UNIVERSITY OF MADRAS

M.Sc. DEGREE PROGRAMME IN BOTANY

SYLLABUS WITH EFFECT FROM 2023-2024

Title of the Course	**PROJECT: GROUP PROJECT**						
Paper Number	**Core XV**						
Category	Core	**Year**	II	**Credits**	2	**Course Code**	523C4D
		Semester	IV				
Instructional Hours per week	**Lecture**	**Tutorial**	**Lab Practice**	**Total**			
	2	-	2	4			
Pre-requisite	To allow students to demonstrate the personal abilities and skills required to produce and present an extended piece of work and as well as to practice writing thesis.						

Learning Objectives:

C1	To recognize the concept of research and its various forms in the context of botany.
C2	To improve abilities relating to scientific experiments.
C3	To become proficient in data collection and the documentation of scientific findings.
C4	To prepare students for entry-level positions or professional training programmes in any field of Botany.
C5	Compare the various reporting and writing styles used in science.

UNIT	**CONTENTS**
I	1. Each student will be allotted a Project Guide from the faculty of the department concerned by lot method. 1. The topic of the dissertation shall be assigned to the candidate before the beginning of third semester. 2. After the completion of the project work, the student has to submit four copies of dissertation with report carrying his/her project report for evaluation by examiners. After evaluation, one copy is to be retained in the College Library. 3. Project work will be evaluated by both the external and the internal (Project Guide) examiners for the maximum of 100 marks in total on the scale of the maximum of 50 marks for the internal and the external each. 4. Viva-voce will be conducted by the panel comprising, External examiner and Internal Examiner for the maximum of 100 marks in total on the scale of the maximum of 50 marks for the internal and the external each.
II	All the candidates of M.Sc (Botany) are required to undergo a major project and submit the following: 1. Dissertation/Thesis based on the work done by the student. 2. Soft copy of the project on CD/DVD. **PROJECT EVALUATION GUIDELINES:** **The project is evaluated on the basis of following heads:**

	For Viva-Voce maximum is 60 marks which will be conducted by both the internal and external examiners during end semester university practical examinations. **Internal:** 40 marks I Review–Selection of the field of study, topic and literature collection- 15 marks II Review – Research design and data collection - 10 marks III Review – Analysis and conclusion, preparation of rough draft - 15 marks **External:** 60 marks Thesis/ Dissertation - 30 marks Presentation - 15 marks Viva-voce - 15 marks	
III	**Suggested areas of work:** Algae, fungi, microbiology, biocontrol agents, plant tissue culture, plant physiology, phytochemistry, biochemistry, anatomy, plant taxonomy, Ethnobotany, ecology, sustainable agriculture, herbal formulations, cytogenetics, molecular biology, biotechnology, bioinformatics, nanotechnology and applied botany.	
IV	**Methodology:** **Each project should contain the following details:** 1. Brief introduction on the topic 2. Review of Literature 3. Materials and Methods 4. Results and Discussion – evidences in the form of figures, tables and photographs. 5. Summary 6. Bibliography	
Course outcomes: CO	**On completion of this course, the students will be able to:**	**Programme outcomes**
CO1	For students in those pertinent core areas, the project is preparing them to become professionals after graduation.	K1
CO2	Compile data and familiarize yourself with techniques for planning and carrying out tests.	K2

CO3	Collect data and educate yourself on how to evaluate the analyzed results of your scientific studies.	K3 & K5
CO4	In-the-moment industrial exposure helps them become more knowledgeble and skilled in the latest technology.	K4
CO5 .	Improving communication skills and coming up with creative ideas are crucial components of training that help someone become an entrepreneur.	K5

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 competitive examinations 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:

Wilson, K and J. Walker (Eds). 1994. Principles and Techniques of Practical Biochemistry (4th Edition) Cambridge University Press, Cambridge.

Bendre, A.M and Ashok Kumar. 2009. A text book of practical Botany. Vol. I & II. Rastogi Publication. Meerut. 9th Edition.

Manju Bala, Sunita Gupta, Gupta, N.K. 2012. Practicals in Plant Physiology and Biochemistry. Scientific Publisher.

Wilson, K and J. Walker. 2005. Principles and Techniques of Practical Biochemistry, 5th Edition. Cambridge University press, New York.

5. Rodney Boyer. 2000. Modern Experimental Biochemistry, 3rd Edition. Published by Addison Wesley Longman. Singapore.

Reference Books:

1. Dawson, C. 2002. Practical research methods. UBS Publishers, New Delhi.
2. Stapleton, P., Yondeowei, A., Mukanyange, J., Houten, H. 1995. Scientific writing for agricultural research scientists – a training reference manual. West Africa Rice Development Association, Hong Kong.
3. Ruzin, S.E. 1999. Plant microtechnique and microscopy. Oxford University Press, New

York, U.S.A.
4. Wilson and Goulding. 1987. Principles of biochemical techniques, Oxford University Press.
5. Mukherji, S. and Ghosh, A.K. 2005. Plant Physiology. First Central Edition, New Central Book Agency (P) Ltd., Kolkata.
6. Taiz, L and Zeiger, E. 2010. Plant Physiology. 5th Edition. Sinauer Associates, USA.
7. Heldt, H.W and Piechulla, B. 2010. Plant Biochemistry, 4th Edition. Academic Press, NY.

Wilson, K and Walker, J. 2010. Principles and Techniques of Biochemistry and Molecular Biology, Seventh edition, Cambridge University Press, USA.

Web resources:

1. https://handbook.monash.edu › units › BIO3011
2. https://www.amazon.in/Practical-Manual-on-Plant-Biochemistry/dp/6200539790
3. https://www.amazon.in/Laboratory-Manual-Physiology-Mukesh-Amaregouda/dp/6133993502
4. https://www.kopykitab.com/A-Laboratory-Manual-of-Plant-Physiology-Biochemistry-and-Ecology-by-Akhtar-Inam
5. https://kau.in/document/laboratory-manual-biochemistry

Mapping with Programme Outcomes:

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

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