

ಬೆಂಗಳೂರು  
ನಗರ ವಿಶ್ವವಿದ್ಯಾನಿಲಯ



BENGALURU  
CITY UNIVERSITY

Office of the Registrar, Central College Campus, Dr. B.R. Ambedkar Veedhi, Bengaluru – 560 001.  
PhNo.080-22131385, E-mail: registrarbcu@gmail.com

No.BCU/BoS/NEP/Sericulture /323/2022-23

Date: 01.12.2022.

**NOTIFICATION**

Sub: B.Sc. I to IV Semesters Sericulture Syllabus of Bengaluru City University-reg.

Ref: 1.Recommendations of the Board of Studies in the Sericulture (UG)

2. Approval of the Vice-Chancellor dated, 1.12.2022.

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In pursuance to the recommendations of the BoS in Sericulture (UG) and the approval of the Vice-Chancellor cited at reference (1 & 2) above, the B.Sc. I to IV Semester Sericulture Syllabus of Bengaluru City University effective from the academic year 2022-23, is hereby notified for information of the concerned.

The copy of the Syllabus is notified in the University Website: [www.bcu.ac.in](http://www.bcu.ac.in) for information of the concerned.

  
REGISTRAR

To:

The Registrar (Evaluation), Bengaluru City University, Bengaluru.

Copy to;

1. The Dean, Faculty of Science, BCU.
2. The Chairman & Members of BoS in Science (UG), BCU.
3. The P.S. to Vice-Chancellor/Registrar/Registrar (Evaluation), BCU.
4. Office copy / Guard file / University Website: [www.bcu.ac.in](http://www.bcu.ac.in)



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BE BOUNDLESS

## **BENGALURU CITY UNIVERSITY**

**CHOICE BASED CREDIT SYSTEM**

**(Semester Scheme with Multiple Entry and Exit Options for  
Under Graduate Course –as per NEP 2020)**

**Syllabus for B.Sc. Sericulture  
I to IV Semesters**

**2022-23 onwards**

# BENGALURU CITY UNIVERSITY

CENTRAL COLLEGE CAMPUS

Dr.B.R. AMBEDKAR

VEEDHI BENGALURU -

560001

(National Education Policy-2020)

Approved copy of Syllabus  
1) Dr. Pradeep  
25/11/2022

2) Dr. A. S. Srinivas  
25/11/22

3) Dr. S. Srinivas  
25/11/22

4) Dr. S. Srinivas  
25/11/22

5) Dr. S. Srinivas  
25/11/22

**CURRICULUM STRUCTURE AND SYLLABUS**

**FOR UNDER GRADUATE COURSE**

**B.SC.( BASIC / HONS.)**

**IN**

**SERICULTURE**

**( 2021 - 2022 )**

**CURRICULUM STRUCTURE AND SYLLABUS**

**FOR UNDERGRADUATE COURSE**

**B.Sc.( BASIC / HONS.)**

**IN**

**SERICULTURE**

**( 2021 - 2022 )**

**PROF. T.S. JAGADEESH KUMAR**

**Chairman ( BOS )**

**MEMBERS**

**PROF. H. L SHIVASHANKARAPPA**

**PROF . FATIMA SADATULLA.**

**PROF . RAMAKRISHNA NAIK.**

**PROF A.C. MANJULA.**

**Dr. H.L.RAMESH.**

## Curriculum Structure and Syllabus for the Undergraduate Degree Programme-

### B.Sc.(Basic/Hons.)

#### Discipline-SERICULTURE

<b>Name of the Degree Program</b>	:	<b>B.Sc</b>
<b>(Basic/Hons.) Discipline Core</b>	:	<b>Sericulture</b>
<b>Total Credits for the Program</b>	:	<b>B.Sc. Basic - 144 and B.Sc. Hons. -</b>
<b>186 Starting year of implementation</b>	:	<b>2021-22</b>

**Program Outcomes:** By the end of the program the students will be able to:

Acquire competency in the discipline with sound knowledge and skill to secure B.Sc.(Basic) or B.Sc.(Hons) in Sericulture.

1. Know the different components of sericulture industry.
2. Understand concepts of sericulture industry and demonstrate interdisciplinary skills acquired in mulberry plant cultivation, silkworm rearing, diagnosis of diseases and pests of mulberry and silkworm and their prevention and its relevance in Seri-farmers livelihood.
3. Demonstrating the Laboratory and field skills with an emphasis on technological aspects in sericulture
4. Competent to transfer the knowledge and technical skills to the Seri-farmers.
5. Critically analyze the environmental issues and apply in management of mulberry garden and silkworm rearing at field.
6. Demonstrate comprehensive innovations and skills in improvement of mulberry and silkworm varieties for betterment of sericulture industry and human welfare.
7. Apply knowledge and skills of seribiotechnology for development new mulberry variety and silkworm breed suitable for varied agro-climatic zones.
8. Thorough knowledge and application of good laboratory and good manufacturing practices in sericulture and biotech industries.
9. Demonstrate entrepreneurship abilities, innovative thinking, planning, and setting up small-scale enterprises.

