## ABOUT THE DEPARTMENT

The Department of Botany has a long and distinguished history of excellence characterized by competent faculty members who have made major contributions to Plant Science over the past 50 years. Prof. Dr. N.M.R. CHANDRAKANTHAN took initiatives to establish the Botany Department in 1979 and rendering academic services to undergraduate students of Chemistry as an ancillary subject. He taught classes in Plant Science and as an acclaimed well– known plant taxonomist he also first documented the campus flora of the Sourashtra College. He eventually rose to the top as the Principal of the college in 2006 and served in the position until 2009.

The scope of botany has widened in recent times with the applications of the knowledge of plants to many other related areas of science. The opportunities for a postgraduate in various courses have expanded and there are greater prospects in academics, research, industry, consultancy and entrepreneurship, both in government and private sectors – in India and abroad. Job opportunities are also increasing as research organizations, herbal products companies, farm management organizations; biotech and drug development firms always do require the services of botany students.

## VISION

Our dream is to provide quality education that will enable the well– being of graduates in the betterment of the Nation through good services to the society, and to motivate students to acquire knowledge and skills besides instilling confidence in critical thinking in a global perspective with honesty, perseverance and compassion.

## MISSION

Our mission is to impart true botanical knowledge and bestow life skills to be a better citizen of tomorrow through an enlightened management and committed, competent faculty.

# SOURASHTRA COLLEGE, MADURAI – 625004

(An Autonomous Institution Re-accredited with 'A' grade by NAAC)

## BOTANY – SYLLABUS

**(Under CBCS based on OBE)**

**(For the students admitted from the academic year 2025-2026 onwards)**



## BOTANY – COURSE STRUCTURE – I SEMESTER

| S. No. | Course Code | Part | Course Title | Hrs. / Week | Exam (Hrs.) | CA | SE | Total Marks | Credits |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 25UBYA11 | III | **Elective/Allied – I: Allied Botany – I** Plant diversity, Cell Biology, Genetics and Plant Biotechnology | 4 (T) | 3 | 25 | 75 | 100 | 3 |
| 2 | 25UBYAP1 | III | **Allied Botany Practical:** Plant diversity, Cell Biology, Genetics and Plant Biotechnology | 2 (P) | 3 | 40 | 60 | 100 | 2 |
| 3 | 25UBYN11 | IV | **SEC – 1: NME:** Nursery and Landscaping | 2 (T) | 3 | 25 | 75 | 100 | 2 |
| | | | **Total** | **8** | | | | | **7** |

## COURSE STRUCTURE – II SEMESTER

| S. No. | Course Code | Part | Course Title | Hrs. / Week | Exam (Hrs.) | CA | SE | Total Marks | Credits |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 25UBYA21 | III | **Elective/Allied – II: Allied Botany – II** Plant Taxonomy, Anatomy, Embryology and Physiology | 4 (T) | 3 | 25 | 75 | 100 | 3 |
| 2 | 25UBYAP2 | III | **Allied Botany Practical:** Plant Taxonomy, Anatomy, Embryology and Physiology | 2 (P) | 3 | 40 | 60 | 100 | 2 |
| 3 | 25UBYN21 | IV | **SEC – 2: NME:** Mushroom Cultivation | 2 (T) | 3 | 25 | 75 | 100 | 2 |
| | | | **Total** | **8** | | | | | **7** |

**Passed in the BoS Meeting held on 27/02/2025** **Signature of the Chairman**

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## COURSE STRUCTURE – I SEMESTER

| S. No. | Course Code | Part | Course Title | Hrs. / Week | Exam (Hrs.) | CA | SE | Total Marks | Credits |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 25UBYA11 | **III** | **Elective/Allied – I: Allied Botany – I** Plant diversity, Cell Biology, Genetics and Plant Biotechnology | 4 (T) | 3 | 25 | 75 | 100 | 3 |
| 2 | 25UBYAP1 | **III** | **Allied Botany Practical:** Plant diversity, Cell Biology, Genetics and Plant Biotechnology | 2 (P) | 3 | 40 | 60 | 100 | 2 |
| 3 | 25UBYN11 | **IV** | **SEC – 1: NME:** Nursery and Landscaping | 2 (T) | 3 | 25 | 75 | 100 | 2 |
| | | **Total** | | **8** | | | | | **7** |

