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CBCS
ALLIED BOTANY
LESSON PLAN
2022-2023

Class : II B.Sc. Zoology **Contact hours : 60 hrs.**
Semester : III **Credits : 4**
Title of the Paper: Plant Diversity - I
Sub Code : 21AG3

Month	Unit	Description	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
July - August	I	**Introduction to Plant Diversity** **Plant diversity** – Concept, Plant Kingdom-Position of plants in five kingdom system (Robert Whittaker) and Classification of plant kingdom Oswald Tippo 1942. **Algae:** General Characters of Algae, Economic importance, Occurrence, Cell Structure and Life Cycle Pattern of: - a. Cyanophyceae - *Spirulina* b. Chlorophyceae - *Oedogonium* c. Phaeophyceae - *Sargassum* d. Rhodophyceae - *Polysiphonia*	16	Chalk & Talk, Seminar, & Group Discussion	All Units Handled by Dr.V.Vijaya
August	II	**Fungi** - General Characters, Economic importance, Occurrence, Cell Structure and Life Cycle Pattern of: - a. Phycomycetes – *Mucor* b. Ascomycetes – *Aspergillus* c. Basidiomycetes – *Puccinia* d. Lichens – *Usnea*	16	Chalk & Talk, Seminar, & Group Discussion	
September	III	**Bryophytes** - General Character, Economic importance, Structure and Life Cycle Pattern of *Marchantia.*	10	Chalk & Talk, Seminar, & Group Discussion	
	IV	General Character, Economic importance, Structure and Life Cycle Pattern of *Azolla.*	8	Chalk & Talk, Seminar, & Group Discussion	
October	V	General Character, Economic importance, Structure, Anatomy of Leaf and Life Cycle Pattern of *Cycas.*	10	Chalk & Talk, Seminar, & Group Discussion	

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2022-2023

Class : III B.Sc. Zoology **Contact hours : 60 hrs.**
Semester : V **Credits : 4**
Title of the Paper: Morphology, Taxonomy of Angiosperms, Medicinal Botany & Economic Botany
Sub Code : 17AG5

Month	Unit	Description	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
July -	I	**PLANT MORPHOLOGY** **Root** – Fusiform, Napiform and Conical. **Stem** – **Aerial** – Tendril, Thorn, Bulbils and Cladode, **Underground Stem** –Bulb, Corm, Sucker and Stolen modifications, **Leaf** – **Phyllotaxy** – Alternate, Opposite, Ternate and Whorled – Modifications of leaf – Phyllode.	12	Chalk & Talk, Seminar, & Group Discussion	All Units Handled by Dr.V.Vijaya
August	II	**PLANT MORPHOLOGY** **Inflorescence** – Definition, Types – **a) Racemose** – Raceme, Spike, Spadix, Umbel and Capitulum **b) Cymose** – Solitary Cyme, Monochasial Cyme and Dichasial Cyme and Polychasial Cyme. **Flower** – Parts of a typical flower, floral whorls **a) Calyx** –Modifications and Types of aestivation **b) Corolla** – Forms – Cruciform, Papilionaceous, Infundibuliform and Bilabiate and types of aestivation **c) Androecium** – Parts of stamen – Monadelphous, Diadelphous and Polyadelphous. **d) Gynoecium** – Parts of carpel, apocarpus and syncarpus, types of placentation in ovules. **Fruit** – Classification Types **a) Simple** – Fleshy and Dry (Dehiscent and Indehiscent) **b) Aggregate** – Eaterio of Berries and Follicles **c) Multiple** – Sorosis and Syconus.	16	Chalk & Talk, Seminar, & Group Discussion	
September	III	**TAXONOMY OF ANGIOSPERMS** The general outline of Benthem and Hooker's classification, its merits and demerits. **Study the salient features of the following families and their Economic Importance: -** Caesalpiniaceae, Asclepiadaceae, Lamiaceae, Euphorbiaceae and Poaceae	12	Chalk & Talk, Seminar, & Group Discussion	