**Assessment:****Weightageforassessments(inpercentage)**

TypeofCourse	FormativeAssessment/IA	SummativeAssessment (WrittenExam)
Theory	40%	60%
Practical	50%	50%
Projects	50%	50%
ExperientialLearning (Internships/MOOC/SWAYAMetc.)	40%	60%

FormativeAssessment		
AssessmentOccasion/type	WeightageinMarks	
	Theory	Practical
Test (1)	20Marks	15Marks
Assignment	10Marks	05Marks
Fieldwork/Visit	10Marks	05Marks
<b>Total</b>	<b>40Marks</b>	<b>25Marks</b>

## Curriculum Structure and Syllabus for the Undergraduate Degree Program

### -B.Sc.(Basic/Hons.)

<b>Total Credits for the Program</b>	<b>186</b>
<b>Starting year of implementation</b>	<b>:2021-22</b>
<b>Name of the Degree Program</b>	<b>:B.Sc.(Basic/Hons.)</b>
<b>Discipline/Subject</b>	<b>:Sericulture</b>

### Curriculum Structure for the Undergraduate Degree Program – B.Sc.

**Curriculum matrix:** This list consists of Discipline Core (DSC) and Open Elective (OE) courses. The Core courses are essential to earn the degree in discipline/subject of interest as prescribed by the NEP-2020. The pedagogy involves L:T:P (Lecture: Tutorial: Practical) model. Core courses involve L+P-theory, laboratory/field experiments, project work, internship etc., while Elective courses composed of L:T.

**Computation of credits** – 1 hour of Lecture or 2 hours of practical per week in a semester is assigned one credit. The core subject theory courses/papers have 4 credits whereas the practical/field work assigned 2 credits.

Semesters /Courses	Title of the course	Program outcomes that the course addresses	Pre-requisite course(s)	Pedagogy	Assessment
<b>I Semester</b>					
Course-1	DSC-1T:SER-101T Fundamentals of Sericulture 4 Credits 100 marks	1. Students would gain brief background on different components of Sericulture.  2. They will have awareness on the origin, growth and status of sericulture in industry across the globe.	Students must have studied Biology or any other equivalent subjects in Class 12.	Lectures/Seminars/Fieldwork/Assignment/Group discussion with farmers/Problem Solving by interacting with scientists	Formative and Summative Assessments /Evaluations prescribed by NEP-2020 /Evaluation and analysis of results and reports submitted by students
	DSC -1P:SER-101P Fundamentals of Sericulture 2 Credits 50 Marks				
Course-2 (Open Elective)	OE-1: Science of Sericulture 3 Credits 100 Marks				

<b>II Semester</b>					
Course-3	DSC-2T:SER-102T Mulberry Biology and Cultivation 4 Credits 100 Marks	1. Students would know all about mulberry plant and cultivars in the field.  2. They would gain knowledge and acquire skill in cultivation of mulberry plants in the garden.			
	DSC-2P:SER-102P Mulberry Biology and Cultivation 2 Credits 50 Marks				
Course-4 (Open Elective)	2: Mulberry Crop Production Technology 3 Credits 100 Marks				

**Exit option with Certificate (with a minimum of 48 credits)**

<b>III Semester</b>					
Course-5	DSC-3T:SER-103T Silkworm Biology and Seed Technology 4 Credits 100 marks	1. Students would know life and structure of silkworm.  2. They would gain knowledge and acquire skill in production of disease free layings of silkworm for rearing.	Students must have studied Biological Science subjects in First and Second semesters	Lectures/Seminars/Field work/Assignment/Group discussion with farmers/Problem Solving by interacting with scientists	Formative and Summative Assessments/Evaluation as prescribed by NEP-2020  /Evaluation and analysis of results and reports submitted by students
	DSC-3P: SER-103P Silkworm Biology and Seed Technology 2 Credits 50 Marks				
Course-6 (Open Elective)	OE-3:Silkworm Rearing Technology 3 Credits 100 marks				



<b>IV Semester</b>					
Course-7	DSC-4T:SER-104T Mulberry and Silkworm Crop Protection 4 Credits 100 Marks				
	DSC-4P:SER-104P Mulberry and silkworm crop protection 2 Credits 50 Marks				
Course-8 (Open Elective)	OE-4: Textile Technology 3 Credits 100 Marks				
<b><i>Exit option with Diploma in Science (with a minimum of 96 credits) or Choose both core subjects as Major subjects and pursue the study.</i></b>					

**B.Sc.in Sericulture (Basic/Hons.)****SEMESTER-1**

<b>Course Title: Fundamentals of Sericulture</b>	
<b>Total Contact Hours: 56</b>	<b>Course Credits: 4+2</b>
<b>Formative Assessment Marks: 40%</b>	<b>Duration of ESA/Exam: 02 hrs.</b>
<b>Chairman BOS : Prof. T.S. Jagadeesh Kumar &amp; members in Committee</b>	<b>Summative Assessment Marks: 60%</b>

**Course Pre-requisite(s):** Students must have studied Biology or any other equivalent subjects in Class 12.

**Course Outcomes (COs):**

At the end of the course the students should be able to:

1. Acquires sound knowledge on different aspects of sericulture industry,
2. Gains skill with hands on training on mulberry cultivation
3. Gains skill with hands on training on silkworm egg production
4. Acquire knowledge and develop skill in silkworm rearing.
5. With the knowledge and skill acquired by students and acts as resource personnel also emerged as potential entrepreneur.

