SOURASHTRA COLLEGE, MADURAI– 625004

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

BOTANY- SYLLABUS

(Under CBCS w.e.f. 2017 – 2018 onwards)

PART - III ALLIED	**Title : Plant Diversity and Applied Botany**	**Subject Code : 17 UBYA11**
Semester : I	**HOURS : 4 hours / Week**	**CREDITS :3**

ANCILLARY BOTANY PAPER FOR I YEAR B.Sc. (CHEMISTRY)

Objectives:

- To provide the basic knowledge the about structure and life cycle pattern of Algae, Fungi, Lichens, Bryophytes, Pteridophytes & Gymnosperms.
- This paper will enable the student get a glimpse of the economic importance and applications of plants.

Unit I - Algae & Fungi

General characteristics of **Algae**. Structure and life cycle of the *Sargassum**. Economic importance of Algae.

General characteristics of **Fungi**. Structure and life cycle of the *Puccinia**. Economic importance of Fungi.

Note: *Development of gametophyte, sporophyte and sex organs need not be discussed.

Unit II- Lichens & **Bryophytes**

General Features of **Lichens**, Structure and reproduction of *Usnea*. Economic importance of Lichens.

General characteristics of **Bryophytes**. Structure and life cycle of *Funaria**. Economic importance of Bryophytes.

Note: *Development of gametophyte, sporophyte and sex organs need not be discussed.

Unit III-Pteriophytes & Gymnosperms

General characteristics of **Pteriophytes.** Structure and Life history of *Lycopodium**.

General characteristics of **Gymnosperms**. Structure and Life history of *Pinus** .

Note: *Development of gametophyte, sporophyte and sex organs need not be discussed.

Unit IV-Plant Tissue culture

Definition, Basic Tissue culture techniques, Callus induction, Anther Culture, Applications of tissue culture.

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Unit V- Mushroom cultivation and Biofertilizers

Structure of Mushroom, Cultivation of Oyster mushroom. Nutritive value of mushrooms. Biofertilizers- Definition, Types. Mass cultivation of Blue Green Algae (BGA), *Rhizobium* and its significance.

Text Books

1. Pandey B.P. 2014. A Text book of Botany- Algae, Fungi & Bryophyta, Vol. I & II. S. Chand & Company Ltd. Ramnagar, New Delhi.
2. Pandey B.P. 2014. A text book of Botany-Bryophyta, Pteridophyta & Gymnosperms. S. Chand & Company Ltd. Ramnagar, New Delhi.
3. Ignacimuthu, S. 1996. Basic Biotechnology – Tata McGraw Publishing Co. Ltd.
4. Dubey, R .C. 2002. A textbook of Biotechnology. S.Chand and Co. Ltd., New Delhi.
5. Kapoor, J.N. 1989. Mushroom Cultivation, ICAR, New Delhi.

Reference Books

1. Smith, G.M. 1971. Cryptogamic Botany - Algae & Fungi, Vol. I. Tata McGrraw Hill Pub. Co. NewDelhi.
2. Smith, G.M. 1971. Cryptogamic Botany - Bryophytes & Pteridophytes, Vol. II. Tata McGrraw Hill Pub. Co. New Delhi.
3. Vasishta, P.C. 2005. Botany for Degree students- Gymnosperms, Vol. V. S. Chand & Company Ltd. Ramnagar, New Delhi- 110055.
4. Satyanarayana, U. 2013. Biotechnology. Books and Allied (P) Limited, Kolkata, India.

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BOTANY- SYLLABUS

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PART - III ALLIED	**Title : Taxonomy, Embryology of Angiosperms & Plant Physiology**	**Subject Code : 17 UBYA21**
Semester : II	**HOURS : 4 hours / Week**	**CREDITS :3**

ANCILLARY BOTANY PAPER FOR I YEAR B.Sc. (CHEMISTRY)

Objectives:

- To provide the basic knowledge about Taxonomy, Embryology of Angiosperms & Plant Physiology
- To understand the importance of Plant Resources.
- To understand the basic physiological process and metabolic functions in plants.

