



## CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA

### BOTANICAL DIVERSITY

Programme	B. Sc. BOTANY				
Course Title	<b>Plant Diversity &amp; Angiosperm Taxonomy</b>				
Type of Course	<b>Minor</b>				
Semester	<b>III</b>				
Academic Level	200-299				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours
	4	3	-	2	75
Pre-requisites	Higher secondary level Biology course				
Course Summary	This course covers a wide range of topics related to the classification and identification of plants. Students will learn about the diversity of plant species and the characteristics that define different plant groups. The course will also cover Taxonomy of Angiosperms and the methods and techniques used in it.				

**Course Outcomes (CO):** After completing the Course, the student should be able to:

CO	CO Statement	Cognitive Level*	Knowledge Category#	Evaluation Tools
CO1	Explain the vegetative, reproductive and economic importance of Cyanobacteria, Algae and Fungi	U	F & P	Quiz/ Tests/ Lab Practical / Field Studies/ Assignments
CO2	Explain the vegetative, reproductive, ecological and economic importance of Bryophytes and Pteridophytes	U	F & P	Quiz/Test/ Assignments/ Lab Practical/ Field studies
CO3	Discuss the vegetative, reproductive, ecological significance and economic importance of Gymnosperms	U	F & P	Lab Practical/ Field Work/ Assignments/ Quiz/Tests
CO4	Describe various classification systems and taxonomic principles to categorize and organize plant species.	U	F & P	Quiz/Test/ Assignments/ Lab Practical/ Field work
CO5	Appraise plant diversity and taxonomy in ecological and conservation contexts.	E	C	Lab practical/ Case Studies/ Field Studies/ Presentations

\* - Remember (R), Understand (U), Apply (Ap), Analyse (An), Evaluate (E), Create (C)

# - Factual Knowledge(F) Conceptual Knowledge (C) Procedural Knowledge (P) Metacognitive Knowledge (M)

## Detailed Syllabus

Module	Unit	Content	Hrs (45 + 30)
<b>I</b>	<b>Cyanobacteria, Algae and Fungi</b>		<b>15</b>
	1	Cyanobacteria - General Account, Ecological and Economic importance.	2
	2	<i>Nostoc</i> - Structure, life cycle and ecological significance.	2
	3	Algae - General characteristics, Thallus organization & reproduction, Ecological and economic importance.	2
	4	<i>Spirogya</i> - Structure and life cycle.	2
	5	Fungi - General characteristics, Nutrition and reproduction. Economic and ecological significance of fungi.	2
	6	Morphology, reproduction and life cycle of <i>Agaricus</i> (developmental details not required)	2
	7	Symbiotic Associations - Lichens: General features, reproduction, ecological and economic importance.	2
	8	Mycorrhiza - General account and its significance.	1
<b>II</b>	<b>Bryophytes &amp; Pteridophytes</b>		<b>8</b>
	9	Bryophytes - General characteristics, Thallus diversity, Ecology and economic importance.	2
	10	Morphology, anatomy and reproduction of <i>Riccia</i> .	2
	11	Pteridophytes - General account, Ecological and economical importance of Pteridophytes.	2
	12	Morphology, Anatomy and life cycle of <i>Pteris</i> .	2
<b>III</b>	<b>Gymnosperms</b>		<b>5</b>
	13	Gymnosperm - General account. Ecological and economic importance.	2
	14	Morphology, anatomy and reproduction of <i>Cycas</i> .	3
<b>IV</b>	<b>Angiosperms</b>		<b>17</b>
	15	Angiosperms - General characters, reproduction, life cycle pattern	2
	16	Nomenclature - Binomial system of nomenclature	2
	17	Basic rules of nomenclature	1
	18	Systems of classification - Bentham & Hooker's system	2
	19	Herbarium techniques: collection, drying, poisoning, mounting & labelling	2
	20	Significance of herbaria and botanical gardens	1

