



G.T.N. ARTS COLLEGE, DINDIGUL – 5
AFFILIATED TO MADURAI KAMARAJ UNIVERSITY

Department of Botany

Choice Based Credit System (CBCS)

B.Sc., ZOOLOGY (Allied Botany)

UNIVERSITY SYLLABUS

[Till the Academic Year 2016-2017]

Branch V Botany - B.Sc., Botany Ancillary

Revised Syllabus (CBCS)

Semester	Subject Code	Subject Name	No. of Course	Credit	Hours
I	SBY8A11	Plant Diversity	1	4	4+2(P)
II	SBY8A21	Plant Ecology & Applied Botany	1	4+1	4+2(P)
	Practical I SBY8A2P	Plant Diversity, Plant Ecology and Applied Botany			
III	SBY8A31	Taxonomy and Embryology of Angiosperms & Medicinal Botany	1	4	4+2(P)
IV	SBY8A41	Plant Physiology & Horticulture	1	4+1	4+2(P)
	Practical II SBY8A4P	Taxonomy, Embryology, Medicinal Botany, Plant Physiology and Horticulture.			

Botany Ancillary – **Theory** – 4 Papers / 16 Credits / 16 Hours

(P)Practical – 2 Papers / 2 Credits / 4 Hours

B.Sc., Zoology Major**Part - III****Semester-I****Allied paper – I Plant Diversity (SBY8A11)****(4 Credits) Contact**

hours per week – 4 hours

Contact hours per Semester – 60 hours

Unit I – Algae

– 12 hours

1. Introduction
2. General Characters
3. Structure and Life Cycle of the following:
 - a) Oscillatoria
 - b) Oedogonium
 - c) Sargassum
4. Economic Importance of Algae

Unit II – Fungi

– 12 hours

1. Introduction
2. General Characters
3. Structure and Life Cycle of the following:
 - a) Aspergillus
 - b) Puccinia
4. Economic Importance of Fungi

Unit III – Bryophytes

– 12 hours

1. Introduction
2. General Characters
3. Structure and Life Cycle of Funaria

Unit IV – Pteridophytes

– 12 hours

1. Introduction
2. General Characters
3. Structure and life cycle of Selaginella

Unit V – Gymnosperms

– 12 hours

1. Introduction
2. General Characters
3. Structure and life cycle of Pinus

References

1. Cryptogamic Botany Vol. I & II – Smith, G.M.
2. Structure and Reproduction of Algae. Fritsch.
3. Pteridophyta – Rashid
4. Gymnosperms – Chopra
5. A Text Book of Gymnosperms – Venkatesvaralu
6. A Text Book of Algae – Vashista
7. Outlines of Botany – Narayanasamy & Rao.

Allied paper – II Plant Ecology & Applied Botany(SBY8A21) (4 Credits) Contact hours per week – 4 hours

Contact hours per Semester – 60 hours

Unit – I Ecology – 12 hours

1. Historical Account, Concepts & Terminologies.
2. Plant Adaptations
 - a. Hydrophytes
 - b. Xerophytes
 - c. Halophytes
3. Vegetation of Tamilnadu.
4. Methods of studying vegetation – Quadrat and Transect.

Applied Botany

Unit II – Mushroom cultivation – 12 hours

Introduction – Nutritive value and Importance of mushrooms, cultivation of Button Mushroom – spawn preparation – preservation of Mushrooms.

Unit III - Plant Tissue Culture – 12 hours

Introduction – Application of plant tissue culture – Basic Tissue Culture Techniques.

Unit IV – Bio-fertilizers – 12 hours

Introduction – Symbiotic Nitrogen Fixers – Asymbiotic Nitrogen Fixers – Blue Green Algae – VAM Fungi – PO₄ Solubilizers – Advantages of Biofertilizers.

Unit V – Farming – 12 hours

Organic Farming – Methods of Compost Preparation – Biodiesel – Production from *Jatropha curcas*.

References

1. Elements of Biotechnology – P.K.Gupta, - Rastogi& Co.
2. Economic Botany – Pandey, B.P. , - S.Chand& Co.
3. Textbook of Biotechnology – R.C. Dubey
4. Economic Botany – Hill
5. Mushroom cultivation and uses- B.C.Suman& V.P. Sharma – Agrobios(India)2005.
6. Plant Tissue Culture – Purohit – Agrobios(India)2005.
7. A Hand Book of Organic Farming – A.K.Sharma, Agrobios(India)2005.