**SEC** – **Skill Enhancement Course**

**CA** – **Class Assessment (Internal)**

**SE** – **Summative Examination**

**NME** – **Non –Major Elective**

**T** – **Theory**

**P** – **Practical**

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## BOTANY – SYLLABUS

**(Under CBCS based on OBE)**

**(For the students admitted from the academic year 2025-2026 onwards)**

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| COURSE CODE | COURSE TITLE | CATEGORY | T | P | CREDITS |
|---|---|---|---|---|---|
| 25UBYA11 | PLANT DIVERSITY, CELL BIOLOGY, GENETICS AND PLANT BIOTECHNOLOGY | ELECTIVE/ ALLIED – 1 | 4 | – | 3 |

| YEAR | SEMESTER | INTERNAL | EXTERNAL | TOTAL |
|---|---|---|---|---|
| I | I | 25 | 75 | 100 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Curriculum Design and Development** | Employability | | ✓ | Skill Oriented | | ✓ | Entrepreneurship | | | | ✓ | |
| | National | ✓ | Local | ✓ | Regional | ✓ | Global | | | | ✓ | |
| **Curriculum Enrichment** | Professional Ethics | | Gender | | Environment and Sustainability | ✓ | Human Values | | Other Values | | | |

**COURSE DESCRIPTION:**

This course helps to understand the morphology and significances of plant diversity, structure and function of cell.

**COURSE OBJECTIVES:**

To understand the economically important plants and their role

**COURSE OUTCOMES (COs):**

**After the completion of the course, the students will be able to**

| No. | Course Outcomes | Knowledge Level (According to Bloom's Taxonomy) |
|---|---|---|
| CO 1 | increase the awareness and appreciation of human friendly algae and their economic importance. | Upto K3 |
| CO 2 | develop an understanding of microbes and fungi and appreciate their adaptive strategies | Upto K3 |
| CO 3 | develop critical understanding on morphology, anatomy and reproduction of Bryophytes, Pteridophytes and Gymnosperms. | Upto K3 |
| CO 4 | compare the structure and function of cells and explain the development of cells. | Upto K3 |
| CO 5 | understand the core concepts and fundamentals of plant biotechnology and genetic engineering | Upto K3 |

**K1– KNOWLEDGE (REMEMBERING), K2–UNDERSTANDING, K3–APPLYING**

## PLANT DIVERSITY, CELL BIOLOGY, GENETICS AND PLANT BIOTECHNOLOGY

### UNIT – I: ALGAE

General characters of algae – Structure, reproduction and life cycle of the following genera – *Anabaena* and *Sargassum*. Economic importance of algae

### UNIT – II: FUNGI, BACTERIA AND VIRUS

General characters of fungi, structure, reproduction and life cycle of the following genera – *Penicillium* and *Agaricus*. Economic importance of fungi

Bacteria – general characters, structure and reproduction of *Escherichia coli*. Economic importance of bacteria.

Viruses – general characters, structure of TMV and bacteriophage

### UNIT – III: BRYOPHYTES, PTERIDOPHYTES AND GYMNOSPERMS

General characters of Bryophytes, Structure and life cycle of *Funaria*.

General characters of Pteridophytes, Structure and life cycle of *Lycopodium*.

General characters of Gymnosperms, Structure and life cycle of *Cycas*

### UNIT – IV: CELL BIOLOGY

Prokaryotic and Eukaryotic cell– structure /organization. Cell organelles – ultra structure and functions of chloroplast, mitochondria and nucleus. Cell division – mitosis and meiosis

### UNIT – V: GENETICS AND PLANT BIOTECHNOLOGY

Mendelism – Law of dominance, Law of segregation, Incomplete dominance. Law of independent assortment. Monohybrid and dihybrid cross – Test cross – Back cross.

