

ALLIED BOTANY- I

Semester	Subject code	Category	Lecture		Theory		Practical	Credit
			Hrs/Week	Total Hours/Semester	Hrs/Week	Total Hours/Semester		
III	21CABO 3A	Allied	4	60	4	60	-	3

COURSE OBJECTIVES

The student will be able to understand the systematic position, functional morphology, anatomy, Life history, economic importance of plants and microbes.

COURSE OUTCOMES (CO)

On the successful completion of the course, the student will be able to

CO NUMBER	CO Statement	Knowledge level (K1-K4)
CO 1	Recognize the general characters, classification, reproduction and economic importance of Microbes.	K3
CO2	Understand the structure and life history and economic importance of Thallophytes	K2
CO 3	Gain knowledge about the Morphology, Anatomy and reproduction of certain Lower plants.	K2
CO 4	Understand the relation between prokaryotic and eukaryotic cell and understand the basic phases involved in cell cycle.	K2
CO 5	Create the basic knowledge of plant tissues and the importance of secondary thickening in plants.	K2

Knowledge level: K1- Remember; K2-Understand; K3-Apply; K4- Analyze

MAPPING WITH PROGRAMME OUTCOMES

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	S	M	S	M	M	S
CO2	S	S	M	S	S	M
CO3	M	S	S	S	M	S
CO4	S	M	M	S	S	S
CO5	M	M	S	S	M	S

S-Strong; M-Medium; L-Low

Unit I Bacteria and Viruses**10Hrs**

Bacteria-General Characteristics-Shape. Flagellation-Grams Staining. Structure of E-Coli. Reproduction (Vegetative and Asexual) Economic Importance of Bacteria.

Viruses-General Characteristics and Structure. Tobacco Mosaic Virus and Corona Virus.

Unit II Thallophyta**10Hrs**

Structure and Life History of Algae-Nostoc, Chlorella, Sargassum,

Structure and Life History of Fungi - Albugo, Penicillium and Agaricus.

Economic importance of Algae and Fungi.

Unit III Bryophyta, Pteridophyta and Gymnosperms**14Hrs**

Structure and Life History of Funaria, Lycopodium and Cycas.

Unit IV Cell Biology**12Hrs**

Prokaryotic and Eukaryotic cell (Plant cell) Cell Organelles-Chloroplast, Mitochondrion and Nucleus. Cell Division – Mitosis and Meiosis.

Unit V Anatomy**14Hrs**

Tissues-Meristematic and Permanent Tissues. Primary Structure of Dicot Stem. Monocot stem. Dicot Root and Monocot root. Normal secondary thickening of Dicot stem. Anomalous Secondary Growth in Dracaena and Nyctanthes.

TEXT BOOKS

S. No	Authors	Title	Publishers	Year of publication
1	Rao.K.N.Krishnamoorthy, J.V and Rao G	Ancillary Botany	S.Viswanathan (p) Ltd., Chennai	1975
2	Sharma, O.P	Algae,	Tata McGraw Hill Education Private limited, New Delhi.	2011
3	Vashishta, Sinha AK	Bryophytes,	S.Chand &Company Ltd., New Delhi	2011
4	Pandey B,P., Plant Anatomy S. Chand Publ. New delhi.	Plant Anatomy	S. Chand	2015
5	Sundararajan ,S	Cytology ,	Anmol publication (P) ltd, New Delhi	2000

REFERENCE BOOKS

S. No	Authors	Title	Publishers	Year of publication
1	Johri , RM, Lata S , Tyagi K	A text book of Gymnosperms	Dominate pub and Distributor, New Delhi	2005
2	Lee, RD	Phycology	Cambridge University Press, New York	2008
3	Nayudu MV	Plant viruses,	Tata McGraw-Bill Education, New Delhi	2008
4	Karp,G	Cell and Molecular Biology	John Wiley and Sons,New York	1995
5	Fahn, A.	Plant Anatomy	Macmillan Publication (P) Ltd, Singapore	1989

Web resources:

www.vedantu.com

www.toppr.com

www.mayoclinic.org

www.khanacademy.org

www.encyclopedia.com

ALLIED BOTANY- II

Semester	Subject code	Category	Lecture		Theory		Practical	Credit
			Hrs/ Week	Total Hours/ Semester	Total Hrs/ Week	Total Hours/ Semester		
IV	21CABO 4A	Allied	4	60	4	60	-	3

COURSE OBJECTIVES

The student will be able to acquire knowledge on Microscopy observation dissection drawing and laboratory exercises'. To understand the components of Taxonomy, Embryology, Physiology and evolution.

