

CC 5 PALAEOBOTANY AND PALYNOLOGY (BOT-A-CC-3-5-TH, BOT-A-CC-3-5-P)

Lead Teacher : DR. ARGHYA KUMAR HAIT

DR. ARGHYA KUMAR HAIT	
THEORETICAL	No of Classes allotted Four (4)/week
PALAEOBOTANY & PALYNOLOGY	
<ol style="list-style-type: none">1. Geological time scale with dominant plant groups through ages.2. Plant Fossil: 2.1. Types: Body fossil (Micro- and Megafossils), Trace fossil, Chemical fossil, Index fossil, 2.2. Different modes of preservation (Schopf, 1975), 2.3. Conditions favouring fossilization, 2.4. Nomenclature and Reconstruction, 2.5. Principle of fossil dating (a brief idea), 2.6. Importance of fossil study.3. Fossil Pteridophytes: Structural features, Geological distribution and Evolutionary significance of 3.1. <i>Rhynia</i>, 3.2. <i>Lepidodendron</i> (Reconstructed), 3.3. <i>Calamites</i> (Reconstructed).4. Fossil gymnosperms: Structural features and Geological distribution of reconstructed genera: 4.1. <i>Lyginopteris</i>, 4.2. <i>Williamsonia</i>, 4.3. <i>Cordaites</i>.5. Indian Gondwana System - Three fold division with major megafossil assemblages.6. Palynology: 6.1. Spore and Pollen, 6.2. Pollen aperture types, 6.3. NPC classification (Erdtman). 6.4. Pollen wall- Sporopollenin, Stratification and Ornamentation (sculpturing).7. Applied Palynology: Basic concepts of: 7.1. Palaeopalynology, 7.2. Aeropalynology, 7.3. Forensic palynology, 7.4. Melissopalynology.	
PRACTICAL	No of Practical Classes allotted One (1)/week
DR. ARGHYA KUMAR HAIT	
PALAEOBOTANY AND PALYNOLOGY	
<ol style="list-style-type: none">1. Morphological study: <i>Ptilophyllum</i> and <i>Glossopteris</i> leaf fossils.2. Study from permanent slides: T.S. of stem of <i>Rhynia</i>, <i>Lepidodendron</i>, <i>Calamites</i>, <i>Lyginopteris</i>, <i>Cordaites</i>.3. Study of Pollen types (colpate, porate and colporate) from permanent slides. Slides may be prepared from specimens: Colpate (<i>Leonurus sibiricus</i>/ <i>Brassica</i> sp.), Porate (<i>Hibiscus rosa-sinensis</i>), Colporate (<i>Cassia sophera</i>/ <i>C. tora</i>).	

CC6 REPRODUCTIVE BIOLOGY OF ANGIOSPERMS (BOT-A-CC-3-6-TH, BOT-A-CC-3-6-P)

Lead Teacher : DR. PARTHA KARAK

PROF. SANDHYA DUTTA	
THEORETICAL	No of Classes allotted Two (2)/week
MORPHOLOGY OF ANGIOSPERMS	
<ol style="list-style-type: none">1. Inflorescence types with examples.2. Flower, induction of flowering, flower development- genetic and molecular aspects.3. Fruits and seeds - types with examples.	

DR. PARTHA KARAK	
THEORETICAL EMBRYOLOGY	No of Classes allotted Two (2)/week
<p>1. Pre-fertilisation changes :</p> <p>1.1. Microsporogenesis and Microgametogenesis, 1.2. Megasporeogenesis and Megagametogenesis (monosporic, bisporic and tetrasporic)</p> <p>2. Fertilisation:</p> <p>2.1. Pollen germination, 2.2. Pollen tube- growth, entry into ovule and discharge, 2.3. Double fertilization.</p> <p>3. Post-fertilization changes :</p> <p>3.1. Embryogenesis in Capsella, 3.2. Development of Endosperm (3 types).</p> <p>4. Apomixis & Polyembryony:</p> <p>4.1. Apomixis- Apospory and Apogamy, 4.2. Polyembryony- different types</p>	
PRACTICAL	No of Practical Classes allotted Two (2)/week
<p>PROF. SANDHYA DUTTA and Dr. PARTHA KARAK</p> <p>REPRODUCTIVE BIOLOGY OF ANGIOSPERMS</p> <p>1. Inflorescence types- study from fresh/ preserved specimens</p> <p>2. Flowers- study of different types from fresh/ preserved specimens</p> <p>3. Fruits- study from different types from fresh/preserved specimens</p> <p>4. Study of ovules (permanent slides/ specimens/photographs)- types (anatropous, orthotropous, amphitropous and campylotropous)</p> <p>5. Field study and preparation of project supported along with photographs taken during field study.</p>	

