

ANNEXURE - 12
DEPARTMENT OF BOTANY

VISION

To stress the necessity of eco friendly environment among the students and enrich the campus natural environment and to make better future.

MISSION

- To nurture the students understanding of nature and floral kingdom through allied paper
- To create and maintain a green campus and make it better dwelling

ALLIED BOTANY: CHOICE BASED CREDIT SYSTEM WITH OBE PATTERN

FOR THOSE WHO HAVE JOINED FROM THE ACADEMIC YEAR 2021-22 ONWARDS

ANCILLARY BOTANY

(FOR II & III MAJOR ZOOLOGY STUDENTS)

Part	Course	Subject	Code	Hrs.	6 th Hr.	Cr.	Adl. Cr.	Exam (Hrs)	Marks	
									Int.	Ext.
SEMESTER - III										
III	Al. Bot.	Plant Diversity, Cell biology and Economic Botany	212403321	4	-	4	-	3	25	75
	Al.Bot. Lab	Botany Practical – I Plant Diversity, Cell biology, Economic Botany, Applied Botany	-	2	-	-	-	-	-	-
SEMESTER - IV										
III	Al. Bot.	Applied Botany	212403421	4	-	4	-	3	25	75
	Al. Bot.lab	Botany Practical – I Plant Diversity, Cell biology, Economic Botany, Applied Botany	212403422	2	-	2	-	3	40	60
SEMESTER - V										
III	Allied Bot.	Taxonomy of Angiosperm, Embryology and Plant Ecology	212403521	4	-	4	-	3	25	75
	Allied Bot. Lab	Botany Practical – II Taxonomy of Angiosperms, Embryology Plant Ecology, Plant Physiology, Forestry and Horticulture	-	2	-	-	-	-	-	-
SEMESTER - VI										
II	Allied Bot.	Plant Physiology, Forestry and Horticulture	212403621	4	-	4	-	3	25	75
	Allied Bot. Lab	Botany Practical – II Taxonomy of Angiosperms, Embryology Plant Ecology, Plant Physiology, Forestry and Horticulture	212403622	2	-	2	-	3	40	60
		TOTAL		24	-	24	-			

Allied Bot.

**TAXONOMY OF ANGIOSPERMS, EMBRYOLOGY
AND PLANT ECOLOGY**
(for Zoology major students)
SEMESTER V

Code: 212403521
4 Hrs/Week
Credits 4

Preamble:

- ✍ *To understand the classification of taxonomy, Characters of families, Embryology, plant ecology and Environmental pollution.*

COURSE OBJECTIVES

- ✍ *To understand classification and nomenclature*
- ✍ *To identify the plant family characters*
- ✍ *To understand the Embryo development*
- ✍ *To distinguish the ecological adaptation of plants.*
- ✍ *To study the causes and effects of pollution*

COURSE OUTCOMES (COs)

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

No.	Course Outcome	Knowledge Level (According to Bloom's Taxonomy)
CO1	understanding the taxonomical classification of Angiosperms	Up to K3
CO2	describe the floral characters of dicot and monocot families	Up to K3
CO3	discuss the application embryogenesis	Up to K3
CO4	examine the ecological groups and their adaptation.	Up to K3
CO5	to create eco friendly method reduce pollution	Up to K3

K1- Knowledge K2 – Understand K3-Apply

UNIT – I:

[12 Hrs]

Taxonomy of Angiosperms:

- (i) Bentham and Hooker's system of classification, merits and demerits.
- (ii) Principles and significance of Taxonomy.
- (iii) Nomenclature.

UNIT – II:

[12 Hrs]

General Characters and Economic importance of :

- (i) Rutaceae
- (ii) Rubiaceae
- (iii) Fabaceae
- (iv) Euphorbiaceae
- (v) Poaceae

UNIT – III:

[12 Hrs]

Embryology:

- (i) Anther – structure of mature anther – Microsporogenesis – Microspore structure.
- (ii) Ovule - Structure and types of ovule – Megasporogenesis.
- (iii) Embryosac – structure and development of polygonum type of embryosac.

UNIT – IV:

[12 Hrs]

Plant Ecology

Different Agro region of Tamilnadu, Plant characters and their adaptation.

- i. Xerophytes
- ii. Hydrophytes
- iii. Halophytes

UNIT – V:

[12 Hrs]

- i. Environmental pollution
 - a. Air pollution - Causes, effects and control measures
 - b. Water Pollution - Causes, effects and control measures
 - c. Land Pollution - Causes, effects and control measures
- ii. Biosphere Reserve threats and conservation

TEXT BOOK:

01. Muneeswaran A., Ancillary Botany, Vol. II, Titan Books, Madurai, 2004.

REFERENCES:

01. Sambamoorthy A.V.S.S., Taxonomy of Angiosperms, I.K. International Private Limited, New Delhi, 2005.
02. Annie Ragland, A Text book of botany, Saras publication, Nagarcoil - 2010.
03. P.D. Sharma, Ecology and Environmental, Rastogi Publications, Meerut, 2009.
04. Sambamoorthy A.V.S.S., and Subramanian N.S., Ecology, 2nd Edition, Narosa Publishing House, Chennai – 2006.
05. Bhojwani SS, Bhatnagar SP, The embryology of Angiosperms, 6th Revised and Enlarged edition, Vikas Publishing House Pvt Ltd, New Delhi, 2014.