Plant Diversity, Plant Ecology and Applied Botany (SBY8A2P)

1. Micro Preparation of Plants mentioned in Plant Diversity part of the Syllabus.
2. Section Cuttings and Submission of Slides of – Selaginella and Pinus.
3. Spotters – Identification of Specimens or Slides from Algae, Fungi, Bryophytes, Pteridophytes and Gymnosperms included in the Syllabus.
4. Section Cutting and Mounting Plant Materials of Ecological Importance (such as .Leaves of Nerium, Bryophyllum, Nymphaea and other available materials)
5. Maintenance of Observation Note Book and Submission of the same during Practical Examination.

Plant Taxonomy, Embryology of Angiosperms and Medicinal Botany (SBY8A31)

Contact hours per week – 4 hours

Contact hours per Semester – 60 hours

Unit I – Classification & Families – 12 hours

Bentham & Hooker Systems of Classification

Study of the following Families and their Economic Importance.

1. Nymphaeaceae
2. Caesalpiniaceae
3. Rutaceae

Unit II – Families – 12 hours

1. Asclepiadaceae
2. Lamiaceae
3. Euphorbiaceae
4. Poaceae

Unit III – Medicinal Botany – 12 hours

The Systematic Position – Description of the Individual Plant, Morphology of Useful Parts – Curative Properties of the following plants

1. *Aegle marmelos* – Rutaceae
2. *Azadirachta indica* – Meliaceae
3. *Ocimum sanctum* – Lamiaceae

Unit IV – Medicinal Botany – 12 hours

1. *Coriandrum sativum* – Apiaceae
2. *Phyllanthus amarus* – Euphorbiaceae
3. *Gloriosa superba* – Liliaceae

Unit V – Embryology of Angiosperms – 12 hours

1. Structure and Development of Anther & Male Gametophyte
2. Structure and Types of Ovules
3. Embryosac – Polygonum Type – Structure and Development.

References

1. A Text Book of Systematic Botany – R.K.Gupta, - Atmaram& Sons, Delhi.
2. Outlines of Botany – R.N.Narayanaswami& K.N. Rao.
3. Economic Botany – B.P.Pandey – Chand & Co.
4. Text Book of Pharmacognosy – T.E. Wallis, CBS Publishers & Distributors, Delhi.
5. Pharmacognosy – K.R. Arumugam& N. Murugesu – Sathya Publishers.
6. Herbs Cultivation and Medicinal Uses – H. Panda, NIR Publication, Delhi.
7. Indigenous Drugs of India – R.N. Chopra – Academic Publishers, 1994.
8. Flora of the Presidency of Madras – Gamble et.al. 3 Volumes.
9. Economic Botany – Albert, F.Hill, Tata Mc. Graw-Hill Publishing Co. Ltd., New Delhi.

Plant Physiology

Unit I - Water & Photosynthesis – 12 hours

Absorption of Water – Transpiration – Ascent of Sap (Dixon's Cohesion Theory) – Photosynthesis – Structure and Function of Chloroplast – Light and Dark Reactions.

Unit II – Respiration – 12 hours

Structure and Function of Mitochondria – Glycolysis and Krebs's Cycle.

Plant Growth Hormones – Auxins, Gibberellins, Cytokinins, Abscisic Acid and Ethylene.

Unit III – Horticulture – 12 hours

Introduction – Basic Requirements – Kinds of Manures – Methods of Vegetative Propagations – Cuttage, Layerage and Graftage.

Unit IV – Planning and Layout – 12 hours

Planning and Layout of Kitchen Garden – Planning and Layout of Orchards – Indoor Gardening – Hanging Pots.

Unit V – Art and Storage – 12 hours

Bonsai, Rockery and Methods of Storage of Fruits.