<b>Course 1: DSC-1T, SRC101 Fundamentals of Sericulture</b>		<b>Course 2: OE-1T Sericulture Technology</b>	
<b>Number of Theory Credits</b>	<b>Number of lecture hours/semester</b>	<b>Number of Theory Credits</b>	<b>Number of lecture hours/semester</b>
<b>4</b>	<b>56</b>	<b>3</b>	<b>42</b>

<b>Sl.No.</b>	<b>DSC-1T: SER-101T, Fundamentals of Sericulture</b>	<b>56 Hrs.</b>
<b>Unit-1: Introduction to Sericulture</b>		<b>14 hrs.</b>
1.	Origin and history of Sericulture. Silk road – Sericulture practicing countries of the World and status.	4 hrs
2.	Sericulture map of India and World.	2 hrs
3.	Sericulture organization in India and Karnataka; role of state departments of Sericulture, CSB, Universities and NGOs in Sericulture development.	2 hrs
4.	Sericultural practices in tropical and temperate climate.	2 hrs

5.	Employment generation in sericulture - Role of women in sericulture, SWOT Analysis.	2 hrs
6.	Textile fibres: Types - natural and synthetic fibres - types of silk produced in India and their importance.	2 hrs
<b>Unit-2 :Importance of soil for mulberry cultivation</b>		<b>14hrs.</b>
7.	Importance of soil fertility with reference to mulberry cultivation	1hrs.
8.	Definition of soil, soil structures, soil textures and soil profile.	3hrs.
9.	Types of soils in India and Soil Sickness.	2hrs.
10.	Soil air, Soil Water and Soil organisms	3hrs.
11.	Soil analysis - soil sampling, soil pH, organic carbon and NPK level.	3hrs.
12.	Soil conservation methods and Reclamation	2hrs.
<b>Unit -3: Components of sericulture</b>		<b>14hrs.</b>
13.	Introduction to Mulberry and non mulberry sericulture	2hrs.
14.	Introduction to mulberry cultivation	2hrs.
15.	Introduction to silkworm rearing	2hrs.
16.	Introduction to silkworm seed production	2hrs.
17.	silkworm seed production post cocoon technology	2hrs.
18.	Mulberry Species and Varieties under cultivation in India.	2hrs.
19.	Popular silkworm races of India	2hrs.
<b>Unit-4: Entrepreneurship and rural development in sericulture</b>		<b>14hrs.</b>
20.	Entrepreneurship development programme (EDP): Emergence and objectives of EDP, essential qualities to become an entrepreneur; selection of a potential entrepreneur.	3hrs.
21.	EDP in raising mulberry saplings (Kisan nursery) and mechanization in mulberry cultivation	2hrs.
22.	EDP in composting and vermicomposting for the management of mulberry garden and rearing wastes.	2hrs.
23.	EDP in chawki rearing centers, silkworm egg production and silkworm rearing, silk reeling and handicrafts from cocoons.	3hrs.
24.	Contract farming and its scope in sericulture and Occupational health hazards in sericulture.	2hrs.
25.	By-products of sericulture industry and their utilization.	2hrs.

**Course-1:Practical:DSC-1P:SER-101P,Fundamentals of Sericulture**

1. Sericulture map of the World map and Silk Road.
2. Sericulture map of India
3. Sericulture map of Karnataka.
4. Sericulture map of non-mulberry silkworms.
5. Identification of different types of Indian soils and Soilsickness.
6. Soil analysis-soil sampling and testing.
7. Determination of pH and NPK in different soil samples.
8. Determination of water holding capacity in different soil samples.
9. Studying of different soil organisms (Microscopic culture).
10. Identification of mulberry varieties.
11. Identification of different non-mulberry food plants.
12. Identification of silkworm breeds and cocoons.
13. Identification of different types of silk fibers- Rawsilk, Bleached silk, Dyed Silk
14. Handicraft making from cocoons.

