UNIVERSITY OF MADRAS

B.Sc. DEGREE PROGRAMME IN CHEMISTRY

SYLLABUS WITH EFFECT FROM 2023-2024

ELECTIVE-I: BOTANY PRACTICALS
SEMESTERS – I & II

Title of the Course		**ELECTIVE BOTANY PRACTICALS**					
Paper Number		**Elective Practicals-I**					
Category	Elective	**Year**	I	**Credits**	**2**	**Course Code**	**124E21**
		Semester	I & II				
Instructional Hours per week		**Lecture**	**Tutorial**		**Lab Practice**	**Total**	
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Pre-requisite		Practicals pertaining to above subjects is important to get knowledge on various aspects of plants.					

Learning Objectives		
C1	To enhance information on the identification of each taxonomical group by developing the skill-based detection of the morphology and microstructure of microorganisms, algae, and fungi.	
C2	To comprehend the fundamental concepts and methods used to identify Bryophytes, Pteridophytes and Gymnosperms through morphological changes and evolution, anatomy and reproduction.	
C3	To be familiar with the basic concepts and principles of plant systematics.	
C4	Understanding of laws of inheritance, genetic basis of loci and alleles.	
C5	To learn about the physiological processes that underlie plant metabolism.	
Course outcomes: CO	**On completion of this course, the students will be able to**	**Programme Outcomes**
CO1	To study the internal organization of algae and fungi.	K1
CO2	Develop critical understanding on morphology, anatomy and reproduction of Bryophytes, Pteridophytes and Gymnosperms.	K2
CO3	To study the classical taxonomy with reference to different parameters.	K3
CO4	Understand the fundamental concepts of plant anatomy and embryology.	K4
CO5	To study the effect of various physical factors on photosynthesis.	K5

EXPERIMENTS

1. Make suitable micro preparation of the types prescribed in Algae, Fungi, Bryophytes, Pteridophytes and Gymnosperms.
2. Micro photographs of the cell organelles ultra structure.
3. Simple genetic problems.
4. To describe in technical terms, plants belonging to any of the family prescribes and to identify the family.
5. To dissect a flower, construct floral diagram and write floral formula.
6. Demonstration experiments
   1. Ganong's Light screen
   2. Test tube Funnel experiment for photosynthesis
7. To make suitable micro preparations of anatomy materials prescribed in the syllabus.
8. Spotters - Algae, Fungi, Bryophytes, Pteridophytes, Gymnosperms and Angiosperm anatomy, Embryology, Cell biology and Biotechnology.

Extended Professional Component (is a part of internal component only, Not to be included in the External Examination question paper)	Questions related to the above topics, from various competitiveexaminations UPSC / TRB / NET / UGC – CSIR / GATE / TNPSC /others to be solved (To be discussed during the Tutorial hour)
Skills acquired from this course	Knowledge, Problem Solving, Analytical ability, Professional Competency, Professional Communication and Transferrable Skill
Recommended Texts	1. Sharma, O.P. 2017. Bryophyta, MacMillan India Ltd, New Delhi. 2. Sharma, O.P. 2012. Pteridophyta, Tata McGraw-Hills Ltd, New Delhi. 3. Subramaniam, N.S. 1996. Laboratory Manual of Plant Taxonomy. Vikas Publishing House Pvt. Ltd., New Delhi. 4. Benjamin, A. Pierce. 2012. Genetics- A conceptual Approach. W.H. Freeman and Company, New York, England. 5. Noggle G.R and G.J. Fritz. 2002. Introductory Plant Physiology. Prentice Hall of India, New Delhi.
Reference Books	1. Strickberger, M.W. 2005. Genetics (III Ed). Prentice Hall, New Delhi, India. 2. Nancy Serediak and M. Huynh. 2011. Algae identification lab Guide. Accompanying manual to algae identification field guide, Ottawa Agriculture and Agri food Canada publisher. 3. Mohammed Gufran Khan, Shite Gatew and Bedilu Bekele. 2012. Practical manual for Bryophytes and Pteridophytes. Lambert Academic Publishing. 4. Aler Gingauz. 2001. Medicinal Chemistry. Oxford University Press & WileyPublications. 5. Steward, F.C. 2012. Plant Physiology Academic Press, US

Web sources	1. https://www.amazon.in/Practical-Manual-Pteridophyta-Rajan-Sundara/dp/8126106883 2. https://www.google.co.in/books/edition/Gymnosperms/3YrT5E3Erm8C?hl=en&gbpv=1&dq=gy mnosperms&printsec=frontcover 3. https://www.amazon.in/Computational-Phytochemistry-Satyajit-Dey-Sarker-ebook/dp/B07CV96NZJ 4. https://medlineplus.gov/genetocs/understanding/basics/cell/ 5. https://apan.net/meetings/apan45/files/17/17-01-01-01.pdf 6. http://www.cuteri.eu/microbiologia/manuale_microbiologia_pratica.pdf 7. https://www.amazon.in/Manual-Practical-Bryophyta-Suresh-Kumar/dp/B0072GNFX4

Mapping with Programme Outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO 1	3	3	3	3	3	3	3	3	3	3
CO 2	3	3	3	3	3	3	3	3	3	3
CO 3	2	3	3	3	3	1	3	3	1	3
CO 4	3	3	2	3	3	3	3	2	3	3
CO 5	3	2	2	2	2	2	2	1	2	2

S-Strong (3) **M-Medium (2)** **L-Low(1)**