	IV	**MEDICINAL BOTANY** **Description of the individual plant, Common name, Botanical name, Family, Morphology of the useful part, Chemical constituents and Medicinal uses of the following plants:-** • Insulin leaf – *Costus igneus* – Zingiberaceae • Turmaric (*Manjal*) – *Curcuma longa* – Zingiberaceae • Nelavembu – *Andrographis paniculata* – Acanthaceae • Thudhuvalai – *Solanum trilobatum* – Solanaceae • Thulsi – *Ocimum sanctum* – Lamiaceae • Vallarai – *Centella asiatica* – Apiaceae • Sotrukatrallai – *Aloe vera* – Liliaceae • Keelanelli – *Phyllanthus amara* – Euphorbiaceae • Perunelli – *Phyllanthus emblica* – Euphorbiaceae • Arukampul – *Cyanodon dactylon* – Poaceae	10	Chalk & Talk, Seminar, & Group Discussion	
October	**V**	**ECONOMIC BOTANY** **Cereals – 1. Paddy** (*Oryza sativa*) Poaceae **2. Millets – Ragi** (*Eleusine coracana*) Poaceae **3. Pulses – Cowpea** (*Vigna unguiculata*) Fabaceae **4. Fruits - Banana-** (*Musa paradisiaca*) *Musaceae* - Ripe Fruit, Inflorescence, Pseudostem **5. Nuts- Cashew nut-** (*Anacardium occidentale*) Anacardiaceae.	10	Chalk & Talk, Seminar, & Group Discussion	

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2022-2023

Class : II B.Sc. Zoology

Title of the Paper: Basics of Botany

Semester : IV **Contact hours : 60 hrs.**

Sub Code : 21AG4 **Credits : 4**

Month	Unit	Description	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
December - January	**I**	**Cytology:** Overall structure of a typical plant cell(Organells & Inclusions), Prokaryotic & Eukaryotic cell difference (table form) – Structural organization and functions of Mitochondria and Chloroplast. Structure of Plasma-membrane (Unit membrane concept – Robertson; Fluid mosaic model – Singer and Nicolson)	12	Chalk & Talk, Seminar, & Group Discussion	All Units Handled by  Dr.V.Vijaya
January -	**II**	**Plant Anatomy** **Types of Meristems - Simple permanent tissue – a)** Parenchyma **b)** Collenchyma **c)** Sclerenchyma, **Complex permanent tissue – a)** Xylem **b)** Phloem (Meristematic theories need not be discussed). Differentiate Dicot & Monocot Root, Stem, Leaf (Table form). Secondary thickening in dicot stem.	16	Chalk & Talk, Seminar, & Group Discussion	
February - March	**III**	**Genetics:** Mendelian Principles – Explain **the** law of Dominance, Segregation and Independent assortment. Mendel's Experiment on Pea plant – Monohybrid Cross, Dihybrid Cross, Back Cross, Test Cross and Incomplete Dominance.	8	Chalk & Talk, Seminar, & Group Discussion	
	IV	**Plant Physiology:** Absorption of water -Types, **Transpiration** – Types, Mechanism of Transpiration. **Photosynthesis** – Photosynthetic apparatus, Pigments and units, Mechanism of photosynthesis - Light reaction (Cyclic and Non-cyclic photo	14	Chalk & Talk, Seminar, & Group Discussion	

		phosphorylation) and Dark reaction (Kelvin Cycle), **Respiration** – Types, Mechanism of Respiration - Glycolysis, Kerb's Cycle in Mitochondria. **Plant Growth Hormones** – Physiological role of Auxins, Cytokinin and Gibberellins (chemical structure need not be discussed).			
March - April	**V**	**Embryology:** Structure and development of anther, structure and development of ovule, Types of Ovules, Female gametophyte (*Polygonum* type), double fertilization and triple fusion.	10	Chalk & Talk, Seminar, & Group Discussion	