## Course-2:OE-1T,Science of Sericulture

Sl.No.	OE-1T, ScienceofSericulture	42Hrs.
<b>Unit-I</b>		<b>14hrs.</b>
1	Introductiontotextilefibres;types-naturalandsyntheticfibresandtheirproperties;importanceofsilkfibre.	2hrs.
2	TypesofsilkproducedinIndia.	2hrs.
3	History,developmentandstatusofmulberryandnon-mulberrysericultureinIndia.SilkproductioninIndiaandothercountries;exportandimport.	3hrs.
4	Characteristic features and advantages of sericulture; scope of sericulture in India vis-à-vis other agricultural crops - employment potential and income generation;role ofwomeninsericulture.	3hrs.
5	Sericulture organization in India. Sericulture extension: Extension systems - CentralSilkBoard,statesericulturedepartments,universitiesandvoluntaryorganizations.	2hrs.
<b>Unit-II</b>		<b>14hrs.</b>
6	Hostplantsofmulberryandnon-mulberrysilkworms.Mulberrycultivars-tropicalandtemperateregions,irrigatedanddrainedconditions.	4hrs.
7	Importanceofsoilsfertilitywithreferencetomulberrycultivation,soilstructures,soiltexturesandsoilprofile,typesofsoils,andProblematicSoilsanditsreclamation	3hrs.
8	Propagationandestablishmentofmulberrygarden,Packageofpracticesformulberrycultivationunderrainfedand irrigatedconditions.	3hrs.
9	Pruning,harvesting,transportationandpreservationofmulberry.	2hrs.
10	Pestsanddiseasesofmulberryandtheirmanagement.	2hrs.
<b>Unit-III</b>		<b>14hrs.</b>
11	Silkwormseedorganizationanditssignificance;seedareasandrearers.	2hrs.
13	General account of silkworm egg production and demand. Silkworm races / breeds, Grainage building and equipments. Grainage activities- procurement and preservation of seed cocoons, sex separation, eclosion, pairing and depairing, oviposition - sheet and loose egg preparation, mother moth examination, acid treatment, surface sterilization, washing, packing and sale of eggs.	4hrs.
14	Lifecycleof <i>Bombyxmori</i> . Rearing houses and equipments; disinfection, incubation and black boxing of silkworm eggs. Rearing operations - brushing, young and late - ages silkworm rearing, moulting, mounting, spinning, cocoon harvesting and marketing.	4hrs.
15	Characteristicsofcocoons.Cocoonstiflingandcooking.Silkreeling:Charaka, cottage basin and multi-end. Silk exchanges; weaving and dyeing.	4hrs.

## TextBooks

1. Sericulture Manual-1 (Mulberry cultivation) (1972); Food and Agriculture Organization of the United Nations, Rome.
2. Sericulture Manual-2 (Silkworm rearing) (1972); Food and Agriculture Organization of the United Nations, Rome.
3. Sericulture Manual-3 (Silk reeling) (1972); Food and Agriculture Organization of the United Nations, Rome.
4. Hand Book of Silkworm rearing (1972); Fuji Publishing Co., Ltd., Tokyo, Japan.
5. Textbook of Tropical Sericulture (1975) Japan Overseas Corporation Volunteers 4-2-24, Hiroo, Shibuya-ku, Tokyo, Japan.
6. Charles J. Huber (1929); The Raw Silk Industry of Japan. The Silk Association of America, Inc.
7. Chaudhury S.N. (1981); Muga Silk Industry, Directorate of Sericulture and Weaving, Government of Assam, Gowhati, Assam.
8. Sarkar D.C. (1980); Sericulture in India, Central Silk Board, Government of India, Bangalore.
9. Sainosuka Omura (1973); Silkworm rearing Techniques in Tropics, Overseas Technical Co-operation Agency, Tokyo, Japan.
10. Tanaka Y. (1964); Sericology, Central Silk Board Publication, Bangalore.
11. Devaiah M. *Cetal.* (2001); Advances in Mulberry Sericulture. Dept. of Sericulture, UAS, Bangalore.

## **SEMESTER-2**

**Title of the Courses**

**Course 3:**

DSC-2T, SER102, **Mulberry Biology and Cultivation** Course 4: OE-1T, **Mulberry Crop Production Technology**

<b>Course 1: DSC-2T, SRC102 Mulberry Biology and Cultivation</b>		<b>Course 2: OE-2T Mulberry Crop Production Technology</b>	
<b>Number of Theory Credits</b>	<b>Number of lecture hours/semester</b>	<b>Number of Theory Credits</b>	<b>Number of lecture hours/semester</b>
<b>4</b>	<b>56</b>	<b>3</b>	<b>42</b>

**Course 3: DSC-2T: SER-102T, Mulberry Biology and Cultivation**

<b>Sl. No.</b>	<b>DSC-2T: SER-102T, Mulberry Biology and Cultivation</b>	<b>56Hrs</b>
<b>Unit-1: Taxonomy of Mulberry</b>		<b>14Hrs</b>
1.	Salient features, economic importance of the family Moraceae. Phytogeography and systematic of the genus <i>Morus</i> L. and its species.	2hrs.
2.	Botanical description and morphology of mulberry.	2hrs.
3.	Floral biology of mulberry: Structure of male and female flowers, Catkins.	1hrs.
4.	Anther and ovule in mulberry; micro- and megasporogenesis; development of male and female gametophytes;	2hrs.
5.	Pollination, fertilization; development of endosperm, embryo and seed in mulberry	2hrs.
6.	Polyembryony and parthenocarpy in mulberry.	1hrs.
7.	Anatomy of mulberry internal structure of stem, root, petiole and leaf lamina; secondary growth in root and stem. Structure and organization of shoot and root meristems.	4hrs.
<b>Unit-2: Establishment of mulberry garden</b>		<b>14hrs.</b>
8.	Propagation of mulberry- seedling, sapling, grafting and layering.	3 hrs
9.	Establishment of mulberry garden (Bush and tree plantation): Areas under mulberry cultivation in India, General Descriptions, Climatic requirements, Soil conditions, mulberry cultivation under rain-fed and irrigated conditions, mulberry cultivation in hilly areas, mixed farming with special reference to tree plantations.	5 hrs
10.	Raising of commercial nursery; Application of root inducing hormones	2hrs.
11.	Estimation of leaf yield: Importance of leaf quality.	2hrs.
12.	Utilization of mulberry in various fields and its medicinal properties.	2hrs.
<b>Unit-3: Mulberry cultivation</b>		
13.	Farm implements utilized in mulberry cultivation	2hrs.