References

1. Introduction to Horticulture – N.Kumar – Rajalakshmi Publications, Nagercoil.
2. Hand Book of Horticulture – K.L.Chandha – ICAR , New Delhi.
3. Text Book of Horticulture – K.M.Rao – Mac Millan India Ltd., New Delhi.
4. Plant Physiology – Rao – Chand&Co.
5. Complete Home Gardening – S.C Dey, Agrobios(India)
6. Plant Hormones Action and Applications – Rajan – Agrobios(India)

**Taxonomy, Embryology of Angiosperms, Medicinal Botany,
Plant Physiology and Horticulture (SBY8A4P)**

1. To make dissections using dissection microscope of the floral parts of Angiospermic plants and to make drawing to bring out the salient features (floral diagram also expected) to learn to mount the floral parts on a given slide.
2. To assign the given plants to its natural order giving reasons.
3. To describe plants in Technical Terms.
4. Identification of Medicinal Plants and record their morphological features.
5. Identification of sections of anther and ovule.
6. Propagation methods of Horticulture plants – Cuttage, Layerage and Graftage.
7. Demonstration of techniques of Horticulture.
8. To describe simple setups in plants physiology (Evolution of Oxygen during Photosynthesis, Light Screen Experiment, Mohl's Half Leaf Experiment).
9. To maintain an observation notebook and to submit it for external valuation.

B.Sc., Botany Allied Practical Question Pattern

Paper I – Plant Diversity, Plant Ecology & Applied Botany

Paper Code – SBY8A2P

Time: 3Hrs.

Max. Marks: 100

1. Take T.S. of **Specimen “A”**. Identify, Draw Labeled Sketch giving Reasons. Submit slide for Valuation. 10 Marks.
2. Make Suitable **Micro Preparation** of **“B” and “C”**. Identify, Draw Labeled Sketch giving Reasons. Submit slide for Valuation. 2x10=20 Marks.
3. Identify, Draw Sketches and Write Notes of **Spotters D, E, F, G, H, I, J and K**. 8X5=40Marks.
4. Comment on the **Ecological Adaptations** of the plant **“L” and “M”**. 2x5=10Marks.
5. **Observation Note Book**. 20Marks.

(Note: Scale Down to 60 Marks)

Key for Botany Ancillary Practical - I

1. A – Angiosperm material – Stem, Leaf of Hydrophytes or Xerophytes prescribed in the syllabus (Slide =5, Diagram = 2 and Description = 3)
2. (B&C) Vegetative material from Plant Diversity (Pteridophytes and Gymnosperm) for each material (Slide = 5, Diagram = 2 and Description = 3)
3. E, F, G, H and I (Permanent slides or museum specimens of Algae, Fungi, Bryophytes, Pteridophytes and Gymnosperms). J & K – Applied Botany (for each one Identification = 1, Diagram = 2 and Description = 2)
4. L & M – Xerophytes or Hydrophytes or a Mangrove plant or plant part (Identification = 1, Diagram = 2 and Description = 2)
5. Observation Note Book – 20 Marks

B.Sc., Botany Allied Practical Question Pattern

Paper II - Taxonomy, Embryology of Angiosperms, Medicinal Botany, Plant Physiology and Horticulture

Paper Code – SBY8A4P

Time: 3 Hrs.

Max. Marks: 100

1. Refer **specimen A** to its Family, giving reasons 10 Marks
2. Describe **B in Technical Terms**. Draw labeled sketches including L.S of Flower.
Submit L.S. of the flower for valuation. 15 Marks
3. Identify and write notes on Botanical Name, Common Name **Medicinal Values** of **C,D,E & F** (No sketches required) 4x5=20 Marks
4. Identify the **spotter** and write notes on G. 5 Marks
5. Demonstrate the **Horticultural Technique**(any one method) assigned to you (**H**) and write the procedure for the same. 10 Marks.
6. Identify the **spotter** and write notes on **I, J and K**. 3x5 = 15 Marks
7. Comment on the **Physiology Set-up L**. 5 Marks.
8. **Observation Notebook**. 20 Marks

(Note: Scale Down to 60 Marks)

Key and Scheme of Valuation

1. A – Angiosperm material of any family prescribed in the syllabus. As a whole 10 Marks.
2. B – Any Angiosperm specimen (included in the syllabus) Description – 5, L.S. – 2, other diagrams – 5, Floral Diagram – 2 and Floral Formula – 1)
3. C,D,E & F – Medicinal plants prescribed in the syllabus (Botanical Name and Common Name – 1 + 1, Notes =3)
4. G – Embryology Slides. Section of Anther and Ovule (Description -3, Diagram – 2)
5. Horticulture – (Demonstration -5, Procedure – 5)
6. I and J – Horticulture, K – Physiology (Identification – 1, Diagram – 2, Notes – 2)
7. Any physiological set-up (Identification – 1, Diagram – 2, Notes – 2)