Plant Biotechnology – Basic tissue culture techniques and applications of plant tissue culture

### TEXT BOOKS:


1. Singh, V., Pande, P.C and Jain, D.K. 2021. ***A Text Book of Botany.*** Rastogi Publications,Meerut.
2. Bhatnagar, S.P and Alok Moitra. 2020. ***Gymnosperms,*** New Age International (P) Ltd., Publishers, Bengaluru.
3. Sharma, O.P. 2017. ***Bryophyta***, MacMillan India Ltd. Delhi.
4. Lee, R.E. 2008. ***Phycology,*** IV Edition, Cambridge University Press, New Delhi.
5. Rao, K., Krishnamurthy, K.V and Rao, G.S. 1979. ***Ancillary Botany,***S.Viswanathan Pvt. Ltd., Madras.

**REFERENCE BOOKS:**

1. Parihar, N.S. 2012. ***An Introduction to Embryophyta – Pteridophytes*** – Surjeet Publications, Delhi.
2. Alexopoulos, C.J. 2013. ***Introduction to Mycology***. Willey Eastern Pvt. Ltd.
3. Vashishta, P.C. 2014. ***Botany for Degree Students Gymnosperms.*** Chand & Company Ltd, Delhi.
4. Coulter, M. Jhon, 2014. ***Morphology of Gymnosperms.*** Surjeet Publications, Delhi.
5. Vashishta, P.C. 2014. ***Botany for Degree Students Algae.*** 2014. Chand & Company Ltd, Delhi.
6. Parihar, N.S. 2013. ***An Introduction to Embryophyta –Bryophytes***. Surjeet Publications, Delhi.
7. Pandey B.P. 1986, ***Text Book of Botany (College Botany)*** Vol. I & II, S. Chand and Co. New Delhi.

**DIGITAL TOOLS:**

1. https://www.kobo.com/us/en/ebook/the– algae– world
2. http://www.freebookcentre.net/biology– books– download/Fungi– (PDF– 15P).html
3. http://scitec.uwichill.edu.bb/bcs/bl14apl/bryo1.htm
4. https://www.toppr.com/guides/biology/plant– kingdom/pteridophytes/
5. https://arboretum.harvard.edu/wp– content/uploads/2013– 70– 4– beyond– pine– cones– an– introduction– to– gymnosperms.pdf
6. https://www.us.elsevierhealth.com/medicine/cell– biology
7. https://www.us.elsevierhealth.com/medicine/genetics
8. https://www.kobo.com/us/en/ebook/plant– biotechnology– 1

# SOURASHTRA COLLEGE, MADURAI – 625004

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## BOTANY – SYLLABUS

**(Under CBCS based on OBE)**

**(For the students admitted from the academic year 2025-2026 onwards)**

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| COURSE CODE | COURSE TITLE | CATEGORY | T | P | CREDITS |
|---|---|---|---|---|---|
| 25UBYAP1 | PLANT DIVERSITY, CELL BIOLOGY, GENETICS AND PLANT BIOTECHNOLOGY | ELECTIVE/ ALLIED – 1 PRACTICAL | – | 2 | 2 |

| YEAR | SEMESTER | INTERNAL | EXTERNAL | TOTAL |
|---|---|---|---|---|
| I | I | 40 | 60 | 100 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Curriculum Design and Development** | Employability | ✓ | Skill Oriented | ✓ | Entrepreneurship | ✓ | | | | | |
| | National | ✓ | Local | ✓ | Regional | ✓ | Global | ✓ | | | |
| **Curriculum Enrichment** | Professional Ethics | | Gender | | Environment and Sustainability | ✓ | Human Values | | Other Values | | |

**COURSE DESCRIPTION:**

To develop skills and practice the basic components in Plant diversity, Cell biology, Genetics and Plant Biotechnology.

**COURSE OBJECTIVES:**

- To identify the Algae, Bryophytes, Pteridophytes and Gymnosperms based on their morphological characters.
- To acquire concept in Cell biology and Plant biotechnology.
- To make the students understand laws of inheritance, genetic basis of loci and alleles.