14.	IntercultivationandMulchingpractices:Purpose,methods,timeand frequency.	2hrs.
15.	Irrigation:Importance,Source,methods,periodicityandquantityof irrigation,over-irrigationandits effects.	2hrs.
16.	Pruning-Objectives,Importanceand methods.	2hrs.
17.	Leafharvesting:harvestingmethods(leafandshootharvests);transportationandpreservat ionofharvestedleafandshoots.	2hrs.
18.	WeedsofMulberryGarden,classification,characteristicsandeffectoncropplants.Integrate dweedmanagement.Weedingmethods.	4hrs.
	<b>Unit-4:Fertilizersapplicationinmulberry</b>	<b>14Hrs</b>
19.	IntroductiontodifferenttypesofManuresandfertilizers:	2hrs.
20.	IntroductiontoBiofertilizersanditsapplicationinmulberrycultivation	2hrs.
21.	IntroductiontoFoliar nutritentsandPlantnutrients(macroandmicronutrients)andtheirapplicationinmulberry cultivation.	3hrs.
22.	IntroductiontoPlantHormonesandtheirapplicationinmulberryproduction	3hrs.
23.	Introduction to Composting and vermi-composting and their utilization in mulberryproduction	4hrs.

**Course3:DSC-2P:SER-102P,MulberryBiologyandCultivation**

1.	Taxonomicdescriptionofmulberry.	
2.	MountingofPollengrains, OvuleandEmbryo.	
3.	Anatomyofpetiole,	
4.	Anatomyofleaflamina,	
5.	Anatomyofprimaryandsecondarystem	
6.	Anatomyofprimaryandsecondaryroot.	
7.	MulberryFarmimplements.	
8.	Preparationofland,pitsandrows;preparationofrootingmedia(fieldwork).	
9.	Raisingofsapling and seedling (fieldwork).	
10.	Intercultivation, mulching, irrigation, pruning and estimation of leaf yield.(Demonstrationandexercise).	
11.	GraftingandLayeringinmulberry.	
12.	Harvestingandpreservationtechniques;leafselectionfordifferentinstars.	
13.	WeedsofMulberrygarden,classification,weedingmethods.	
14.	Studyandidentificationofdifferenttypesoffertilizers	



## Course4:OE-2T,MulberryCropProductionTechnology

Sl.No.	OE-2T,MulberryCropProductionTechnology	42Hrs
<b>Unit-I</b>		<b>14hrs.</b>
1	Taxonomyandsystematicsof mulberry.Reproductivebiologyof mulberry:maleandfemal eflowersandfruitof mulberry.	2hrs.
2	Anatomyofroot,stemandleafof mulberry.	3hrs.
3	Popular mulberrycultivarsandtheircharacteristicsfeatures	3hrs.
4	Climaticfactorsrequired formulberrygrowthandproductivity.	2hrs.
5	Soilsformulberrycultivation:Soilprofileandproperties;soilsamplingandtesting;proble matic soils andtheirreclamation.	4hrs
<b>Unit-II</b>		<b>14hrs.</b>
5	Propagationof mulberrythroughcuttings,graftingandlayering.Raisingof nurseryfor largescaleproductionofsaplings(Kisannursery).	4hrs.
6	Establishmentandmaintenanceof mulberrygardens;packageofpracticesformulberryga rdensunderrainfedandirrigatedconditions.	4hrs.
7	Plantnutrientmanagement:Essentialnutrients,organicmanures,inorganic fertilizersandbio-fertilizersand itsapplication.	3hrs.
8	Irrigationandinter-cultivationof mulberrygarden.Weeds of mulberrygarden theirmanagement.	3hrs.
<b>Unit-III</b>		<b>14hrs</b>
9	Pruning,leafharvesting;harvestingmethods(leafandshootharvests);transportation, preservation of leaf and shoots. Assessment of mulberry leaf yieldandquality.	4hrs
11	Diseasesof mulberry:Causalorganism,symptomatology,seasonalincidence,diseasecycl e,yieldand qualitylossandtheirmanagement.	4hrs.
12	Pestsof mulberry:Lifecycle,symptomsofattack,seasonaloccurrence,natureof damageandtheirmanagement.	4hrs.
13	By-Productsandmedicinalimportanceof mulberry	2hrs.

## **TextBooks;-**

1. Sericulture Manual-1 (Mulberry cultivation) (1972); Food and Agriculture Organization of the United Nations, Rome.
2. Sericulture Manual-2 (Silkworm rearing) (1972); Food and Agriculture Organization of the United Nations, Rome.
3. Sericulture Manual-3 (Silk reeling) (1972); Food and Agriculture Organization of the United Nations, Rome.
4. Hand Book of Silkworm rearing (1972); Fuji Publishing Co., Ltd., Tokyo, Japan.
6. Text book of Tropical Sericulture (1975) Japan Overseas Corporation Volunteers 4-2-24, Hiroo, Sibuya-ku, Tokyo, Japan.
6. Charles J. Huber (1929); The Raw silk Industry of Japan. The Silk Association of America, Inc.
7. Sainosuka Omura (1973); Silkworm rearing Techniques in Tropics, Overseas Technical Co-operation Agency, Tokyo, Japan.
8. Devaiah M. *et al.* (2001); Advances in Mulberry Sericulture. Dept. of Sericulture, UAS, Bangalore.