WEB RESOURCES:

01. <https://guides.lib.umich.edu>
02. www.mbgnet.net>bioplants
03. <http://books.google.com>

PEDAGOGY: Chalk & Talk, Black Board

COURSE CONTENTS & TEACHING / LEARNING SCHEDULED

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
Unit – I [12 hrs]				
1.1	Introduction of angiosperms	1	Chalk & Talk	Black Board
1.2	Natural classification	2	Chalk & Talk	Black Board
1.3	Flow chart of natural classification	2	Chalk & Talk	PPT & White board
1.4	Merits and demerits of natural classification	2	Chalk & Talk	Smart Board
1.5	Principle of taxonomy	2	Lecture	Black Board
1.6	Significance of taxonomy	1	Lecture	Black Board
1.7	Nomenclature	2	Lecture	Black Board
Unit – II [12 hrs]				
2.1	Rutaceae	2	Chalk & Talk	Field visit
2.2	Rubiaceae	2	Chalk & Talk	Field visit

2.3	Fabaceae	3	Chalk & Talk	Field visit
2.4	Euphorbiaceae	2	Chalk & Talk	Field visit
2.5	Poaceae	3	Chalk & Talk	Field visit
Unit – III [12 hrs]				
3.1	Introduction to embryology	1	Lecture	Black Board
3.2	Mature anther	2	Chalk & Talk	chart
3.3	Microsporogenesis	1	Chalk & Talk	chart
3.4	Structure microspore	1	Chalk & Talk	chart
3.5	Structure and types of ovule	3	Chalk & Talk	chart
3.6	Structure and development of embryosac	4	Chalk & Talk	chart
Unit – III [12 hrs]				
4.1	Introduction to Plant ecology	1	Chalk & Talk	Black Board
4.2	Xerophytes	4	Chalk & Talk	Live speciman
4.3	Hydrophytes	4	Chalk & Talk	Live speciman
4.4	Halophytes	3	Chalk & Talk	Live speciman
Unit – IV [12 hrs]				
5.1	Air pollution	4	Lecture	PPT
5.2	Water pollution	4	Lecture	PPT
5.3	Land pollution	2	Lecture	PPT
5.4	Biosphrer reserve	2	Lecture	PPT

MAPPING OF COs WITH POs

	PO1	PO2	PO3	PO4	PO5
CO1	2	1	1	1	2
CO2	1	2	2	1	2
CO3	2	2	2	3	2
CO4	2	3	2	3	3
CO5	3	3	3	3	3

3 - Strong 2 - Medium 1- Low

COURSE DESIGNER: Dr. M. Kannan

Allied Bot. PLANT PHYSIOLOGY, FORESTRY AND HORTICULTURE

(for Zoology major students)

Code: 212403621

SEMESTER VI

4 Hrs/Week

Credits 4

Preamble:

- ✍ *Embassies is given to basic fundamentals in plant physiology, forestry and horticulture*

COURSE OBJECTIVES

- ✍ *To understand the units of plant physiology*
- ✍ *To understand the metabolism of plants*
- ✍ *To identify the forestry types*
- ✍ *To know the horticulture techniques*
- ✍ *To establish the modern garden*

COURSE OUTCOMES (COs)

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

No.	Course Outcome	Knowledge Level (According to Bloom's Taxonomy)
CO1	understanding the fundamentals of plant physiology	Up to K3
CO2	explain the mechanism of light dependant reaction	Up to K3
CO3	enable the students to know about the forestry	Up to K3
CO4	differentiate the techniques of horticulture	Up to K3
CO5	illustrate the concept of gardening	Up to K3

K1- Knowledge K2 – Understand K3-Apply

UNIT – I: **[12 Hrs]**

Plant Physiology - Water relations:

- i. Absorption of water – Active and Passive absorption.
- ii. Transpiration – Definition, types, Mechanism and factors affecting transpiration.
- iii. Guttation.
- iv. Mineral absorption – Contact and carbonic acid exchange theory.

UNIT – II: **[12 Hrs]**

- i. Photosynthesis – Light and Dark reaction
- ii. Respiration – Kreb's cycle.
- iii. Growth hormones – with special reference to Auxin, Gibberellin,
- iv. Photoperiodism.

UNIT – III: **[12 Hrs]**

Introduction of Forestry - Types of Forest in Tamilnadu – Conservation - in-situ and Ex-situ - Chipko movement – Afforestation - Deforestation – Causes and effects.

