

**CC 3 PLANT ANATOMY (BOT-A-CC-2-3-TH, BOT-A-CC-2-3-P)**

**Lead Teacher : DR.ARKAJO MAJUMDAR**

<b>DR. NANDINI CHAKRABARTY</b>	
<b>Theoretical</b>	<b>No of I Classes allotted – One (2)/week.</b>
<p><b>3. Stele</b> 3.1 Leaf-trace and leaf-gap, 3.2. Stellar types &amp; evolution</p> <p><b>4. Primary structure of stem and root</b> - Monocot and Dicot. Leaf- dorsiventral and isobilateral.</p> <p><b>5. Secondary growth</b> 5.1. Normal (intra- &amp; extra-stelar), 5.2. Anomalous (stem of <i>Bignonia</i>, <i>Boerhavia</i>, <i>Tecoma</i>, <i>Dracaena</i> and root of <i>Tinospora</i>).</p>	
<b>DR.ARKAJO MAJUMDAR</b>	
<b>Theoretical</b>	<b>No of Classes allotted – One (1)/week.</b>
<p><b>8. Ecological Anatomy:</b> Adaptive anatomical features of 8.1. Hydrophytes, 8.2. Xerophytes.</p> <p><b>1. Cell wall:</b> 1.1. Ultrastructure &amp; Chemical constituents, 1.2. Plasmodesmata- ultrastructure, 1.3. Concept of Apoplast and Symplast, 1.4. Growth and Thickening of cell wall.</p> <p><b>2. Stomata:</b> 2.1. Types (Metcalfe and Chalk, Stebbins and Khush).</p> <p><b>6. Mechanical tissues and the Principles governing their distribution in plants.</b></p> <p><b>7. Developmental Anatomy:</b> 7.1. Organisation of shoot apex (<i>Tunica–Corpus</i>) and Root apex (<i>Korper-Kappe</i>), 7.2. Plastochrone.</p> <p><b>9. Scope of plant anatomy: application in systematics, forensics and pharmacognosy.</b></p>	
<b>PRACTICAL</b>	<b>DR. NANDINI CHAKRABARTY and DR.ARKAJO MAJUMDAR</b>
<b>PLANT ANATOMY</b>	<b>No of Practical Classes allotted – Two (2)/week.</b>
<p><b>1. Microscopic studies on:</b> Types of stomata, sclereids, raphides (<i>Colocasia</i>), cystolith (<i>Ficus</i> leaf) starch grains, aleurone grains, laticiferous ducts, oil glands.</p> <p><b>2. Study of anatomical details through permanent slides/ temporary stained mounts-</b> a) Root-Monocot and dicot, b) Stem- Monocot and dicot, c) Leaf- Monocot and dicot.</p> <p><b>3. Study of anomalous secondary structure in stem of <i>Bignonia</i>, <i>Boerhaavia</i>, <i>Tecoma</i>, <i>Dracaena</i> and root of <i>Tinospora</i></b></p> <p><b>4. Study of adaptive anatomical features:</b> Hydrophytes (<i>Nymphaea</i> – petiole) and Xerophytes (<i>Nerium</i> – leaf).</p>	

**CC 4 ARCHAEGONIATE (BOT-A-CC-2-4-TH, BOT-A-CC-2-4-P)**

**Lead Teacher : DR. ARGHYA KUMAR HAIT**

**DR. SUJITA DATTA GHOSH**

**THEORETICAL**

**No of Classes allotted – One (1)/week.**

**BRYOPHYTES**

**1. General Account :**

1.1. General characteristics and adaptations to land habit, 1.2. Classification (Strotler and Crandle Strotler, 2009) up to class with diagnostic characters and examples.

2. Life History: Gametophyte structure and Reproduction, Development and Structure of sporophyte, Spore dispersal in:

2.1. *Marchantia*, 2.2. *Anthoceros*, 2.3. *Funaria*.

