



A PROPOSAL TO START

Diploma In Sericulture (DS)

Under Faculty of Science &Technology

AT

DEPARTMENT OF ZOOLOGY,
SHIVAJI UNIVERSITY,
KOLHAPUR – 416 004

2017

Standard Format For Syllabus Framework

- A. Ordinance and Regulations:- (as applicable to degree / programme)
B. Shivaji University, Kolhapur, New Syllabus for Diploma in Sericulture(DS)

1. **Title: Diploma in Sericulture(DS)**
2. **Faculty** of Science & Technology
3. **Year of Implementation:** 2017
4. **Preamble:**

The sericulture industry stands for livelihood opportunity for millions owing to high employment oriented, low capital intensive and remunerative nature of its production. The very nature of this industry with its rural based on-farm and off-farm activities and enormous employment generation potential has attracted the attention of the planners and policy makers to recognize the industry among one of the most appropriate avenues for socio-economic development of a largely agrarian economy like India. India has the unique distinction of being the only country producing all the five known commercial silks, namely, mulberry, tropical tasar, oak tasar, eri and muga, of which muga with its golden yellow glitter is unique and prerogative of India

Growth and development of an industry or success of a project depends on the quality of manpower attached to it, their skill levels and their ability to learn and adapt to new technologies & skills-sets. Income generation is also believed to be directly related and proportional to the degree of development of desired skills and traits. Central Silk Board had realized the importance of training and capacity building fairly early and hence, in addition to being a R&D focused organization it has developed a strong training orientation.

In this ever increasing era of agro based silk and sericulture industries consultancy/trained manpower are becoming a part of process and therefore, there is need of qualified and trained/experienced manpower for providing field solutions. Nowadays, there is high demand for such silk /sericulture professionals from different sectors. In many nations, it has been made mandatory to appoint well trained and qualified professional for the silk Industry.

Every year around 200 students of Department of Zoology, Botany, Biochemistry, Biotechnology complete M. Sc. degree and join for Consultancy or Industry as a Professional. With their M. Sc. , if they get add-on course as a Diploma in Sericulture or PG Diploma in Sericulture , which is compulsory/ desirable under recruitments of state and central sectors, particularly for the jobs of Central Silk Board an autonomous body of Govt., of India , Directorate of Sericulture Govt., of Maharashtra

and in various NGO as BAIF etc., these students will get immediate entry in the industry and good salary package after completion of their P.G.

Considering the present scenario in mind, Dept of Zoology, propose to start P.G. Diploma in Sericulture, (DS). This course is being introduced as an add on course for M.Sc. students and Job oriented course for unemployed graduates. As this course covers all aspects of Sericulture, after successful completion of this course, a candidate can start his own Sericulture farm, i.e. growing mulberry plantation, rearing of silkworms, Preparation of silkworm seed, Reeling of cocoons etc. Presently, a sericulturist, who practices Sericulture with one acre mulberry plantation and by rising silk cocoons is getting an income of Rs.3,00,000/- per year with a net profit of Rs.1,80,000/-. With this huge potential, this course would be able to deliver trained workforce, who will be able to motivate other youth in rural areas to take up this avocation. Ultimately, this will bring sustainable economy to our villages. With the changing climatic scenario, in the event of onset of draught conditions, mulberry plant can tolerate and able to yield the leaves required for Silkworm rearing. Moreover, the climate of Western Maharashtra is very congenial for Silkworm rearing. Mulberry leaf is having medicinal values and there are so many by-products that can be reaped from cocoons made by silkworms. The course is designed for the students and employees from Sericulture govt. depts. who will be exposed to comprehensive and rigorous training covering all aspects of Sericulture Science.

5. General Objectives of the Course:

To develop highly qualified professional manpower in Silk and Sericulture sector. In Sericulture the basic requirement lies on systematic quality based coaching and training in advanced Science and Technologies/innovations. Therefore, the course is designed to train and provide expert human resource to Silk industry and expected to bring direct benefits to Rural development and sericulture farming community.

The course is based on following objectives:

- i. To develop an expert manpower to handle the own sericulture units/ entrepreneurship/ Corporate sector units.
- ii. To give scientific knowledge about mulberry cultivation , silkworm rearing techniques to the students.
- iii. To make the student aware about Soil to Silk concept, Sericulture Extension and innovative technology /techniques etc.
- iv. To train the students in compressive Silk production techniques .

6. Duration of Course:

The duration of the course is 1 year and the lectures will be delivered thrice a week, two hours from 5 pm to 7 pm. These timings will be suitable for students and working employees from government and industry.

7. Course pattern:

Candidates will be required to undergo learning in theory, project development and workshop subjects during the academic year. Candidates also will be exposed to industrial exposure through Industrial visits to get familiar mulberry cultivation, silkworm rearing, Raw silk production, Silkworm egg production, weaving and cocoon production.