**COURSE OUTCOMES (COs):**

**After the completion of the course, the students will be able to**

| No. | Course Outcomes | Knowledge Level (According to Bloom's Taxonomy) |
|---|---|---|
| CO 1 | recognize the basic principles and components of gardening. | Upto K3 |
| CO 2 | explain about bio– aesthetic planning and conceptualize flower arrangement. | Upto K3 |
| CO 3 | apply techniques for design various types of gardens according to the culture and art of bonsai. | Upto K3 |
| CO 4 | compare and contrast different garden styles and landscaping patterns. | Upto K3 |
| CO 5 | establish and maintain special types of gardens for outdoor and indoor landscaping. | Upto K3 |

**K1– KNOWLEDGE (REMEMBERING), K2–UNDERSTANDING, K3–APPLYING**

**Passed in the BoS Meeting held on 27/02/2025** **Signature of the Chairman**

## PLANT DIVERSITY, CELL BIOLOGY, GENETICS AND PLANT BIOTECHNOLOGY

**EXPERIMENTS**

1. Make suitable micro preparation of the types prescribed in Algae, Fungi, Bryophytes, Pteridophytes and Gymnosperms.
2. Micro photographs of the cell organelles ultra– structure – Prokaryotic cell, Eukaryotic cell, Nucleus, Chloroplast and Mitochondria. Simple genetic problems.
3. Spotters – Algae, Fungi, Bryophytes, Pteridophytes, Gymnosperms, Cell biology and Plant Tissue culture.

**TEXT BOOKS:**

1. Nancy Serediak and M. Huynh. 2011. ***Algae Identification Lab Guide. Accompanying manual to algae identification field guide,*** Ottawa Agriculture and Agri food Canada publisher.
2. Mohammed Gufran Khan, Shite Gatew and Bedilu Bekele. 2012. ***Practical Manual for Bryophytes and Pteridophytes.*** Lambert Academic Publishing.
3. Benjamin, A. Pierce. 2012. ***Genetics – A Conceptual Approach.*** W.H. Freeman and Company, New York, England.

**DIGITAL TOOLS:**

- https://www.kobo.com/us/en/ebook/the– algae– world
- http://scitec.uwichill.edu.bb/bcs/bl14apl/bryo1.htm
- https://www.toppr.com/guides/biology/plant– kingdom/pteridophytes/
- https://arboretum.harvard.edu/wp– content/uploads/2013– 70– 4– beyond– pine– cones– an– introduction– to– gymnosperms.pdf

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## BOTANY – SYLLABUS

**(Under CBCS based on OBE)**

**(For the students admitted from the academic year 2025-2026 onwards)**

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| COURSE CODE | COURSE TITLE | CATEGORY | T | P | CREDITS |
|---|---|---|---|---|---|
| 25UBYN11 | NURSERY AND LANDSCAPING | SEC – 1 NME | 2 | – | 2 |

| YEAR | SEMESTER | INTERNAL | EXTERNAL | TOTAL |
|---|---|---|---|---|
| I | I | 25 | 75 | 100 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Curriculum Design and Development** | Employability | | ✓ | Skill Oriented | | ✓ | Entrepreneurship | | | ✓ | |
| | National | ✓ | Local | ✓ | Regional | ✓ | Global | | | ✓ | |
| **Curriculum Enrichment** | Professional Ethics | | Gender | | Environment and Sustainability | ✓ | Human Values | ✓ | Other Values | | |

**COURSE DESCRIPTION:**

Students will acquire knowledge about the fundamental aspects of garden plants**.** Develop competency in the applications of garden as entrepreneurial skill and to generate additional income

**COURSE OBJECTIVES:**

Application of the acquired knowledge over the essential requirements of garden making and maintenance Examine the different propagation methods in garden plants.

