**SYLLABUS FOR B. Sc. III to VI SEMISTERS**

**SKILL ENHANCEMENT COURSES**

**CBCS**

**SUBJECT: ZOOLOGY**

**SKILL ENHANCEMENT COURSE**

**III SEM**

**APICULTURE**

**(CREDITS 4)**

**Unit I: Biology of Bees**

**1.1** Introduction to Apiculture, species of honey bees

**1.2** Social Organization of Bee Colony

**1.3** Life cycle of honey bee

**1.4** Behavioural patterns (bees dance, swarming)

**Unit II: Rearing of Bees**

**2.1** Methods of bee keeping

**2.2** Types of Beehives

**2.3** Appliances

**2.4** Bee foraging

**Unit III: Diseases and Enemies**

**3.1** Killer bees

**3.2** Brood diseases

**3.3** Acarine mite, dysentery, nosema

**3.4** Varroa and wax moths

**Unit IV: Bee Economy**

**4.1** Honey composition and uses

**4.2** Bees wax and polish

**4.3** Mead and its types

**4.4** Propolis/medicinal products

**SUGGESTED READINGS**

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

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**SKILL ENHANCEMENT COURSE**

**IV SEM**

**AQUARIUM FISH KEEPING**

**(CREDITS 4)**

**Unit I: Introduction to Aquarium Fish Keeping**

**1.1** Scope of Aquarium Fish Industry as a Cottage Industry,

**1.2** Construction of home aquariums, materials and other equipments used

**1.3** Water quality requirements

**1.4** Exotic and Endemic species of Aquarium Fishes

**Unit II: Biology of Aquarium Fishes**

**2.1** 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

**2.2** Diseases of aquarium fishes

**2.3** Breeding habits

**2.4** Hatching and production of monosex fishes

**Unit III: Food and feeding of Aquarium fishes**

**3.1** Nutritional requirement of aquarium fishes

**3.2** Different kinds of feeds

**3.3** Preparation of dry feeds

**3.4** Other ornamental organisms used such as anemons, starfishes, lobsters and shrimps

**Unit IV: Fish Transportation and maintenance**

**4.1** Live fish transport - Fish handling

**4.2** Packing and forwarding techniques.

**4.3** General Aquarium maintenance –

**4.4** Budget for setting up an Aquarium Fish Farm as a Cottage Industry

**SKILL ENHANCEMENT COURSE**

**V SEM**

**MEDICAL DIAGNOSTICS**

 **(Credits 4)**

**Unit I: Haematological techniques**

* 1. Enumeration of RBC’s
	2. Enumeration of WBC’s
	3. ESR
	4. Estimation of haemoglobin

**Unit II: Histopathology**

* 1. Processing of tissues
	2. Special Stains
	3. Frozen sections
	4. Decalcification

**Unit III: Diseases**

* 1. Diagnosis and prevention of diabetes (Type I and Type II)
	2. Testing of blood glucose using glucometer
	3. Diagnosis and prevention of tuberculosis
	4. Diagnosis and prevention of hepatitis

**Unit IV: Imaging ( using photographs)**

* 1. X-Rays
	2. PET
	3. CT scans
	4. MRI’s

**SUGGESTED READINGS**

1. Park, K. (2007), *Preventive and Social Medicine*, B.B. Publishers
2. Godkar P.B. and Godkar D.P. *Textbook of Medical Laboratory Technology*, II
3. Edition, Bhalani Publishing House
4. Cheesbrough M., *A Laboratory Manual for Rural Tropical Hospitals, A Basis for*
5. *Training Courses*
6. Guyton A.C. and Hall J.E. T*extbook of Medical Physiology*, Saunders
7. Robbins and Cortan, *Pathologic Basis of Disease*, VIIIEdition, Saunders
8. Prakash, G. (2012), *Lab Manual on Blood Analysis and Medical Diagnostics*, S.
9. Chand and Co. Ltd

**SKILL ENHANCEMENT COURSE**

**VI SEM**

**SERICULTURE**

**(CREDITS 4)**

**Unit I: Introduction**

**1.1** History of sericulture

**1.2** Types of silkworm

**1.3** LH of mulberry silkworm

**1.4** Races of silkworm

**Unit II: Rearing of Silkworms**

**2.1** Selection of mulberry variety and establishment of mulberry garden

**2.2** Rearing house and rearing appliances; Disinfectants: Formalin, bleaching powder, RKO

**2.3** Silkworm rearing technology: Early age and Late age rearing

**2.4** Types of mountages; Spinning, harvesting and storage of cocoons

**Unit III: Pests and Diseases**

**3.1** Pests of silkworm

**3.2** Protozoans diseases

**3.3** Bacterial diseases

**3.4** Control and prevention

**Unit IV: Entrepreneurship in Sericulture**

**4.1** Prospectus of Sericulture in India

**4.2** By products of sericulture

**4.3** National Sericulture Projects and Central Sericulture Boards

**4.4** Visits to various Sericulture centres

**SUGGESTED READINGS**

1. Handbook of Practical Sericulture: S.R. Ullal and M.N. Narasimhanna CSB,
2. Bangalore
3. Appropriate Sericultural Techniques; Ed. M. S. Jolly, Director, CSR & TI, Mysore.
4. Handbook of Silkworm Rearing: Agriculture and Technical Manual-1, Fuzi Pub. Co.
5. Ltd., Tokyo, Japan1972.
6. Manual of Silkworm Egg Production; M. N. Narasimhanna, CSB, Bangalore 1988.
7. Silkworm Rearing; Wupang—Chun and Chen Da-Chung, Pub. By FAO, Rome 1988.
8. Improved Method of Rearing Young age silkworm; S. Krishnaswamy, reprinted CSB,
9. Bangalore, 1986.