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LESSON PLAN
2022-2023

Title of the Paper: Plant Diversity - I & Basics of Botany

Semester : III & IV **Contact hours :60 hrs.**

Sub Code : 21AG4P **Credits : 4**

Month	Description	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
July	Microscopic analysis of Algal specimens. a. Cyanophyceae - *Spirulina* b. Chlorophyceae - *Oedogonium* c. Phaeophyceae - *Sargassum* d. Rhodophyceae - *Polysiphonia*	10	Demonstration & Hands-on training,	All Units Handled by Dr.V.Vijaya
August	Microscopic analysis of Fungal specimens a. Phycomycetes – *Mucor* b. Ascomycetes – *Aspergillus* c. Basidiomycetes – *Puccinia* d. Lichens – *Usnea*	10	Demonstration & Hands-on training,	
September	Sectioning, Mounting and Identifying the internal structure of Bryophytes - *Marchantia.*	4	Demonstration & Hands-on training,	
October	Sectioning, Mounting and Identifying the internal structure of Pteridophyte - *Azolla.*	2	Demonstration & Hands-on training,	
	Sectioning, Mounting and Identifying the internal structure of *Cycas.*	4	Demonstration & Hands-on training,	
January	**Cytology:** Identification of permanent slides of Cell Biology.	2	Spotter Identification	

	Plant Anatomy: Sectioning, Mounting and Identifying the internal structure of the Dicot: Stem, Root and Leaf.	10	Demonstration & Hands-on training,	
February	**Genetics:** Analysis of Monohybrid Cross, Dihybrid Cross, Back Cross, Test Cross and Incomplete Dominance.	10	Demonstration & Group Discussion	
	Plant Physiology: Demonstration of transpiration and photosynthesis with the help of suitable materials.	6	Demonstration & Group Discussion	
March	**Embryology:** Spotter identification of the structure of anther and ovule.	2	Spotter Identification	

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Class : III B.Sc. Zoology **Contact hours : 60 hrs.**
Semester : V **Credits : 4**
Title of the Paper: Morphology, Taxonomy of Angiosperms, Medicinal Botany & Economic Botany
Sub Code : 17AG5

Month	Unit	Description	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
December	I	**PLANT PHYSIOLOGY** **Photosynthesis** - Light harvesting complexes, Hill's Light Reaction - Noncyclic Photophosphorylation (Z Scheme), Calvin's - Dark reaction (C_3 cycle) in the chloroplast.	12	Chalk & Talk, Seminar, & Group Discussion	All Units Handled by Dr.V.Vijaya
January	II	Absorption of water (Active and Passive absorption) in roots. Transpiration – Types Stomatal Movement and Guttation in leaves - Ascent of sap through xylem (Vital theories – Physical theory (**Dixon and Jolly**) –Transpiration pull. Respiration (Glycolysis, Kerb's Cycle and Electron Transport Chain (ETC) in Mitochondria. **Plant hormones** – Role of phytohormones in plants- Auxins, Cytokinins and Gibberellins (chemical structure need not be discussed).	16	Chalk & Talk, Seminar, & Group Discussion	
February	III	**EMBRYOLOGY** Structure and development of anther, male gametophyte. Structure of mature megasporangium (ovule) – development of female gametophyte (Embryosac) (e.g. *Polygonum* type of embryosac), Double fertilization. Endosperm – Different types (Nuclear, Cellular and Helobial).	12	Chalk & Talk, Seminar, & Group Discussion	
	IV	**TISSUE CULTURE** Tissue culture – laboratory requirements for plant tissue culture – Tissue culture techniques (Steps) – Applications of tissue culture – Production and uses of haploid plants.	10	Chalk & Talk, Seminar, & Group Discussion	

March	**V**	**PLANT PATHOLOGY** General account about Bacterial and Viral diseases – Symptoms, Causative organisms and control measures of the following diseases: **Viral disease** – Bunchy top of Banana; **Bacterial disease** –Canker of Citrus; **Fungal disease** – Tikka disease of ground nut.	10	Chalk & Talk, Seminar, & Group Discussion	