**COURSE OUTCOMES (COs):**

**After the completion of the course, the students will be able to**

| No. | Course Outcomes | Knowledge Level (According to Bloom's Taxonomy) |
|---|---|---|
| CO 1 | recognize the basic principles and components of gardening. | Upto K3 |
| CO 2 | explain about bio– aesthetic planning and conceptualize flower arrangement. | Upto K3 |
| CO 3 | apply techniques for design various types of gardens according to the culture and art of bonsai. | Upto K3 |
| CO 4 | compare and contrast different garden styles and landscaping patterns. | Upto K3 |
| CO 5 | establish and maintain special types of gardens for outdoor and indoor landscaping. | Upto K3 |

**K1– KNOWLEDGE (REMEMBERING), K2–UNDERSTANDING, K3–APPLYING**

## NURSERY AND LANDSCAPING

**UNIT – I:**

Introduction, prospects and scope of nursery and landscaping

**UNIT – II:**

Methods of vegetative propagation–cutting, layering, grafting, budding, Floriculture: Rose, Chrysanthemum, Jasmine – cultivation

**UNIT – III:**

Gardening–formal garden, informal garden, vegetable garden, landscaped layout designing – formation and maintenance of lawn

**UNIT – IV:**

Nursery structures – Green house – Shade house, Mist chamber –Topiary, Bonsai culture

**UNIT – V:**

Manures, composting – vermicomposting

**TEXT BOOKS:**


1. AmarnathV. 2006. ***Nursery and Landscaping,*** M/s IBD Publishers, New Delhi.
2. Butts, E and Stensson, K. 2012. ***Sheridan Nurseries: Onehundred years of People, Plans, and Plants.*** Dundurn Group Ltd.
3. Russell, T. 2012. ***Nature Guide: Trees: The world in your hands (Nature Guides).***
4. Mukherjee D. ***Gardening in India***, OxfordIBH Publishing Co, New Delhi.
5. Kumar, N. 1997. ***Introduction to Horticulture,*** Rajalakshmi Publications, Nagercoil.


**REFERENCE BOOKS:**


1. Edmond Musser and Andres, ***Fundamentals of Horticulture***, McGraw Hill Book Co. New Delhi.
2. Agrawal, P.K. 1993. ***Hand Book of Seed Technology,*** Dept. of Agriculture and Cooperation, National Seed Corporation Ltd., New Delhi.
3. Janick Jules. 1979. ***Horticultural Science***. (3rd Ed.), W.H. Freeman and Co., San Francisco, USA.
4. Singh, J. 2018. ***Fundamentals of Horticulture.*** Kalyani Publishers.
5. Sharma V. K. 1999. ***Encyclopaedia of Practical Horticulture***, Vol. I–IV, Deep And Deep Publ. Pvt. Ltd


**DIGITAL TOOLS:**

- https://www.us.elsevierhealth.com/medicine/cell– biology
- https://www.us.elsevierhealth.com/medicine/genetics
- https://www.kobo.com/us/en/ebook/plant– biotechnology– 1

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## BOTANY – SYLLABUS

**(Under CBCS based on OBE)**

**(For the students admitted from the academic year 2025-2026 onwards)**



## COURSE STRUCTURE – II SEMESTER

| S. No. | Course Code | Part | Course Title | Hrs. / Week | Exam (Hrs.) | CA | SE | Total Marks | Credits |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 25UBYA21 | III | **Elective/Allied – II: Allied Botany – II** Plant Taxonomy, Anatomy, Embryology and Physiology | 4 (T) | 3 | 25 | 75 | 100 | 3 |
| 2 | 25UBYAP2 | III | **Allied Botany Practical:** Plant Taxonomy, Anatomy, Embryology and Physiology | 2 (P) | 3 | 40 | 60 | 100 | 2 |
| 3 | 25UBYN21 | IV | **SEC – 2: NME:** Mushroom Cultivation | 2 (T) | 3 | 25 | 75 | 100 | 2 |
| | | | **Total** | 8 | | | | | 7 |