Taxonomy of Angiosperms

Unit I

Principles and types of classifications. Herbarium techniques. Outline of Bentham and Hooker's system of classification-Merits and Demerits.

Unit II

Study of salient features of following families and their economic importance

Caesalpiniaceae, Rubiaceae, Apocynaceae, Euphorbiaceae, Poaceae.

Unit III Embryology of Angiosperms

Structure and development of anther. Structure and development of male gametophyte. Types of ovule. Structure of embryosac- eg. *Polygonum* type.

Plant Physiology

Unit IV

Absorption of water – Active and Passive absorption. Transpiration- Types, stomatal mechanism (Steward theory), Guttation.

Unit V

Photosynthesis – Light - cyclic and non-cyclic, Dark reactions-C_4 cycle. Respiration-Aerobic respiration- Glycolysis, Kreb's cycle, ETP pathway.

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Text books

1. Sharma, O.P. 2009. Plant Taxonomy, Tata McGraw-Hill publishers, New Delhi
2. Vashishta, P.C.1992. Taxonomy of Angiosperms, R.Chand and Co. Ltd., New Delhi.
3. Mukherji. S. and Ghosh, A. K. 2005. Plant Physiology, New Central Book Agency Ltd., New Delhi
4. Bhojwani, S.S. and Bhatnagar S.P. 1999. The Embryology of Angiosperms. Vikas Publishing House P.Ltd., New Delhi.

REFERENCE BOOKS

1. Lawrence, G.H.M. 1951. Taxonomy of Vascular plants. The Mac-Millan Co., New York.
2. Maheshwari, P. 1980, An Introduction to the Embryology of Angiosperms. Tata McGraw Hill Publishing Company Ltd., Bombay – New Delhi
3. Salisbury, F. B. and Ross, C. W. 2010. Plant Physiology, Asia Ltd., Singapore.

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BOTANY- SYLLABUS

(Under CBCS w.e.f. 2017 – 2018 onwards)

PART - III ALLIED	**Title : ANCILLARY BOTANY PRACTICAL – Plant Diversity, Applied Botany, Taxonomy, Embryology of Angiosperms & Plant Physiology**	**Subject Code : 17 UBYAP1**
Semester : II	**HOURS : 2 hours / Week**	**CREDITS : 2**

ANCILLARY BOTANY PRACTICAL PAPER FOR I YEAR B.Sc. (CHEMISTRY)

Objectives:

To impart the basic and applied knowledge about Plant Diversity, Applied Botany, Taxonomy, Embryology of Angiosperms & Plant Physiology.

1. Sectioning and Mounting of T.S. of *Sargassum* (stem, leaf), *Lycopodium* (stem), and *Pinus* (needle).
2. Spotters- Identification of specimens or slide from Algae, Fungi, Lichens, Bryophytes, Pteridophytes and Gymnosperms (mentioned in the syllabus).
3. Identification of pictures or Photographs related to Plant tissue culture, mushroom cultivation and biofertilizers.
4. To assign the given plant specimens to the respective families giving reasons.
5. To describe the given plant in technical terms
6. Identification of sections of Anther and Ovule (Permanent slides)
7. To describe any three physiological setups (Effect of light intensity on the rate of photosynthesis, Ganong's Potometer, Kuhn's fermentation tube)
8. To conduct field visit to the botanically important areas (minimum two days)
9. Submission of 5 herbarium sheets.

REFERENCE BOOKS

Pandey, B.P.2010. Modern Practical Botany, Vol. I- III. S.Chand, New Delhi India.

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BOTANY- SYLLABUS

(Under CBCS w.e.f. 2017 – 2018 onwards)

PART - IV NME	**Title : ECOFRIENDLY BIOMATERIALS**	**Subject Code : 17 UBYN31**
Semester : III	**HOURS : 2 hours / Week**	**CREDITS : 2**

NON-MAJOR ELECTIVE (NME) PAPER FOR II YEAR B.Sc. (CHEMISTRY)

Objectives:

To provide the basic knowledge about importance of environment and biomaterials.

