Estd. 1962
"A++" Accredited by
NAAC (2021)
With CGPA 3.52

**SHIVAJI UNIVERSITY, KOLHAPUR - 416004, MAHARASHTRA**

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**शिवाजी विद्यापीठ, कोल्हापूर -४१६००४,महाराष्ट्र**

दूरध्वनी-ईपीएबीएक्स -२६०९०००, अभ्यासमंडळे विभाग दुरध्वनी ०२३१—२६०९०९४
०२३१—२६०९४८७

**Ref.No.SU/BOS/Science/ 597** **Date: 06/10/2025.**

**To,**

The Principal,
All Concerned Affiliated Colleges/Institutions
Shivaji University, Kolhapur

The Head/Co-ordinator/Director
All Concerned Department (Science)
Shivaji University, Kolhapur.

**Subject:** Regarding revised syllabi of Diploma in Sericulture and P.G. Diploma in Sericulture programme under the Faculty of Science and Technology as per NEP-2020.

**Sir/Madam,**

With reference to the subject mentioned above, I am directed to inform you that the university authorities have accepted and granted approval to the revised syllabi, nature of question paper and equivalence of Diploma in Sericulture and P.G. Diploma in Sericulture programme under the Faculty of Science and Technology as per NEP-2020.

This syllabus, nature of question and equivalence shall be implemented from the academic year 2024-2025 onwards. A soft copy containing the syllabus is attached herewith and it is also available on university website www.unishivaji.ac.in NEP-2020 (Online Syllabus)

The question papers on the pre-revised syllabi of above-mentioned course will be set for the examinations to be held in October /November 2024 & March/April 2025. These chances are available for repeater students, if any.

You are, therefore, requested to bring this to the notice of all students and teachers concerned.

Thanking you,

**Yours faithfully,**

**Dy Registrar**
**Dr. S. M. Kubal**

# SHIVAJI UNIVERSITY, KOLHAPUR

**Established: 1962**

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**Structure and Syllabus in Accordance with**

## National Education Policy - 2020

# Post-Graduate Diploma in Sericulture (PGDS)

# under

# Faculty of Science and Technology

# (To be implemented from Academic Year 2024-25)

**Medium of Instruction:** English

| Sr. No. | Subject Code | Paper Title | Theory hrs | Practical hrs | Marks | | Total |
|---|---|---|---|---|---|---|---|
| | | | | | External | Internal | |
| 1 | PGDS1 | Food Plant Cultivation and Management | 40 | - | 60 | 40 | 100 |
| 2 | PGDS2 | Silkworm Rearing and Management | 40 | - | 60 | 40 | 100 |
| 3 | PGDS3 | Grainage, Reeling, Economics and Value Addition in Sericulture | 40 | - | 60 | 40 | 100 |
| 4 | PGDS4 | Silkworm and Host Plant Pests and Disease Management | 40 | - | 60 | 40 | 100 |
| 5 | PGDS5 | Intensive Practical Training and Visits to Units | - | 3 Weeks | 60 | 40 | 100 |
| 6 | PGDS6 | Project | - | One year | 60 | 40 | 100 |
| **Total Marks** | | | | | | | **600** |

# Paper I: Food Plant Cultivation and Management

**Course Outcomes:** Upon successful completion of this course, the student will have in depth knowledge of:

**CO1:** Gives detailed information about history of sericulture and its scope at national and international level.

**CO2:** Imparts knowledge of variety of mulberry and non-mulberry sericulture, its classification, growth stages.

**CO3:** Students are able to understand soil, its management and mulberry cultivation for sericulture practices.

**CO4:** Gives knowledge of mulberry varieties, their propagation and water management of mulberry garden.

| Units | Description | Hrs |
|---|---|---|
| 1 | Introduction to Mulberry: Morphology, Anatomy, Physiology, Reproductive biology, Cultivars, Crop improvement. Soil and Climatic Requirements – Types of soil, Soil fertility, Irrigation, Role of climatic factors on growth and productivity of mulberry, climatic factors, agroclimatic zones. | **10** |
| 2 | Mulberry Propagation and Cultivation – sexual & asexual propagation, nursery techniques, planting methods, pruning, harvesting, transportation and preservation of mulberry leaves, mechanization in mulberry cultivation. | **10** |
| 3 | Nutrient and Weed Management – organic & inorganic fertilizers, bio fertilizers, integrated nutrient management, weed control. | **10** |
| 4 | Establishment, maintenance and package of practices for mulberry gardens under rainfed and irrigated conditions. Maintenance of garden for rearing of young-age silkworms and silkworm seed crop. | **10** |

**Reference Books:**


1. Sericulture Manual-1 (Mulberry cultivation) (1972) Food and Agriculture Organization of the United Nations, Rome.
2. Text book of Tropical Sericulture (1975) Japan Overseas Corporation Volunteers 4-2-24, Hiroo, Sibuya-ku, Tokyo, Japan.
3. Tanaka Y. (1964) Sericology, Central Silk Board Publication, Bangalore.
4. Allard (R.W.) (1976) Principles of Plant Breeding, New York, John Wiley.
5. Shankar M.A (1997) Hand book of mulberry nutrition, UAS- Multiplex, Bangalore.