**SEC** – Skill Enhancement Course

**CA** – Class Assessment (Internal)

**SE** – Summative Examination

**NME** – Non –Major Elective

**T** – Theory

**P** – Practical

# SOURASHTRA COLLEGE, MADURAI – 625004

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## BOTANY – SYLLABUS

**(Under CBCS based on OBE)**

**(For the students admitted from the academic year 2025-2026 onwards)**

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| COURSE CODE | COURSE TITLE | CATEGORY | T | P | CREDITS |
|---|---|---|---|---|---|
| 25UBYA21 | PLANT TAXONOMY, ANATOMY, EMBRYOLOGY AND PHYSIOLOGY | ELECTIVE/ ALLIED – 2 | 4 | – | 3 |

| YEAR | SEMESTER | INTERNAL | EXTERNAL | TOTAL |
|---|---|---|---|---|
| I | II | 25 | 75 | 100 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Curriculum Design and Development** | Employability | | ✓ | Skill Oriented | | ✓ | Entrepreneurship | | | | |
| | National | ✓ | Local | ✓ | Regional | ✓ | Global | | | | ✓ |
| **Curriculum Enrichment** | Professional Ethics | | Gender | | Environment and Sustainability | ✓ | Human Values | | Other Values | | |

**COURSE DESCRIPTION:**

This course helps to understand the morphology, anatomy, functions and significances of plants.

**COURSE OBJECTIVES:**

To understand the economically important plants and their role

**COURSE OUTCOMES (COs):**

**After the completion of the course, the students will be able to**

| No. | Course Outcomes | Knowledge Level (According to Bloom's Taxonomy) |
|---|---|---|
| CO 1 | be familiar with the basic concepts and principles of plant systematic. | Upto K3 |
| CO 2 | learn the importance of plant anatomy in plant production systems. | Upto K3 |
| CO 3 | understand the mechanism underling the shift from vegetative to reproductive phase. | Upto K3 |
| CO 4 | learn about the physiological processes that underlie plant metabolism. | Upto K3 |
| CO 5 | know the energy production and its utilization in plants. | Upto K3 |

**K1– KNOWLEDGE (REMEMBERING), K2–UNDERSTANDING, K3–APPLYING**

## PLANT TAXONOMY, ANATOMY, EMBRYOLOGY AND PHYSIOLOGY

**UNIT – I: MORPHOLOGY OF FLOWERING PLANTS**

Parts of plant, structure and functions of root and stem. Parts of leaf, types of leaves – simple and compound. Phyllotaxy and types. Inflorescence – Racemose, Cymose and Special types. Terminology with reference to flower description.

**UNIT – II: TAXONOMY**

Study of the vegetative, floral and economic importance of the following families: Rutaceae, Caesalpiniaceae, Asclepiadaceae, Euphorbiaceae and Poaceae.

**UNIT – III: ANATOMY**

Tissue and tissue systems: Simple and complex tissues. Anatomy of dicot and monocot – roots, stems and leaves.

**UNIT – IV: EMBRYOLOGY**

Structure of mature anther and ovule – Types of ovules, structure of embryo sac, pollination – double fertilization, structure of dicotyledonous and monocotyledonous seeds.

**UNIT – V: PLANT PHYSIOLOGY**

Absorption of water, photosynthesis – light reaction – Calvin cycle; respiration – Glycolysis – Krebs cycle – electron transport system. Growth hormones – auxins and cytokinins and their applications

**TEXT BOOKS:**


1. Sharma, O.P. 2017. ***Plant Taxonomy***. (II Edition).The McGraw Hill Companies.
2. Bhojwani, S.S. Bhatnagar, S.P and Dantu, P.K. 2015. ***The Embryology of Angiosperms*** (6th revised and enlarged edition). Vikas Publishing House, New Delhi.
3. Maheshwari, P. 1963. ***Recent Advances in Embryology of Angiosperms***. Intl. Soc. Plant Morphologists, New Delhi.
4. Salisbury, F. B.C.W. Ross.1991. ***Plant Physiology.*** Wassworth Pub. Co. Belmont.
5. Ting, I.P. 1982. ***Plant Physiology***. Addison Wesley Pb. Philippines.


**REFERENCE BOOKS:**


1. Lawrence.G.H.M. 1985. ***An Introduction to Plant Taxonomy***, Central Book Depot, Allahabad.
2. Bhojwani, S.S and Bhatnagar, S.P. 2000. ***The Embryology of Angiosperms*** (4th revised and enlarged edition). Vikas Publishing House, New Delhi.
3. Pandey, B.P. 2012. ***Plant Anatomy***. S Chand Publishing.
4. Jain, VK. 2006. ***Fundamentals of Plant Physiology***, S. Chand and Company Ltd.
5. Rajni Gupta. 2012. ***Plant Taxonomy: Past, Present and Future***. Vedams (P) Ltd. New Delhi.
6. Jain, V.K. 2006. ***Fundamentals of Plant Physiology***, S.Chand and Company Ltd., New Delhi.
7. Verma, S.K. 2006. ***A Textbook of Plant Physiology***, S.K.Chand & Co., New Delhi.