To enlighten the students on the ecofriendly biomaterials.

Unit 1: Ecosystem and Health

History of environmentalism, Green Environmentalism, Ecological Balance, Ecological Indicators, Sustainability of Ecosystem.

Unit II: Single cell protein

Definition, sources (Yeast, Algae and Bacteria) - Merits and Demerits.

Unit III: Biological Pesticides:

Definition, Plant Pesticide (eg. Neem), Microbial pesticide (eg. BT). Role of biopesticides on sustainable agriculture - Transgenic plants and crops- Bt cotton-Golden rice- Merits and demerits of Genetically modified food.

Unit IV: Bioplastics

Types –Starch, Cellulose and Bioderived polyethylene. Role of microorganisms in production of bioplastics.

Unit V: Biofuels

Definition, Types (Bioethanol, Biodiesel and Biogas) - sources, Advantages and disadvantages.

TEXT BOOKS

1. Sharma, P.D. 2004. Ecology and Environment, Rastogi Publications, New Delhi.
2. Patel, A.H. 1985. Industrial Microbiology. Macmillan India Ltd. New Delhi

REFERENCE BOOKS

1. Altman, A. 1997. Agricultural biotechnology. CRC Press.
2. Chouhan, N., Kumar, A., Sharma, A., Ameta, R. 2013. Eco-Friendly Products. Green Chemistry: Past, Present, and Future. CRC Press.
3. www.wikipedia.org

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BOTANY- SYLLABUS

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PART - IV NME	**Title : HORTICULTURE AND ECONOMIC BOTANY**	**Subject Code : 17 UBYN41**
Semester : IV	**HOURS : 2 hours / Week**	**CREDITS : 2**

NON-MAJOR ELECTIVE (NME) PAPER FOR II YEAR B.Sc. (CHEMISTRY)

Objectives:

To provide the basic knowledge of horticulture.

To learn the methods of propagation and gardening techniques.

To know the economically important plants in day to day life.

Horticulture

Unit-I Horticulture- Definitions and importance, a brief account of olericuture, floriculture, pomology Vegetative propagations-cuttage (stem) and graftage (approach), Budding (T), advantages and disadvantages.

Unit-II Garden implements, Garden and Gardening- Basic techniques of pruning and training, Designing of formal and informal garden, Parts of a garden (Hedge, Edge, Arches and Rockery), Maintenance of Lawn.

Unit- III Layout of kitchen garden and mention the vegetable crops. Indoor gardening- Hanging baskets, terrarium, bottle garden and bonsai.

Economic Botany

Unit- IV Botanical and family name, Morphology of useful parts and economic importance of the following plants: **Cereals**-Rice, Wheat, Maize, Ragi; **Pulses**-Green gram, Soyabean; **Wood**-Teak wood, BAMBOO.

Unit-V Beverages- Coffee, Coco; **Fibre**- Cotton, Jute; **Latex**- Rubber

TEXT BOOKS

1. Rao, K.M.1991. Text book of Horticulture, Mac Millan India Ltd., New Delhi.
2. Bendre and Kumar, A. 1998. Economic Botany. Rastogi Publications, Meerut.

REFERENCE BOOKS

1. Kumar, N. 1999. Introduction to Horticultre. Rajalakshmi Publications. Nagerkoil.
2. Pandey, B.P. 2012. Economic Botany, S.Chand & Company Ltd, New Delhi.
3. Kochhar, S.L. 1995. Economic Botany in the Tropics, Macmillan India Ltd., Delhi.
4. Sambamurthy, A.V.S.S. and N.S. Subramanyam. 1989. A Text Book of Economic Botany, Wiley-Eastern Ltd, New Delhi.

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