**3. Phylogeny:**

3.1. Unifying features of archaegoniates; transition to land habit, 3.2. Origin of Alternation of Generations (Homologous and Antithetic theory), 3.3. Evolution of Sporophytes (Progressive and Regressive concept), 3.4. Origin of Bryophytes.

**4. Importance :**

Role of bryophytes in: 4.1. Plant succession, 4.2. Pollution Monitoring, 4.3. Economic importance of bryophytes with special reference to *Sphagnum*.

**DR. ARGHYA KUMAR HAIT**

**THEORETICAL**

**No of Classes allotted – Two (2)/week.**

**PTERIDOPHYTES**

**1. General Account:**

1.1. Colonisation and rise of early land plants, 1.2. Classification of vascular plants by Gifford & Foster (1989) upto division (Rhyniophyta to Filicophyta) with diagnostic characters and examples.

**2. Life History:**

Sporophyte structure, Reproduction and Structure of gametophyte in 2.1. *Psilotum*, 2.2. *Selaginella*, 2.3. *Equisetum*, 2.4. *Pteris*.

3. Telome concept and its significance in the origin of different groups of Pteridophytes.

4. Heterospory and Origin of Seed habit.

5. Economic importance as food, medicine and Agriculture.

**PROF. SUTAPA GUPTA**

**THEORETICAL**

**No of Classes allotted – One (1)/week.**

**GYMNOSPERMS**

1. Classification of vascular plants by Gifford & Foster (1989) upto division (Progymnospermophyta to Gnetophyta) with diagnostic characters and examples.
2. Progymnosperms :Diagnostic characters of the group, 2.2.Vegetative and reproductive features of Archeopteris, 2.3. Phylogenetic importance
3. Life History :Distribution in India; Vegetative and Reproductive structure of sporophyte, Development of gametophyte in : 3.1. *Cycas* , 3.2. *Pinus* and 3.3. *Gnetum*.
4. Economic Importance with reference to Wood, Resins, Essential oils, and Drugs.

**PRACTICAL**

**DR. ARGHYA KUMAR HAIT and PROF. SUTAPA GUPTA**

**No of Practical Classes allotted – Two (2)/week.**

**BRYOPHYTES**

1. Morphological study of the plant body: Genera as mentioned in theoretical syllabus and *Riccia*, *Porella*.
2. Study from permanent slides : *Riccia* (V.S. of thallus with sporophyte), *Marchantia* (L.S. through gemma cup, antheridiophore , archegoniophore) , *Anthoceros* (L.S. of sporophyte) , *Funaria* (L.S. of capsule).

**PTERIDOPHYTES**

1. Morphological study of the sporophytic plant body: Genera as mentioned in the theoretical syllabus and *Lycopodium*, *Ophioglossum* and *Marsilea*.
2. Workout of the reproductive structures: *Selaginella*, *Equisetum*, *Pteris*.
3. Study from permanent slides: *Psilotum* (T.S. of synangium), *Lycopodium* (L.S. of strobilus), *Ophioglossum* (L.S. of spike), *Dryopteris* (gametophyte), *Marsilea* (L.S. of sporocarp).

**GYMNOSPERMS**

1. Morphological study: *Cycas* (microsporophyll and megasporophyll), *Pinus* (female and male cone), *Gnetum* (female and male cone).
2. Study from permanent slides: *Cycas* (L.S. of ovule), *Pinus* (L.S. of male and female cone), *Ginkgo* (L.S. of female strobilus), *Gnetum* (L.S. of male cone and ovule).

**FIELD STUDY**

Botanical excursion to familiarize the students with the natural habitat of bryophyte, pteridophyte and gymnosperm , if academic calendar permits.

**TRACKING ACADEMIC PROGRESSION THROUGH INTERNAL ASSESSMENT/EVALUATION**

1. **METHOD : CLASS TEST – First during MID TERM and the second before the END TERM by each teacher concerned.**
2. **MENTOR – MENTEE APPROACH**
3. **Oral and Poster presentation of students in the College Science Day Programme.**
4. **Publication of wall magazine/e magazine by the students.**