# Paper II: Silkworm Rearing and Management

**Course Outcomes:** Upon successful completion of this course, the student will have in depth knowledge of:

**CO1:** Students are able to understand practical and theoretical aspects of rearing requirements such as mulberry leaf quality, brushing, rearing house etc.

**CO2:** Gives knowledge and needs of eggs processing, incubation, development and their handling during chawki rearing.

**CO3:** Explains about late age rearing and their requirements.

**CO4:** Gives detailed information of non-mulberry silkworm rearing and their management.

| Units | Description | Hrs |
|---|---|---|
| 1 | Introduction to textile fibres; types – natural and synthetic fibres and their properties; importance of silk fibre. Types of silkworms – mulberry and non- mulberry. History, development and status of mulberry and non-mulberry sericulture in India. Silk production in India and other countries; export and import. | 08 |
| 2 | Silkworm Biology – Life cycle of the silkworm, *Bombyx mori*; Morphology of Egg, larva, pupa and adult. Geographical distribution, moultinism, voltinism, cocoon colour and shape. | 08 |
| 3 | Planning for silkworm rearing: Pre-requisites for silkworm rearing. Estimation of leaf yield and quality, brushing capacity; selection of silkworm races / breeds and hybrids. Rearing houses: Types, location and orientation; rearing houses for young (chawki) and grown up (late-age) silkworms; rearing appliances and their uses. Disinfection and hygiene: Importance, types of disinfectants Hygiene practices in silkworm rearing. | 08 |
| 4 | Environmental requirements for silkworm egg incubation, young and late-age silkworm rearing. Egg transportation, methods of black boxing and brushing. Chawki silkworm rearing: Rearing methods – advantages and disadvantages; | 08 |
| 5 | Late age silkworm rearing: Rearing methods – advantages and disadvantages; Procedure - feeding, spacing and bed cleaning. Moulting: Characteristic features, features of mountages, types of mountages, Cocoon harvesting, sorting, deflossing, packing, transportation and marketing. | 08 |

**Reference Books:**


1. Sericulture Manual-2 (Silkworm rearing) (1972) Food and Agriculture Organization of the United Nations, Rome.
2. Hand Book of Silkworm rearing (1972) Fuji Publishing Co., Ltd., Tokyo, Japan.
3. Yonemura (M) & Rama Rao N., (1925); Hand Book of Sericultura1 Rearing of Silkworms, Mysore Government Branch Press.
4. S.Morohosi.(2000) Development Physiology of Silkworms ( Translated Japanese) Oxford & IBH Publishing Co.Pvt .Ltd. New Delhi , Calcutta.
5. Yasuji Hamamura. (2001) Silkworm Rearing on artificial diet- Oxford & IBH Publishing Co.Pvt .Ltd. New Delhi & Calcutta.

# Paper III: Grainage, Reeling, Economics and Value Addition in Sericulture

**Course Outcomes:** Upon successful completion of this course, the student will have in depth knowledge of:

**CO1:** Students are able to understand silkworm egg production, its embryonic development, incubation and their requirements.

**CO2:** Gives detailed information about silk and silk industries functioning.

**CO3:** Imparts knowledge about marketing organisation, economics and extension.

**CO4:** Gives detailed information of harvesting, processing and marketing of cocoons for better income.

| Units | Description | Hrs |
|---|---|---|
| 1 | Silkworm Seed Organization and its significance, Seed areas (bivoltine and multivoltine), Selected seed rearers and silkworm seed legislation act. Silkworm races/ breeds. | 08 |
| 2 | Grainage Technology – Grainage building and equipments, Disinfection and hygiene, Preservation of seed cocoons, Sex separation, Emergence, Pairing and depairing, Oviposition – sheet and loose egg preparation, Mother moth examination, Acid treatment, Surface sterilization, Washing, Packing and sale of eggs. | 08 |
| 3 | Reeling technology: Physical and commercial characteristics of cocoons, cocoon sorting, Marketing of cocoon. Evolution of silk reeling, Reeling units – Charaka, Cottage basin, Multi-end and Automatic reeling devices, Cocoon stifling, Preservation of cocoons, Cocoon cooking, Silk reeling, Re-reeling and packing. Raw silk properties - physical and chemical. Raw silk testing. Byproducts of silk reeling industry and their utilization. | 08 |
| 4 | Sericulture extension system: Extension systems of CSB, State governments, Voluntary organizations and Universities. Extension services in sericulture. | 08 |
| 5 | Economics of mulberry production under rainfed and irrigated systems, Economics of cocoon production for commercial purpose, Economics of raw silk production. | 08 |