UNIT – IV: **[12 Hrs]**

Introduction of Horticulture:

- i) Classification and importance of Horticulture.
- ii) Cuttage
- iii) Layerage – Ground and Air layering
- iv) Graftage – Types, Splice, Cleft, and advantages
- v) Budding – 'T' Budding
- vi) Establishment of lawn, Rockery

UNIT – V: **[12 Hrs]**

- a. Indoor gardening – Hanging pot
- b. Orchard – planning and layout
- c. Kitchen garden
- d. Terrace Garden

TEXT BOOK:

01. Annie Ragland, A Text book of botany, Saras publication, Nagarcoil - 2010.

REFERENCES:

01. Muneeswaran A., Ancillary Botany, Vol. II, Titan Books, Madurai, 2004.
02. Kumar N., Introduction to Horticulture, Rajalakshmi Publishers, Nagercoil, July 1997.
03. Jain V.K., Fundamentals of plant physiology S. Chand and Company Ltd., Ram nagar, New Delhi, 19th Edition 2017.

WEB RESOURCES:

01. <http://agritech.tnau.ac.in>
02. <http://www.forestrybooks.com>
03. <http://www.uou.ac.in>

PEDAGOGY: Black Board, Chalk & Talk

COURSE CONTENTS & TEACHING / LEARNING SCHEDULED

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
Unit –I		[12hrs]		
1.1	Absorption of water	3	Chalk & Talk	Black Board
1.2	Transpiration	5	Chalk & Talk	LCD
1.3	Guttation	1	Chalk & Talk	LCD
1.4	Minéral absorption	3	Chalk & Talk	Internet
Unit – II		[12hrs]		
2.1	Photosynthesis	4	Lecture	LCD / Chart
2.2	Respiration	2	Chalk & Talk	LCD / Chart
2.3	Growth hormone	3	Chalk & Talk	LCD / Chart
2.4	Photoperiodism	3	Chalk & Talk	LCD / Chart
Unit – III		[12hrs]		
3.1	Types of forest	3	Lecture	Internet
3.2	Vegetation of TamilNadu	3	Chalk & Talk	Internet
3.3	Conservation of forest	3	Chalk & Talk	Internet
3.4	Chipko movement	1	Chalk & Talk	Internet
3.5	Deforestation	2	Chalk & Talk	Internet
Unit – IV		[12hrs]		
4.1	Division and importance	2	Chalk & Talk	Black board
4.2	Lawn and rockery	4	Chalk & Talk	LCD
4.3	Layering	3	Chalk & Talk	LCD
4.4	Grafting and Buding	3	Chalk & Talk	LCD
Unit – V		[12hrs]		
5.1	Indore gardening	3	Lecture	Field visit
5.2	Orchard	3	Lecture	LCD
5.3	Kitchen garden	3	Lecture	Field visit
5.4	Terrace garden	3	Lecture	Field visit

MAPPING OF COs WITH POs

	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	2	1
CO2	2	3	3	3	2
CO3	3	3	3	3	3
CO4	2	3	3	3	3
CO5	3	3	3	3	3

3 - Strong 2 - Medium 1- Low

COURSE DESIGNER: Dr. M. Kannan

Allied. Bot. Lab

BOTANY PRACTICALS – II
TAXONOMY OF ANGIOSPERMS , EMBRYOLOGY,
PLANT ECOLOGY, PLANT PHYSIOLOGY, FORESTRY AND HORTICULTURE
(for zoology major students)
SEMESTER V & VI

Code: 212403622

2 Hrs/Week

Credits 2

Objectives:-

✍ *Developing practical skills and technique to describing in technical terms, sectioning, identifying and sketching.*

1. Describe the following in technical terms. Draw labeled sketches including L.S. of flower. Submit L.S of the flower for valuation.
 - i. Rubiaceae
 - ii. Euphorbiaceae
 - iii. Fabaceae
 - iv. Rutaceae
 - v. Poaceae
2. Demonstration of Horticulture techniques in grafting types.
 - i. Cuttage
 - ii. Splice
 - iii. Cleft
 - iv. 'T' Budding
3. Spotters
 - i. Section of anther
 - ii. Section of Ovule
 - iii. Types of Ovules.
 - iv. Leaf succulent – Aloe.
 - v. Free floating – Eichhornia
 - vi. Mangrove – Pneumatophore
 - vii. Air pollution
 - viii. Water pollution
 - ix. Land pollution
 - x. Hanging pot
 - xi. Simple and compound layering
 - xii. Air layering
4. Physiological setup

Transpiration pull	–	Ganong's Photometer Experiment
Photosynthesis	–	Light Screen Experiment
Growth	–	Arc Auxanometer.

REFERENCES:

01. Sharma, A.K.sharma R 2010, Taxonomy of Angiosperms, Rastogi Publication, Meerut.
02. Bender A, and Kumar A, 2003, A Text Book of Practical Botany, Rastogi Publication, Meerut.
03. Chandrasekar P, horticulture and crop Breeding, 2009 , T.K. Publication, Chennai.

COURSE DESIGNER: Dr. M. Kannan