**DIGITAL TOOLS:**

1. https://www.kobo.com/us/en/ebook/the– algae– world
2. http://scitec.uwichill.edu.bb/bcs/bl14apl/bryo1.htm
3. https://www.toppr.com/guides/biology/plant– kingdom/pteridophytes/
4. https://arboretum.harvard.edu/wp– content/uploads/2013– 70– 4– beyond– pine– cones– an– introduction– to– gymnosperms.pdf
5. https://www.us.elsevierhealth.com/medicine/cell– biology
6. https://www.us.elsevierhealth.com/medicine/genetics

# SOURASHTRA COLLEGE, MADURAI – 625004

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## BOTANY – SYLLABUS

**(Under CBCS based on OBE)**

**(For the students admitted from the academic year 2025-2026 onwards)**



| COURSE CODE | COURSE TITLE | CATEGORY | T | P | CREDITS |
|---|---|---|---|---|---|
| 25UBYAP2 | PLANT TAXONOMY, ANATOMY, EMBRYOLOGY AND PHYSIOLOGY | ELECTIVE/ ALLIED – 2 PRACTICAL | – | 2 | 2 |

| YEAR | SEMESTER | INTERNAL | EXTERNAL | TOTAL |
|---|---|---|---|---|
| I | II | 40 | 60 | 100 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Curriculum Design and Development** | Employability | | ✓ | Skill Oriented | | ✓ | Entrepreneurship | | | | |
| | National | ✓ | Local | ✓ | Regional | ✓ | Global | | | | ✓ |
| **Curriculum Enrichment** | Professional Ethics | | Gender | | Environment and Sustainability | ✓ | Human Values | | Other Values | | |

**COURSE DESCRIPTION:**

To develop skills and practice the basic components in Plant Taxonomy, Anatomy, Embryology and Physiology

**COURSE OBJECTIVES:**

1. To identify the various families based on their morphological characters.
2. To acquire concept of physiological process in plants

**COURSE OUTCOMES (COs):**

**After the completion of the course, the students will be able to**

| No. | Course Outcomes | Knowledge Level (According to Bloom's Taxonomy) |
|---|---|---|
| CO 1 | identify the various angiosperm plants based on their morphology | Upto K3 |
| CO 2 | understand anatomical and developmental biology of plants | Upto K3 |
| CO 3 | understand the concept of physiological process in plants | Upto K3 |

**K1– KNOWLEDGE (REMEMBERING), K2–UNDERSTANDING, K3–APPLYING**

**PLANT TAXONOMY, ANATOMY, EMBRYOLOGY AND PHYSIOLOGY EXPERIMENTS**

1. To describe in technical terms, plants belonging to any of the family prescribes and to identify the family prescribed in the syllabus.
2. To dissect a flower, construct floral diagram and write floral formula prescribed in the syllabus.
3. Demonstration experiments
    a. Ganong's Light screen
    b. Ganong's respiroscope
4. To make suitable micro preparations of anatomy materials prescribed in the syllabus.
5. Spotters – Plant Taxonomy, Anatomy, Embryology, and Physiology.