**Reference Books:**


1. Sericulture Manual-3 (Silk reeling) (1972) Food and Agriculture Organization of the United Nations, Rome.
2. Kovalev P.A., (1970); Silkworm breeding Stocks, Central Silk Board, Bangalore.
3. Eikichi Hiratsuka (2000) Silkworm breeding, Oxford and IBH publications, New Delhi.
4. Nobumasa Hojo (2000) Structure of the Silk yarn, Oxford and IBH publications, New Delhi.
5. Eikichi Hiratsuka. (1999) Silkworm Breeding (Translated from Japanese) Oxford & IBH Publishing Co. Pvt. Ltd. New Delhi & Calcutta.
6. Singh, AK and Singh, L. (2008). Dynamics of Entrepreneurship development in agriculture: Basics to advances. Entrepreneurship: Theory and practice in agriculture. pp. 120-131.

# Paper IV: Silkworm and Host Plant Pests and Disease Management

**Course Outcomes:** Upon successful completion of this course, the student will have in depth knowledge of:

**CO1:** Students are able to understand pests and diseases of mulberry and non-mulberry silkworm food plants and their managements.

**CO2:** Gives practical and theoretical knowledge of pests and diseases of mulberry and non-mulberry silkworms

| Units | Description | Hrs |
|---|---|---|
| 1 | Pests of mulberry: Classification of pests: Leaf eating pests, Shoot and root feeding pests, Life cycle, symptoms of attack, seasonal occurrence, nature of damage and management strategies, Integrated pest management. | 10 |
| 2 | Diseases of mulberry: Foliar diseases, Shoot and root diseases, Causal organism, symptoms, disease cycle, yield and quality loss and management strategies. | 10 |
| 3 | Pests of silkworms: Insect and non-insect pests of mulberry silkworm, life cycle of uzi fly, management of uzi fly – physical, mechanical, exclusion, biological, chemical and integrated management strategies. | 10 |
| 4 | Diseases of silkworms: classification of diseases- viral, bacterial, fungal, protozoan, causal organism, mode of infection and transmission. Management of diseases. | 10 |

**Reference Books:**


1. Jadhav, A. D., & Sathe, T. V. (2020). Sericulture and pest management. Astral International.
2. Khan, M. A., Bhat, M. M., & Singh, T. (2013). Silkworm crop protection: Concepts and approaches. Narendra Publishing House.
3. Elumalai, D., Mohan, P., Mohan Raj, P., Poovizhiraja, R., & Ramamoorthy, R. (2023). Introduction to non-mulberry silkworms. CRC Press.
4. Gentner, J. (2020). Diseases and pests of silk worm. Discovery Publishing House.
5. Hisao Aruga (2024) Principles of Sericulture (Translated from Japanese). Oxford & IBH Publishing Co. Pvt. Ltd.

# Practicals of Post graduate Diploma in Sericulture (PGDS)

**Experiment 1:** Estimation of hatching and brushing percentage of silkworm eggs

**Experiment 2:** Estimation of moisture content of mulberry leaves for chawki rearing

**Experiment 3:** Determination of mulberry leaf drying in the rearing bed

**Experiment 4:** Estimation of silkworm larval density in the rearing bed and silkworm population during chawki rearing

**Experiment 5:** Estimation of larval density and shoot quantity required for late age rearing

(Shoot feeding method) for 100 dfls.

**Experiment 6:** Estimation of Uzi fly infestation during late age silkworm rearing

**Experiment 7:** Evaluation of different types of mountages (Chandrika) and its effects on defective cocoons

**Experiment 8:** Estimation of cocoon shell ratio

**Experiment 9:** Estimation of defective cocoon percentage from the given sample of cocoons

**Experiment 10:** Identification of different silkworm diseases and method of their disposal

**Experiment 11:** Preparation of different disinfectant solutions recommended in sericulture

**Experiment 12:** Identification of major silkworm pests

**Experiment 13:** Demonstration of management practices against silkworm pests

Any other practical as suggested by concerned teacher

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