	21	Important herbaria and botanical gardens in India	1
	22	Study the following families and their economic importance: Fabaceae (with sub-families), Rubiaceae, Euphorbiaceae and Poaceae	6
<b>V</b>	<b>Practical (Mandatory experiments)</b>		<b>30</b>
	<ol style="list-style-type: none"> <li>1. Microscopic observation of vegetative and reproductive structures of <i>Nostoc</i> and <i>Spirogyra</i>.</li> <li>2. Make suitable micro preparations of vegetative and reproductive structures of <i>Agaricus</i>, <i>Riccia</i>, <i>Pteris</i> and <i>Cycas</i>.</li> <li>3. Study of vegetative and floral characters of the families in the syllabus. Students shall be able to describe the plants in technical terms and draw the L.S. of two plants of the families and record the same.</li> <li>4. Mounting of properly dried and pressed specimen of any five wild plants of the families mentioned in the syllabus, with proper herbarium label.</li> </ol>		
<b>Practical (Open Ended-Suggestive list)</b>			
	<ol style="list-style-type: none"> <li>5. Field visit, identification and documentation of common Algae, Bryophytes and Pteridophytes.</li> <li>6. Determine the systematic position of local plants comes under the syllabus based on their vegetative and floral characters.</li> <li>7. Campus walk to identify and record campus plants.</li> </ol>		
<b>Suggested Readings</b>			
<ul style="list-style-type: none"> <li>• Fritsch, F.E. 1935. The structure and reproduction of the algae. Vol. 1 and II, Uni. Press. Cambridge.</li> <li>• Morris, I. 1967. An Introduction to the algae. Hutchinson and Co. London.</li> <li>• Papenfuss, G.F. 1955. Classification of Algae.</li> <li>• B.R. Vasishta. Introduction to Algae</li> <li>• Mamatha Rao. 2009. Microbes and Non-flowering plants. Impact and applications. Ane Books, New Delhi.</li> <li>• Sanders, W.B. 2001. Lichen interface between mycology and plant morphology, Bioscience, 51: 1025-1035.</li> <li>• B.R. Vasishta. Introduction to Fungi.</li> <li>• P.C. Vasishta. Introduction to Bryophytes.</li> <li>• B.P. Pandey. Introduction to Pteridophytes</li> <li>• Chamberlain C.J. 1935. Gymnosperms – Structure and Evolution, Chicago University Press.</li> <li>• Sreevastava H.N. 1980. A Text Book of Gymnosperms. S. Chand and Co. Ltd., New Delhi.</li> <li>• Vasishta P.C. 1980. Gymnosperms. S. Chand and Co., Ltd., New Delhi.</li> <li>• Radford, A.E. 1986. Fundamentals of Plant Systematics. Harpor &amp; Row Publishers, New York.</li> <li>• Sivarajan, V.V. 1991. Introduction to Principles of Plant Taxonomy. Oxford &amp; IBH,</li> </ul>			

New Delhi.

- Jeffrey, C. 1968. An introduction to Plant Taxonomy, Cambridge University Press, London.
- Gurucharan Singh. 2001. Plant Systematics. Theory and practice. Oxford & IBH Publications New Delhi.
- Sharma O.P. 1990. Plant Taxonomy – Tata McGraw Hills. Publishing company Ltd.
- Subramanyam N.S. 1999. Modern Plant Taxonomy. Vikas Publishing House Pvt Ltd.
- Pandey & Misra. 2008. Taxonomy of Angiosperms. Ane books Pvt Ltd.

#### Mapping of COs with POs:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	-	2	1	2	1	3
CO2	3	-	2	1	2	1	3
CO3	3	-	2	1	2	1	3
CO4	3	-	3	1	2	2	3
CO5	3	-	2	1	3	3	3

#### Correlation Levels:

Level	Correlation
-	Nil
1	Slightly / Low
2	Moderate / Medium
3	Substantial / High

#### Assessment Rubrics:

- Quiz / Discussion
- Assignment/ Seminar
- Project/Practical
- Final Exam

#### Mapping of COs to Assessment Rubrics :

	Internal Exam	Assignment/Seminar	Practical/Project Evaluation	End Semester Examinations
CO 1	✓	✓	✓	✓
CO 2	✓	✓	✓	✓
CO 3	✓	✓	✓	✓
CO 4	✓	✓	✓	✓
CO 5			✓	✓