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**III AND IV SEMESTERS, SYLLABUS  
FOR UNDERGRADUATE PROGRAMME**

**B.Sc.(Basic/Hons.)  
in  
SERICULTURE**

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**Assessment:**

**Weightage for assessments (in percentage)**

Type of Course	Formative Assessment /IA	Summative Assessment (Written Exam)
Theory	40%	60%
Practical	50%	50%
Projects	50%	50%
Experiential Learning (Internships/MOOC/SWAYAMetc.)	40%	60%

Formative Assessment		
Assessment Occasion/type	Weightage in Marks	
	Theory	Practical
Test(1)	20Marks	15Marks
Assignment	10Marks	05Marks
Fieldwork/Visit	10Marks	05Marks
<b>Total</b>	<b>40Marks</b>	<b>25Marks</b>

## SEMESTER - 3

### Title of the Courses

Course 5: DSC-3T, SER-103T, Silkworm Biology and Rearing Technology

Course 6: OE-3T, Silkworm Rearing Technology

Course 5: DSC-3T, SRC103T Silkworm Biology and Rearing Technology		Course 6: OE-3T Silkworm Rearing Technology	
Number of Theory Credits	Number of lecture hours/semester	Number of Theory Credits	Number of lecture hours/semester
4	56	3	42

### COURSE-5: DSC-3T, SER-103T- SILKWORM BIOLOGY AND REARING TECHNOLOGY

Sl. No.	Course-5: DSC-3T, SER 103T, Silkworm Biology and Rearing Technology	56hrs
<b>Unit-1</b>		<b>14hrs</b>
1	Classification of sericigenous insects. Characteristic features of the order Lepidoptera and families-Saturnidae and Bombycidae.	4hrs.
2	Classification of silkworm breeds based on moultinism, voltinism and geographical distribution.	4hrs.
3	Popular silkworm breeds and hybridsof Karnataka and their economic traits.	2hrs.
4	Lifecycle of <i>Bombyx mori</i> L. Morphology of egg, larva, pupa and adult of <i>B. mori</i> .	4hrs.
<b>Unit-2</b>		<b>14hrs</b>
5	Spermatogenesis, oogenesis and fertilization in the silkworm, <i>B. mori</i> .	4hrs.
6	Anatomy: digestive, circulatory, excretory, respiratory and nervous system of <i>B. mori</i> .	5hrs.
7	Anatomy of reproductive systems of <i>B. mori</i> .	3hrs.
8	Anatomy of silk glands of <i>B. mori</i> .	2hrs.
<b>Unit-3</b>		<b>14hrs</b>
9	Rearing house: Location, orientation, plan and utilities. Model and low-cost rearing houses.	3hrs.
10	Rearing appliances- shelf and shoot rearing, requirements of rearing appliances for 100 dfls.	2hrs.
11	Disinfection of rearing house and rearing appliances. Disinfectants- rearing room and rearing bed. Hygiene - personal and rearing house.	2hrs.

12	Selection of silkworm races/breeds for rearing. Advantages and disadvantages of Bivoltine and multivoltine pure races/breeds and hybrids rearing.	2hrs.
13	Incubation: definition, methods and devices. Black boxing and its importance.	3hrs.
14	Brushing of silkworm- Definition, types and care during brushing.	2hrs.
<b>Unit-4</b>		<b>14hrs</b>
15	Chawki rearing: Characteristics of young age worms. Types of chawki rearing- traditional and advanced methods. Methods, frequency and quantity of feeding. Spacing. Methods of bed cleaning. Optimum environmental conditions required for rearing of chawki worms. Moulting- symptoms and care during moulting.	4hrs.
16	Late age silkworm rearing: Characteristics of adult worms. Methods of rearing- Merits and demerits. Methods, frequency and quantity of feeding. Spacing. Methods of bed cleaning. Optimum environmental conditions required for rearing of Late age silkworms. Moulting - symptoms and care during moulting.	4hrs.
17	Spinning: Identification of ripened larvae; mounting and density; Types of Mountages and their advantages and disadvantages. Environmental requirements during spinning.	3hrs.
18	Harvesting- time of harvesting. Sorting, storage/preservation, packaging and Transport of cocoons; leaf-cocoon ratio; maintenance of rearing records.	3hrs.