8. Fee Structure :

Particulars	Rupees Annual fee
Tuition fee	9000 = 00
Laboratory fee	1000 = 00
Annual fee : per student	Total : 10,000 = 00

Other fee will be applicable as per university rules/ norms

9. Eligibility for Admission :

1. The student passing with SSC or equivalent
2. Std VII th pass for farmers and farmers having 3 years practical experience in Sericulture farming.
3. In case applicants number is more, the entrance Test will be conducted.
4. Students are not required to submit MC/TC.

10. Medium of Instruction: Marathi

11. Course structure: Course will be of one year duration.

Sr. No.	Code	Paper Title	Theory Hours	Practical Hours	Marks		Total
					External	Internal	
1.	DS -1	Food plants cultivation and management	40	--	75	--	75
2.	DS -2	Silkworm rearing, occupational health hazards in sericulture & management	40	--	75	--	75
3.	DS -3	Grainage/Reeling/ economics & value addition in sericulture	40	--	75	--	75
4.	DS- 4	Silkworm , host plant pest & disease management	40	--	75	--	75
5.	DS 5	Intensive practical Training and Visits to	--	10 days	--	50	50

		Units					
6.	DS 6	Project	--	One Year	25	25	50
Total marks							400

12. Scheme of Teaching and Examination :

Classes will be conducted on Friday and Saturday without hampering regular courses of the department. Practical's will be conducted on Sunday and as per requirement. The students will be undergoing continuous assessment throughout the academic year through seminars, tests, tutorials etc. The evaluation will consist of internal assessment, external assessment and viva voce for the project.

13. Standard of passing:

For Theory and Practical 40%. Passing will be as per university rules.

14. Nature of Question Paper and Scheme of Marking:

DS (Diploma in Sericulture) Examination

Paper-

Sub. Code: _____

Day and Date:

Total Marks: 75

Time:

Instructions:

- 1) All questions are compulsory
- 2) Draw neat and labelled diagrams wherever necessary

Question 1. Write short notes on (any two) 15

- a)
- b)
- c)

Question 2. Write brief note on(any four). 20

- a)
- b)
- c)
- d)
- e)
- f)

Question 3. Solve any two. 10

- a)
- b)
- c)

Question 4. Describe in detail (any one) 15

a)

b)

Question 5. Write Essay on (any one) 15

a)

b)

15. Equivalence in Accordance with Titles and contents of papers:

(For Revised syllabus): NA

16. Special Instructions, if any: Nil

17. Detailed Title of Papers and Units and No. of Lectures

Paper-I FOOD PLANTS CULTIVATION AND MANAGEMENT

Unit-I: History and scope of Sericulture. 05

General account of global production of mulberry and non-mulberry silk,
Scope of sericulture in India and Maharashtra

Unit-II: SOIL MANAGEMENT AND CULTIVATION OF MULBERRY 15

Agro climatic conditions for mulberry cultivation, Site suitability for mulberry garden establishment, soil management, classification of different types of soil, Physical and chemical properties of soils, Selection and preparation of land for mulberry cultivation, kisan nursery

Unit-III: MORICULTURE 20

Characteristic features of popular mulberry varieties Mulberry propagation- Scope and significance of sexual and asexual propagation, Different methods of propagation. Mulberry crop production- Planning for establishment of mulberry garden, Concept and establishment of mulberry garden for chawki & late age worms, Water management- Concept of irrigation, Methods of irrigation, Fertilizer management, organic, Compost, bio-fertilizers, Inorganic etc.
Life cycle of Mulberry Silkworm, Growth Stages of Mulberry Silkworm, Types of Non-mulberry Silkworms and life cycle .

Paper-II Silkworm rearing, occupational health hazards in sericulture & management

Unit I: Pre-requisites for rearing 10

Objectives, Introduction, Estimation of Mulberry Leaf Yield and Assessment of Leaf Quality, Estimation of Brushing Capacity Requirements of Rearing, Disinfecting Silkworm Rearing House and Appliances, Silkworm rearing house,

Unit II: Egg handling, Incubation & Chawki rearing **15**

Objectives, Introduction, Incubation of Silkworm Eggs, Black Boxing, Hatching, Brushing of Larvae, Leaf Quality for Chawki Rearing, Chawki Rearing Practices, Commercial Chawki Rearing, Transportation of Chawki worms, Economics of Chawki Rearing.

Unit-III: Late age silkworm rearing **15**

Objective, Introduction, Late Age Silkworms, Rearing Methods, Tray Rearing, Shelf Rearing, Advantages and Disadvantages of Shoot Feeding, Environmental Conditions for Silkworm Rearing, Leaf Harvest, Transportation and Preservation, Leaf Quality and Quantity, Mechanization in Silkworm Rearing, Tasar Silkworm Rearing, Eri Silkworm Rearing.

Paper-III Grainage/Reeling/ economics & value addition in sericulture

Unit –I: Silkworm seed technology **10**

Silkworm Seed cocoon production, egg production, Diapause and non-diapause eggs, Acid treatment, Incubation of eggs in Grainages through Incubation chambers and related aspects.

