# DEPARTMENT OF ZOOLOGY

## B. BOROOAH COLLEGE (Autonomous)

**(Affiliated to Gauhati University)**

**GUWAHATI, ASSAM, 781007, INDIA**

**(Nationally reaccredited with 'A$^{++}$' grade by NAAC with a CGPA of 3.62)**

# SYLLABUS FOR FYUGP IN ZOOLOGY

## (SKILL ENHANCEMENT COURSES)

**FYUGP 1st SEMESTER**
**LABORATORY PRACTICES**
**CODE: SEC-01-B-17-03**
**CREDITS: 2 (T) + 1 (P) = 3**
**Total marks: 75 (End semester: 30; Internal assessment: 20; Practical: 25)**

| Theory | Hours |
|---|---|
| **Unit 1: Introduction to Biological lab**<br>Practical and observation notebook maintenance, instrument calibration, glass wares and lab instrument cleaning and maintenance, museum specimens, specimen cataloging and preservation. | 8 |
| **Unit 2: Bioinstrumentation**<br>Basics of microscopy, spectrometry, colorimetry, microtomy, autoclave, incubator, laminar air flow, centrifuge, pH meter, chromatography, electrophoresis and pipetting (traditional and automatic). | 8 |
| **Unit 3: Solution preparation**<br>General math in reagent preparation, percent solutions, molarity, molality, normality, buffer solutions, reagents, and stains. | 8 |
| **Unit 4: Laboratory safety**<br>Basics of laboratory safety, handling and storage of chemicals and reagents, precautions in handling hazardous chemicals. | 6 |

**Practical (30 hours)**

1. Laboratory instrument identification and calibration: Microscopes, incubator, laminar air flow, microtome, autoclave, pH meter, colorimeter/spectrophotometer, electrophoresis unit, centrifuge
2. Reagent/ Solution (normal/molar) preparation
3. Specimen submission

**Reference books**


1. A Swargiary. Biological tools and techniques
2. SC Nigam and Omkar. Experimental Animal Physiology and Biochemistry
3. G Blokdyk. Good laboratory practice – A complete guide

**FYUGP 2nd SEMESTER**
**SERICULTURE AND ITS PROSPECTS**
**CODE: SEC-02-B-16-03**
**CREDITS: 2 (T) + 1 (P) = 3**
**Total marks: 75 (End semester: 30; Internal assessment: 20; Practical: 25)**

| Theory | Hours |
|---|---|
| **Unit 1: Introduction to Sericulture**<br>Mulberry/Non mulberry: Origin/history and distribution, varieties of silk, types of silkworms, propagation of host plant by cutting and layering. | 5 |
| **Unit 2: Biology of Silkworms**<br>Life cycle of Mulberry, Eri, Muga and Tasar silkworms, structure of silk gland and nature of silk. | 5 |
| **Unit 3: Rearing house and appliances**<br>Environmental condition for silkworm rearing, rearing technology, brushing, feeding, mounting, mountages, harvesting and storage of cocoons, spinning and reeling of silk. | 5 |
| **Unit 4: Grainage Technology**<br>Silkworm seed production, reproduction and commercial silk, egg laying, mother moth examination. | 5 |
| **Unit 5: Pests and diseases of silkworm**<br>Pests of silkworm, viral, bacterial, fungal and protozoan diseases, prevention and control measures. | 5 |
| **Unit 6: Entrepreneurship in sericulture**<br>Marketing and economic status of sericulture, future prospects. | 5 |

**Practical (30 hours)**

1. Identification of various larval stages of silkworms
2. Identification of disease and disease-free silkworms
3. Visit to Sericulture research station and report submission

**Reference books**


1. DB Tembhare. Modern Entomology
2. GS Shukla and VB Upadhyay. Economic Zoology
3. SN Choudhury. Muga Silk Industry
4. SN Choudhury. Eri Silk Industry
5. SN Choudhury. Silk and Sericulture

**FYUGP 3rd SEMESTER**
**ORNAMENTAL FISH KEEPING**
**CODE: SEC-03-B-16-03**
**CREDITS: 2 (T) + 1 (P) = 3**
**Total marks: 75 (End semester: 30; Internal assessment: 20; Practical: 25)**

| Theory | Hours |
|---|---|
| **Unit 1: Introduction to Ornamental fish**<br>Definition and characteristics of ornamental fishes, ornamental fishes of North-east India, important exotic species. | 5 |
| **Unit 2: Construction and management of home aquarium**<br>Materials required for construction, selection of place, accessories required for aquarium installation. | 5 |
| **Unit 3: Selection and introduction of fish in aquarium**<br>Species compatibility, acclimatization and treatment. | 5 |
| **Unit 4: Feeding and routine monitoring**<br>Natural and commercially available feeds, replacement and monitoring of water quality. | 5 |
| **Unit 5: Health Management**<br>Common diseases of ornamental fishes, prevention and treatment. | 5 |
| **Unit 6: Aquarium plants and biofilters**<br>Plants used in aquarium, types, utility and development of biofilter. | 5 |

**Practical (30 hours)**

1. Identification of important ornamental fishes of Assam
2. Construction and installation of aquarium
3. Identification of plankton used as fish feed
4. Identification of plants used in aquarium

**Reference books**


1. SP Biswas. Ornamental fishes of Northeast India
2. M Clarke and I West. The complete aquarium guide
3. CW Emmens. Keeping and breeding of aquarium fishes
4. HE Roberts. Fundamentals of ornamental fish health