazing logging; cover construction; preservation of general genetic diversity; restoration of degraded habitats.

Unit 3:

Population estimation, population density, natality, birth rate, mortality, fertility schedules and sex ratio computation.
Faecal analysis of ungulates and carnivores: faecal samples, slide preparation; hair identification, pug marks and census method.

Unit 4:

Estimation of carrying capacity; eco-tourism / wild life tourism in forests; concept of climax persistence; ecology of perturbance.

Unit 5:

Bio- telemetry; Care of injured and diseased animal; quarantine; common diseases of wild animal.
Protected areas, National parks & sanctuaries, Community reserve; important features of protected areas in India.

SEC 6. SERICULTURE

(Credits 3)

Unit 1:

Sericulture: definition, history and present status; silk route; types of silkworms; Distribution and races; exotic and indigenous races; Mulberry and non-mulberry sericulture.

Unit 2:

Life cycle of *Bombyx mori*; Structure of silk gland and secretion of silk.

Unit 3:

Selection of mulberry variety and establishment of mulberry garden.
Rearing house and rearing appliances; disinfectants: Formalin, bleaching powder, RKO.
Silkworm rearing technology: early age and late age rearing.
Types of mountages; spinning, harvesting and storage of cocoons.

Unit 4:

Pests of silkworm: Uzi fly, dermestid beetles and vertebrates.
Pathogenesis of silkworm diseases: protozoan, viral, fungal and bacterial.
Control and prevention of pests and diseases.

Unit 5:

Prospects of sericulture in India: sericulture industry in different states, employment, potential in mulberry and non-mulberry sericulture.

SUGGESTED READINGS

- Manual on Sericulture; Food and Agriculture Organisation, Rome 1976.
- Handbook of Practical Sericulture: S.R. Ullal and M.N. Narasimhanna CSB, Bangalore.
- Silkworm Rearing and Disease of Silkworm, 1956, Ptd. By Director of Ptg., Stn. & Pub. Govt. Press, Bangalore.
- Appropriate Sericultural Techniques; Ed. M. S. Jolly, Director, CSR & TI, Mysore.
- Handbook of Silkworm Rearing: Agriculture and Technical Manual-1, Fuzi Pub. Co. Ltd., Tokyo, Japan1972.
- Manual of Silkworm Egg Production; M. N. Narasimhanna, CSB, Bangalore 1988.
- Silkworm Rearing; Wupang—Chun and Chen Da-Chung, Pub. By FAO, Rome 1988.
- A Guide for Bivoltine Sericulture; K. Sengupta, Director, CSR & TI, Mysore 1989.

Improved Method of Rearing Young age silkworm; S. Krishnaswamy, reprinted CSB, Bangalor