CC7 Plant systematic (BOT-A-CC-3-7-TH, BOT-A-CC-3-7-P)

Lead Teacher : PROF. SANDHYA DUTTA

PROF. SANDHYA DUTTA	
THEORETICAL	No of Classes allotted Two (2)/week
<p>TAXONOMY OF ANGIOSPERMS</p> <p>1. Introduction:</p> <p>1.1. Components of Systematic: Nomenclature, Identification, Classification; 1.2. Taxonomy and its phases - Pioneer, Consolidation, Biosystematic and Encyclopaedic; alpha- and omega- taxonomy.</p> <p>2. Nomenclature:</p> <p>Type method, Publication, Rank of taxa, Rules of priority, Retention and rejection of names, Author Citation, Effective and valid publication, Elementary knowledge of ICN- Principles.</p>	

DR. SITAL CHATTERJEE

THEORETICAL

No of Classes allotted Two (2)/week

3. Systems of classification:

Broad outline of Bentham & Hooker (1862-1883), Cronquist (1988), Takhtajan (1991) - system of classification with merits and demerits. Brief reference of angiosperm phylogeny group (APG III) classification. 3.1. Systematics in Practice: Herbaria and Botanical Gardens – their role in teaching and research; important Herbaria and Botanical Gardens of India and world (3 each); 3.2. Dichotomous keys – indented and bracketed.

4. Phenetics and Cladistics: Brief idea on Phenetics, Numerical taxonomy- methods and significance; Cladistics- construction of dendrogram and primary analysis; Monophyletic, polyphyletic and paraphyletic groups; Plesiomorphy and apomorphy.

5. Data sources in Taxonomy: Supportive evidences from: 5.1. Phytochemistry, 5.2. Cytology, 5.3. Palynology and 5.4. Molecular biology data (Protein and Nucleic acid homology).

6. Diagnostic features, Systematic position (Bentham & Hooker and Cronquist), Economically important plants (parts used and uses) of the following families:

6.1. Monocotyledons: Alismataceae, Gramineae (Poaceae), Cyperaceae, Palmae (Arecaceae), Liliaceae, Musaceae, Zingiberaceae, Cannaceae, Orchidaceae.

6.2. Dicotyledons: Nymphaeaceae, Magnoliaceae, Leguminosae (subfamilies), Polygonaceae, Euphorbiaceae, Malvaceae, Umbelliferae (Apiaceae), Labiatae (Lamiaceae), Solanaceae, Scrophulariaceae, Acanthaceae, Rubiaceae, Cucurbitaceae, Compositae (Asteraceae).

PRACTICAL

No of Practical Classes allotted Two (2)/week

PROF. SANDHYA DUTTA

ANGIOSPERMS

1. Work out, description, preparation of floral formula and floral diagram, identification up to genus with the help of suitable literature of wild plants and systematic position according to Bentham Hooker system of classification from the following families: Malvaceae, Fabaceae (Papilionaceae), Solanaceae, Scrophulariaceae, Acanthaceae, Labiatae (Lamiaceae), Rubiaceae.

2. Spot identification (Binomial, Family) of common wild plants from families included in the theoretical syllabus (list to be provided).

3. FIELD WORK : PREPARATION OF FIELD RECORDS and HERBARIUM SPECIMENS

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. **One Parent-Teacher Meeting after the declaration of MID TERM Result.**