Unit –II: Silk Technology **15**

Textile fibers: Brief introduction to natural and synthetic fibers Silk industry: General silk industry in various states of India Cocoons: Assessment of cocoon properties, Silk reeling, Cocoon stifling Storage & preservation of cocoons, Cocoon cooking, Silk reeling and re-reeling, Silk weaving.

Unit –III: Sericulture organization and economics **15**

Marketing of cocoon and silk, Organizational set up of sericulture, Economics of mulberry cultivation Economics of cocoon production Economics of seed cocoon, Economics of silk production, Extension education, Classification of various extension teaching methods, Harvesting and marketing of cocoons Time of Harvest, Methods of Harvest, Deflossing, Sorting of Cocoons,

Assessment of Cocoons, Transportation and Marketing of Cocoons , Cost of Cocoon Production.

Paper-IV Silkworm, host plants pest & disease management

Unit I: Mulberry and Non-Mulberry food plants diseases and their management 10

Objectives, Introduction, Leaf Spot Disease, Powdery Mildew Disease, Leaf Rust Disease, Leaf Blight Disease, Preparation of the Spray Solution, Equipment's used for Spraying the Fungicides, Nursery Diseases, Root Knot Disease, Root Rot Disease, Types of Diseases of Non-mulberry Silkworm Host Plants, Diseases of Eri Silkworm Host Plants, Integrated Disease Management (IDM) .

Unit II: Mulberry and Non-Mulberry host plant pests and their management 15

Objectives, Introduction, Types of Mulberry Pests, Sap Suckers Leaf Eaters, Root / Shoot Feeders, Pests of Non-mulberry Silkworm Host Plants, Pests of Tasar Silkworm Host Plans, Pests of Eri Silkworm Host Plants, Management of pests.

Unit -III: Mulberry and Non-Mulberry Silkworm diseases ,Pests and their management 20

Objectives, Introduction, Common Diseases of Silkworm, Grasserie , Flacherie ,Muscardine ,Pebrine ,Diseases of Non-mulberry Silkworms, Tasar Silkworms, Diseases of Eri Silkworms ,Disease Management,Identification of Pesst, Life Cycle of Uzi fly,Uzi fly , Management and Economics, Dermestes Beetle

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19. A Treatise on acid treatment of silkworm eggs, Technical Publication, Central Sericultural Research & Training Institute, Mysore.
20. Problematic soils of tropical mulberry garden and their management, Technical Publication, Central Sericultural Research & Training Institute, Mysore.
21. Tips for successful silkworm cocoon crops, Technical Publication, Central Sericultural Research & Training Institute, Mysore.
22. Tips for successful bivoltine silkworm cocoon crops, Technical Publication, Central Sericultural Research & Training Institute, Mysore.
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Practical's Diploma in Sericulture

Experiment no.	Title of Experiment
Experiment no.1	Estimation of Hatching and Brushing Percentage of silkworm Eggs
Experiment no.2	Estimation of Moisture Content of Mulberry Leaves for chawki Rearing
Experiment no.3	Determination of mulberry Leaf Driage in the Rearing Bed

Experiment no.4	Estimation of silkworm Larval Density in the Rearing Bed and Silkworm Population During Chawki Rearing
Experiment no.5	Estimation of Larval Density and shoot Quantity Required for Late Age Rearing (Shoot Feeding Method) for 100 dfls
Experiment no.6	Estimation of Uzi Fly Infestation During Late Age silkworm Rearing
Experiment no.7	Evaluation of Different Types of Mountages and its Effects on Defective cocoons
Experiment no.8	Estimation of Cocoon shell Ratio
Experiment no.9	Estimation of Defective Cocoon Percentage from the Given Sample of Cocoon
Experiment no.10	Identification of Different Silkworm Diseases and Method of their Disposal
Experiment no.11	Preparation of Different Disinfectant Solutions Recommended in Sericulture
Experiment no.13	Identification of Major Silkworm Pests
Experiment no.14	Demonstration of Management Practices Against Silkworm pests

Any other practical as suggested by concerned Teacher

18. Recommended Reading Material: Details are given along with Syllabus

C) Other Features:

- 1. Intake Capacity / Number of Students:** Maximum 40 students in which priority will be given to the university students (60%) and others (40%).
- 2. Library and Laboratory equipment:** This department is running M.Sc. course with Sericulture as one of the specialization. Basic equipment required for conducting practical is existing in the Department. Books on Sericulture are available with University & Departmental libraries. Space Required.
The course includes theory papers and intensive Practical training. The theory part can be taught in the Department of Zoology, Shivaji University, Kolhapur. The remaining part of training can be completed in the Laboratory as well as at beneficiaries field in villages/ Technical service centers of sericulture department. The students have to complete project in the industry/Field units and therefore, laboratory space is not required for the one year project. The department has well equipped teaching classrooms and Laboratories for the practical.

D) General Guidelines: Nil