## Course5:DSC-3P,SER-103P, Silkworm Biology and Rearing Technology

1	Lifecycle of <i>Bombyxmori</i> .Morphologyofegg,larva,pupaandadultof <i>Bombyxmori</i> .	2 hrs
2	Sexseparation in larva, pupa and adult of the silkworm, <i>B.mori</i> .	2 hrs
3	Dissection and display of Digestive system of <i>B.mori</i> larva.	2 hrs
4	DissectionanddisplayofNervoussystemof <i>B.mori</i> larva	2 hrs
5	Dissectionand displayofReproductivesystemofmaleandfemale <i>B.mori</i> moths.	2 hrs
6	Dissectionand displayofSilk glandsin <i>B.mori</i> .	2 hrs
7	Mounting of <i>B.mori</i> larval mouthparts.	2 hrs
8	Identificationofdifferentbreeds/hybridsof silkwormcocoon-NB4D2,KA,PM,C. Nichi,Nistari,CSR2andCSR4race/breedscharacters.Identificationofmutants of silkworm larva-zebra,ursa,knobbedandsex-limitedRaces.	2 hrs
9	Rearinghouses-modelrearinghouseandlow-costrearinghouses.Rearing appliancesandtheiruses.	2 hrs
10	Disinfection-Typesofdisinfectants,concentrationanddosagerequirement. Preparationand sprayofdisinfectantstotherearing houseand beddisinfectants.	2 hrs
11	Incubationofsilkwormeggs.Blackboxing.CalculationofHatching percentage.	2 hrs
12	RearingofChawkisilkworms:Brushingofnewlyhatchedsilkwormlarvae-feedingandspacing.Bedcleaningusingbedcleaningnet.Identificationof Moultinglarvae.	2 hrs
13	RearingofLateagesilkworms:Feedingandspacing,bedcleaningusingbed Cleaningnet.Identificationofmoulting larvae.	2 hrs
14	Mountingandmountingdensity;Typesofmountages.	2 hrs

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2. Chapman,R.F.(1998)*The Insects Structure and Function*.Cambridge University Press,UK.
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- 6.HirooandSibuyaku(1975)*TextbookofTropicalSericulture*.JapanOverseasCorporationVolunt eers,Tokyo,Japan.
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## COURSE.6: OE-3T- SILKWORM REARING TECHNOLOGY

Sl.No.	OE-3T,SilkwormRearingTechnology	42Hrs.
<b>Unit-I</b>		<b>14hrs.</b>
1	Introduction to silkworm rearing. Types of silks- mulberry and non-mulberry. Popular mulberry silkworm breeds and hybrids of Karnataka.	3hrs.
2	Planning for silkworm rearing: Estimation of leaf yield and quality; brushing capacity; selection of silkworm races/ breeds and hybrids.	3hrs.
3	Rearing houses: Types, location and orientation; rearing houses for young (chawki) and grown up (late-age) silkworms; rearing appliances and their uses.	4hrs.
4	Disinfection and hygiene: Importance, types of disinfectants, preparation of spray solution, quantum of spray solution required, disinfection method, mode of action of disinfectants and hygiene practices in silkworm rearing.	4hrs.
<b>Unit-II</b>		<b>14hrs.</b>
5	Chawki silkworm rearing: Rearing methods and operations; chawki rearing centres- importance and functions.	6hrs.
6	Late age silkworm rearing: Rearing methods and operations.	6hrs.
7	Moulting: Characteristic features- before, at and after moult; care during moulting.	2hrs.
<b>Unit-III</b>		<b>14hrs.</b>
8	Mounting- Types of mountages, density of mounting, environmental conditions during spinning.	5hrs.
9	Cocoon harvesting, sorting, packing, transportation and marketing.	4hrs.
10	Environmental requirements for silkworm egg incubation, young and late-age silkworm rearing.	3hrs.
11.	By-product of silkworm rearing and their utilization.	2hrs.

## REFERENCES

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6. Jolly, M.S. (1987) *Appropriate Sericulture Techniques*. Published by InternationalCentre forTrainingandResearchinTropicalSericulture,Mysore.
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## **SEMESTER- 4**

### **Title of the Courses**

**Course7: DSC-4T,SER-104T,MulberryandSilkwormCropProtection**

**Course8:OE-4, Textile Technology**

<b>Course7:DSC-4T,SER-104T, MulberryandSilkwormCropProtection</b>		<b>Course8:OE- 4,TextileTechnolog y</b>	
<b>NumberofTheory Credits</b>	<b>Numberoflecture hours/semester</b>	<b>NumberofTheory Credits</b>	<b>Numberoflecture hours/semester</b>
<b>4</b>	<b>56</b>	<b>3</b>	<b>42</b>