**TEXT BOOKS:**


1. Subramaniam, N.S. 1996. ***Laboratory Manual of Plant Taxonomy***. Vikas Publishing House Pvt. Ltd., New Delhi.
2. Noggle G.R and G.J. Fritz. 2002. ***Introductory Plant Physiology***. Prentice Hall of India, New Delhi.
3. Steward, F.C. 2012. ***Plant Physiology*** Academic Press, US


**DIGITAL TOOLS:**

- https://arboretum.harvard.edu/wp– content/uploads/2013– 70– 4– beyond– pine– cones– an– introduction– to– gymnosperms.pdf
- https://www.us.elsevierhealth.com/medicine/cell– biology
- https://www.kobo.com/us/en/ebook/plant– biotechnology– 1

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## BOTANY – SYLLABUS

**(Under CBCS based on OBE)**

**(For the students admitted from the academic year 2025-2026 onwards)**

**421**

| COURSE CODE | COURSE TITLE | CATEGORY | T | P | CREDITS |
|---|---|---|---|---|---|
| 25UBYN21 | MUSHROOM CULTIVATION | SEC – 2 NME | 2 | – | 2 |

| YEAR | SEMESTER | INTERNAL | EXTERNAL | TOTAL |
|---|---|---|---|---|
| I | II | 25 | 75 | 100 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Curriculum Design and Development** | Employability | | ✓ | Skill Oriented | | ✓ | Entrepreneurship | | | | ✓ |
| | National | ✓ | Local | ✓ | Regional | ✓ | Global | | | | ✓ |
| **Curriculum Enrichment** | Professional Ethics | | Gender | | Environment and Sustainability | ✓ | Human Values | | Other Values | | |

**COURSE DESCRIPTION:**

Students will understand the role of mushrooms in Nutrition, Medicine and health. Develop competency in the cultivation practices and entrepreneurial skill and to generate additional income

**COURSE OBJECTIVES:**

Application of the acquired knowledge over the essential requirements of mushroom cultivation and marketing

**COURSE OUTCOMES (COs):**

**After the completion of the course, the students will be able to**

| No. | Course Outcomes | Knowledge Level (According to Bloom's Taxonomy) |
|---|---|---|
| CO 1 | learn and develop skills in mushroom cultivation. | Upto K3 |
| CO 2 | understand and appreciate the role of mushrooms in Nutrition,Medicine and health. | Upto K3 |
| CO 3 | cultivate mushroom cultivation in small scale industry. | Upto K3 |
| CO 4 | learn about diseases and post– harvest technology. | Upto K3 |
| CO 5 | study new methods and strategies to contribute to mushroom | Upto K3 |

**K1– KNOWLEDGE (REMEMBERING), K2–UNDERSTANDING, K3–APPLYING**

## MUSHROOM CULTIVATION

**UNIT – I:**

Mushroom cultivation – introduction and scope. Mushrooms – morphology, types and identification (edible and poisonous).

**UNIT – II:**

Prospects of mushroom cultivation. Nutritional and medicinal values of mushrooms and mushroom recipes.

**UNIT – III:**

Life cycle of common edible mushrooms with special reference to *Pleurotus* spp and *Agaricus* spp.

**UNIT – IV:**

Mushroom cultivation techniques – spawn production, growth media, spawn running and harvesting of mushrooms.

**UNIT – V:**

Diseases – insects, pests, nematodes, mites, viruses, fungal competitors. Post– harvest technology and marketing.

**TEXT BOOKS:**


1. Handbook of Mushroom ***Cultivation***. 1999. TNAU publication.
2. Marimuthu, T., Krishnamoorthy, A.S., Sivaprakasam, K. and Jayarajan. R. 1991. ***Oyster Mushrooms, Department of Plant Pathology,*** Tamil Nadu Agricultural University, Coimbatore.
3. Swaminathan, M. 1990. ***Food and Nutrition.*** Bappco, The Bangalore Printing and Publishing Co. Ltd., No. 88, Mysore Road, Bangalore – 560018.


**REFERENCE BOOKS:**


1. Sing. 2005. ***Modern Mushroom Cultivation,*** International Book Distributors, Dehradun.
2. Verma,2013. ***Mushroom: Edible and Medicinal: Cultivation Conservation, Strain Improvement with their Marketing.*** Daya Publishing House.


**DIGITAL TOOLS:**

- https://www.amazon.in/Mushroom– Cultivation– India– B– C/dp/817035479X
- http://nrcmushroom.org/book– cultivation– merged.pdf
- http://agricoop.nic.in/sites/default/files/ICAR_8.pdf
- http://www.agrimoon.com/mushroom– culture– horticulture– icar– pdf– book/