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LESSON PLAN

2022-2023

Title of the Paper: Morphology, Taxonomy of Angiosperms, Medicinal Botany, Economic Botany/ Plant physiology, Embryology, Tissue culture and Plant Pathology

Semester : V & VI **Contact hours :60 hrs.**
Sub Code : 17AG6P **Credits : 4**

Month	Description	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
July	**PLANT MORPHOLOGY: Spotter identification of :** **Root** – Fusiform, Napiform and Conical. **Stem** – **Aerial** – Tendril, Thorn, Bulbils and Cladode. **Underground Stem** –Bulb, Corm, Sucker and Stolen modifications. **Leaf** – **Phyllotaxy** – Alternate, Opposite, Ternate and Whorled – Modifications of leaf – Phyllode.	10	Spotter identification & Group discussion	All Units Handled by Dr.V.Vijaya
August	**Spotter Identification of Inflorescence** – – **a) Racemose** – Raceme, Spike, Spadix, Umbel and Capitulum **b) Cymose** – Solitary Cyme, Monochasial Cyme and Dichasial Cyme and Polychasial Cyme. **Flower** – Parts of a typical flower, floral whorls **a) Calyx** –Modifications and Types of aestivation **b) Corolla** – Forms – Cruciform, Papilionaceous, Infundibuliform and Bilabiate and types of aestivation **c) Androecium** – Parts of stamen – Monadelphous, Diadelphous and Polyadelphous. **d) Gynoecium** – Parts of carpel, apocarpus and syncarpus, types of placentation in ovules. **Fruit** – Types **a) Simple** – Fleshy and Dry (Dehiscent and Indehiscent) **b) Aggregate** – Eaterio of Berries and Follicles **c) Multiple** – Sorosis and Syconus.	10	Spotter identification & Group discussion	
September	**Study the salient features of the following families and their Economic Importance: -** Caesalpiniaceae, Asclepiadaceae, Lamiaceae, Euphorbiaceae and Poaceae	6	Demonstration, Hands-on training, & Group Discussion	

October	**MEDICINAL BOTANY** **Description of the individual plant, Common name, Botanical name, Family, Morphology of the useful part, Chemical constituents and Medicinal uses of the following plants:-** Insulin leaf – *Costus igneus* – Zingiberaceae Turmaric (*Manjal*) – *Curcuma longa* – Zingiberaceae Nelavembu – *Andrographis paniculata* – Acanthaceae Thudhuvalai – Solanum *trilobatum* – Solanaceae Thulsi – *Ocimum sanctum* – Lamiaceae Vallarai – *Centella asiatica* – Apiaceae Sotrukatrallai – *Aloe vera* – Liliaceae Keelanelli – *Phyllanthus amara* – Euphorbiaceae Perunelli – *Phyllanthus emblica* – Euphorbiaceae Arukampul – *Cyanodon dactylon* – Poaceae	2	Spotter Identification & Group Discussion	
	ECONOMIC BOTANY- Spotter Identification of **Cereals – 1. Paddy (*Oryza sativa*)** Poaceae **2. Millets – Ragi (*Eleusine coracana*)** Poaceae **3. Pulses – Cowpea (*Vigna unguiculata*)** Fabaceae **4. Fruits - Banana- (*Musa paradisiaca*)** *Musaceae* - Ripe Fruit, Inflorescence, Pseudostem **5. Nuts- Cashew nut- (*Anacardium occidentale*)** Anacardiaceae.	4		
January	Transpiration & Transpiration with Suitable Example	2	Demonstration & Group Discussion	
	Structure of anther, Structure of ovule – Endosperm – Different types - Nuclear, Cellular and Helobial.	10	Spotter Identification & Group Discussion,	
February	Demonstration of Plant Tissue Culture Technique	10	Demonstration & Group Discussion	
	Spotter Identification of Bacterial and Viral diseases – Symptoms, Causative organism and control measures of the following diseases: **Viral disease** – Bunchy top of Banana; **Bacterial disease** –Canker of Citrus; **Fungal disease** – Tikka disease of ground nut.	6	Spotter Identification & Group Discussion	

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