COURSE OUTCOMES (CO)

On the successful completion of the course, the student will be able to

CO NUMBER	CO Statement	Knowledge level (K1-K4)
CO1	Understand the systematic position and economic importance of flowering plants	K2
CO2	Imbibe knowledge on embryological characters and plant reproductive biology.	K3
CO 3	Update the knowledge on plant tissue culture and its applications.	K2
CO 4	Understand the concept of Mendelism and evolutionary theories.	K2
CO 5	Apply the knowledge in utilizing plants as a traditional medicines.	K3

Knowledge level: K1- Remember; K2-Understand; K3-Apply; K4- Analyze

MAPPING WITH PROGRAMME OUTCOMES

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	S	S	M	S	M	S
CO2	S	M	M	S	S	M
CO3	M	M	S	M	M	S
CO4	S	S	M	S	S	M
CO5	M	M	S	S	M	S

S-Strong; M-Medium; L-Low

Unit I Taxonomy **14Hrs**

General outline of APG, Bentham & Hooker's system of classification. Study of the range of characters and Economic importance of the following families. Annonaceae, Asteraceae, Apocyanaceae, Euphorbiaceae and Poaceae.

Unit II Embryology **10Hrs**

Structure of Mature Anther, development of male gametophyte. Structure of Mature Ovule and its Type, Fertilization, Double fertilization, Triple fusion, Post fertilization changes and development of Dicot Embryo.

Unit III Plant Physiology & Plant Tissue Culture **14Hrs**

Photosynthesis-Light Reaction , Calvin cycle.Respiration-Glycolysis, Kreb's Cycle, Electron transport system. Nitrogen Cycle, Growth Hormones-Auxins, Gibberellins. Tissue Culture – Introduction – Principles- Advantages. Types of Medium. (MS)

Unit IV Genetics & Evolution **10Hrs**

Genetics- Definition, Introduction to Mendelism- Mendelian Principles, Monohybrid and Dihybrid crosses, Interaction of Genes-Complementary factors. Evolution-Theories of Evolution, Lamarckism and Darwinism.

Unit V Medicinal Plants **12Hrs**

History, Scope and Importance of Medicinal Plants - Indigenous Medicinal Sciences - Ayurveda, Siddha, Unani.

Systematic position and medicinal uses of the following herbs in curing various ailments: Ocimum sanctum, Zingiber officinale, Solanum trilobatum, Curcuma longa, Azadirachta indica, Andrographis paniculata, Cassia auriculata, Catharanthus roseus, Phyllanthus amarus and Aloe vera.

TEXT BOOKS

S.No	Authors	Title	Publishers	Year of publication
1	Bhatnagar,SP, Dantu P.K, Bhojwani SS	The Embryology of Angiosperms	Vikas_Publishing House. Delhi	2014
2	G.L.Chopra	Angiosperm	Raj Rattan Press	1977
3	Dr.Annie Ragland & co.	Plant Physiology	Saras Publications	2009
4	Dr.N.Arumugam	Cytology Genetics & Evolution	Saras Publications	2010
5	Trivedi P. C.,	Medicinal Plants Ethnobotanical Approach,	Agrobios, India.	2006

REFERENCE BOOKS

S.No	Authors	Title	Publishers	Year of publication
1	Simpson M.G	Plant systematics,	Elsevier Academic Press,USA	2006
2	Dwivedi, J.N.	Embryology of Angiosperms.	Rastogi & Co., Meerut	1988
3	Bhojwani, SS. and Razdan, MK	Plant tissue culture .	Read Elsevier India Pvt. Ltd	2004
4	Bhattacharjee, S.K.	Hand Book of Medicinal plants.	Pointer Publishers, Jaipur	2004
5	Lewin	Gene IX	Jones and Barlett Pub	2007

WEB RESOURCES

www.britannica.com

www.sciencedirect.com

www.intechopen.com

www.healthline.com

www.nature.com

ALLIED BOTANY PRACTICAL

Semester	Subject code	Category	Practical		Theory	Practical	Credit
			Hrs/Week	Total Hours/Semester			
IV	21CA BO41	Allied Practical	3	45	Nil	45	2

OBJECTIVES:

- To describe in Technical terms, plant belong to any of the families.
- To dissect a flower, construct floral diagram and write floral formula.
- To describe simple experimental setup in plant physiology.
- To describe and identify the Micropreparation materials of Pteridophyte, Gymnosperms, Embryology, Histology and Angiosperms.

Thallophyta

Nostoc colony, chlorella cell, Penicillium WM, Sargassum Habit , Axis TS, Leaf TS, Male conceptacle, Female conceptacle, Albugo Candida, Agaricus Basidiocarp, Agaricus gill TS. Funaria Habit, Stem TS, Root TS, Leaf TS, Antheridial head, Archegonial head, Capsule LS, TMV

Cell Biology

Mitosis cell division-Prophase, Metaphase, Anaphase and Telophase

Anatomy

Dicot root , Monocot root, Dicot stem, Monocot stem, Normal secondary thickening in Dicot stem. Parenchyma, Collenchyma, Sclerenchyma, Xylem and phloem.

Taxonomy

Annonaceae - Annona, Atractotryx, Polyalthia

Asteraceae - Tridax, Sunflower

Apocyanaceae- Catharanthus, Evratamia

Euphorbiaceae- Euphorbia sps, E. hirta, Croton

Liliaceae- Onion, Asparagus

Embryology

Mature anther, Different types of ovules, Dicot embryo

Medicinal plants

Ocimum sanctum, Zingiber officinale, Solanum trilobatum, Curcuma longa, Azadirachta indica, Andrographis paniculata, Cassia auriculata, Catharanthus roseus, Phyllanthus amarus and Aloe vera.