

SRI KRISHNADEVARAYA UNIVERSITY: ANANTAPUR
DEPARTMENT OF SERICULTURE

CURRICULUM FOR B.Sc Z.S.C (Zoology, Sericulture & Chemistry) COURSE
(SEMESTER PATTERN)

(Effective from the Academic Year 2015-2016)

B.Sc. ZSC. V Semester

60 Hours

Paper – 5 SILKWORM DEVELOPMENTAL BIOLOGY, CYTOLOGY AND GENETIC ENGINEERING

Unit 1: DEVELOPMENTAL BIOLOGY: 14 hrs

1. Structure of a typical insect egg,
2. Membrane organization of egg,
3. Development of polarity, cleavage, blastoderm and blastokinesis,
4. Appendage formation and organogenesis.

Unit 2: CYTOLOGY: 12 hrs

1. Mitosis,
2. Meiosis,
3. Chromosome number in Mulberry and Non-Mulberry Silkworms.

Unit 3: GAMETOGENESIS: 10 hrs

1. Detailed account of Gametogenesis:
 - a. Spermatogenesis
 - b. Oogenesis

Unit 4: SEX DETERMINATION: 12 hrs

1. Sex determination in silkworms,
2. Role of Z and W Chromosomes

Unit 5: INTRODUCTION TO GENETIC ENGINEERING: 12 hrs

1. Molecular vectors – Cloning, shuttle, expression, binary vectors, plasmids, and virus.
2. Enzymes – Restriction endonucleases, types and utility in gene cloning and mapping.

Practicals

45 Hours

**SILKWORM DEVELOPMENTAL BIOLOGY,
CYTOLOGY AND GENETIC ENGINEERING**

1. Staining and mounting the different embryonic stages (Blue Egg Stage, Pin Head stage).
2. Mitotic and Meiotic, preparation, procedure and identification (Prophase, Metaphase, Anaphase, Telophase).
3. Identification of different cocoons of silkworm races- NB4D2, NB18, NB7, KA, PM, C.B., Nistari, Tasar, Muga, Eri.
4. Cocoon Assessment- Single Cocoon Weight, Single Shell Weight, Shell Ratio.
5. Class Record.

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Paper – 6

SILK FIBRE TECHNOLOGY

Unit I: TEXTILE FIBRES

10 hrs

1. Brief introduction to natural and man-made fibres – Cotton – Wool – Silk and Nylons – Polyester – Acrylic.
2. Physical and chemical properties of silk.
3. Identification of fibres – Burning, microscopic and solubility tests

Unit 2: GRADING AND MARKETING

12 hrs

1. Different cocoon breeds (MV, B.V, U.V& Non Mulberry Cocoons)- Physical and Commercial Cocoon Characteristics.
2. Cocoon testing – methods followed in Japan and its practicability to Indian conditions
3. Cocoon sorting Objectives and Methods. Defective cocoons – Types -defective cocoon percentage
4. Grading of cocoons, Visual inspection, Selection- Assessment of Cocoon by Filament length – Filament denier – Non breakable filament length-Estimated Renditta and Raw Silk percentage – shell ratio.
5. purchase of cocoons in the open auction, preservation of cocoons, transportation, determination Marketing-and price fixation

Unit3: POST COCOON PROCESSES

14 hrs

1. Cocoon Stifling-Sun drying-Barrel-Hot air Oven methods
2. Cocoon cooking &Brushing -Mono pan, three pan and pressurized cocoon cooking
3. Reeling and Re-reeling
4. Packing different skeins, book making and bundling.

Unit 4: RAWSILK TESTING & GRADING

12 hrs

1. Raw silk Properties and uses,

2. Silk Examination and quality control International and ISI standards, marketing of silk yarn, Silk Exchange.
3. Silk Throwing and Twisting.
4. Silk Degumming, Processing and bleaching methods.
5. Silk Weaving in Handlooms and Power looms.

Unit 5: REELING INDUSTRY, REELING WASTE AND RESOURCE MANAGEMENT

12 hrs

1. Evolution of silk reeling industry in India and other silk producing countries.
2. Spun Silk Industry, Process of technology, utilization of by products and uses.
3. Employment potential and income generation in Sericulture
4. Impact of advanced technology in the development of Sericulture Industry.

PRACTICALS

45 hours

1. Identification and sorting of different types.
2. Estimation of Shell ratio of M.V, B.V & C.B. Cocoons.
3. Reeling of cocoons, estimation of filament length, Non breakable filament length, calculation of Denier , Denier variation and Renditta of M.V, B.V & C.B Cocoon breeds(Comparative analysis)
4. Estimation of alkalinity in reeling water.
5. Textile fibers – Collection and Identification of Natural Fibres
6. Physical & Chemical Tests A) Microscope Test B) Burning Test.
7. Identification of silk wastes.

Class Record.