### **Course7: DSC-4T,SER-104T,Mulberryand Silkworm Crop Protection**

<b>Sl. No.</b>	<b>Course7: DSC-4T,SER-104T,MulberryandSilkwormCropProtection</b>	<b>56hrs</b>
<b>Unit-1</b>		<b>14hrs</b>
1.	Introduction to plant diseases and importance of plant protection.	2hrs.
2.	Influence of biotic and abiotic factors on the incidence of plant diseases.	2hrs.
3.	Classification of mulberry diseases.	1hrs.
4.	Fungal diseases of mulberry: Causal organism, Classification, Occurrence, symptoms, etiology, preventive and control measures- Powdery mildew, Leaf spot, Leaf rust, Leaf blight and Root rot.	5hrs.
5.	Root-knot mulberry: Causal organism, Classification, Occurrence, symptoms, preventive and control measures.	1hrs.
6.	Viral, bacterial and dwarf diseases of mulberry: Causal organism, Classification, occurrence, symptoms, preventive and control measures.	2hrs.
7.	Mineral deficiency symptoms and remedial measures in mulberry.	1hrs.
<b>Unit-2</b>		<b>14hrs</b>
8.	Pest: Definition; categories of pest and ways of infestation; pest outbreak; pest forecasting and forewarning. Concept and strategies of pest management.	2hrs.
9.	Major pests: leafroller, Bihar hairy caterpillar, mealybug, scale insect and thrips. Their damage and preventive and control measures.	4hrs.
10.	Minor pests: grasshopper, stem girdlers, termites, May and June beetles, Jassids and mites. Their damage and Preventive and control measures.	4hrs.
11.	Pesticides: Forms, formulations, calculation and application; Different types of sprayers.	2hrs.
12.	Integrated pest management.	2hrs.
<b>Unit-3</b>		<b>14hrs</b>
13.	Introduction to silkworm pathology. Classification of silkworm diseases.	1hrs.
14.	Protozoan disease: symptomatology, life cycle of <i>Nosema bombycis</i> , structure of pebrine spore, source, mode of infection and transmission, cross infectivity, prevention and control.	3hrs.
15.	Bacterial diseases: causative agents, symptoms, factors influencing flacherie, source, mode of infection and transmission, prevention and control.	3hrs.
16.	Viral diseases : grasserie, infectious flacherie, cytoplasmic polyhedrosis, denonucleosis and gattine. Causative agents, symptoms, mode of infection and	3hrs.

	transmission, prevention and control.	
17.	Fungal diseases: white muscardine, green muscardine and aspergillosis-causative agents, symptoms, structure and life cycle of fungal pathogen, mode of infection and transmission, prevention and control.	4 hrs.
<b>Unit-4</b>		<b>14 hrs</b>
18.	Integrated management of silkworm diseases.	2 hrs.
19.	Uzifly: Classification, life cycle and morphology of Indian uzifly, seasonal occurrence, nature and extent of damage, prevention and control.	2 hrs.
20.	Cocoon pests of silkworm: Dermestid beetle - life cycle, nature and extent of damage, prevention and control measures.	2 hrs.
21.	Predators of silkworm: Cockroaches, ants, lizards, Birds and rodents. Their damage, prevention and control measures.	4 hrs.
22.	Brief account of methods of pest control: Cultural, mechanical, physical, legislative (Quarantine), chemical, genetical/autocidal, biological and IPM.	4 hrs.

### Course 7: DSC-4P, SER-104P, Mulberry and Silkworm Crop Protection

1	Study of powdery mildew through sectioning, staining and temporary mounting.	2 hrs
2	Study of leaf spot through sectioning, staining and temporary mounting.	2 hrs
3	Study of leaf rust through sectioning, staining and temporary mounting.	2 hrs
4	Study of root-knot nematode in mulberry through sectioning, staining and temporary mounting.	2 hrs
5	Identification of mulberry pests: Leafroller, Bihar hairy caterpillar, scale insect, mealybug, thrips, beetles, jassids and grasshoppers etc.,	2 hrs
6	Study of pesticides, their formulation, applicators (sprayers and dusters).	2 hrs
7	Identification of diseased silkworms based on symptoms. Preparation of temporary slides of bacteria.	2 hrs
8	Identification of diseased silkworms based on symptoms. Preparation of temporary slides of pebrine spores.	2 hrs
9	Identification of diseased silkworms based on symptoms. Preparation of temporary slides of nuclear polyhedral bodies.	2 hrs
10	Identification of diseased silkworms based on symptoms. Preparation of temporary slides of mycelial mat and spores of muscardine.	2 hrs
11	Methods of application of silkworm bed disinfectants for management of silkworm diseases.	2 hrs
12	Life cycle of Uzi fly; Identification of Uzi-infested silkworms and cocoons.	2 hrs
13	Life cycle of dermestid beetles: Dermestid beetle infested silkworm cocoons	2 hrs
14	Predators of silkworm <i>B. mori</i> .	2 hrs

## REFERENCES

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## COURSE,8:OE-4,TEXTILETECHNOLOGY

Sl.No.	OE-4,TextileTechnology	42hrs
<b>Unit-I</b>		<b>14hrs</b>
1	Introductiontotextilefibres.Classificationoffibres- naturaland manmadefibres.	2hrs.
2	Cocoonsorting;stifling,differentcocooncookingmethods.	6hrs.
3	Reeling:differentreelinginstruments;reelingoncharaka,cottagebasin, multi-end,semi-automaticandautomaticreelingmachines.	6hrs.
<b>Unit-II</b>		<b>14hrs</b>
4	SilkThrowing.	4hrs.
5	Weaving:Preparationforweaving,warppreparation,pirnwinding, Weavingonhandloomandpowerloom	2hrs.
6	Degummingandbleachingofsilk.	4hrs.
7	Dyeing:typesofdyes, dyeingmethods,teststodeterminecolourfastness	4hrs.
<b>Unit-III</b>		<b>14hrs</b>
8	Dyesusedforprinting,methodsofprintingandbooking.	2hrs.
9	Majornaturalfibres;Cotton,linen,wool,Nylon,polyesterandsilk- Theirhistoryandcharacteristicfeatures.	4hrs.
10	Minornaturalfibres:Vegetableandmineralfibresandtheircharacteristic features.	2hrs.
11	Spunsilk productionand uses.	4hrs.
12	Comparativecharacteristicsofnaturalandmanmadefibres.	2hrs.

## REFERENCES

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