



**University of Kerala**

Discipline	<b>BOTANY</b>				
Course Code	<b>UK1DSCBOT105</b>				
Course Title	<b>MORPHOLOGY OF FLOWERING PLANTS</b>				
Type of Course	<b>DSC</b>				
Semester	<b>I</b>				
Academic Level	<b>100 -199</b>				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	04	03 Hours	-	02 Hours	05 Hours
Pre-requisites	No pre-requisites				
Course Summary	Plant morphology is a field of study dealing with the external structure of plant organs. Morphology forms the basis of taxonomic descriptions and generally constitutes the most important data in taxonomy. Hence, studying the morphology of angiosperms is a very basic course to learn more about these important plant groups.				

**Detailed Syllabus:**

Module	Unit	Content	Hrs
<b>I</b>	<b>Angiosperm structure</b>		<b>05</b>
	1	General Angiosperm structure- introduction; Plant habit, habitat, and life span	
<b>II</b>	<b>Morphology of the Vegetative parts</b>		<b>07</b>
	2	Root- types, modifications (storage, aerial, pneumatophores, prop, stilt, buttress).	
	3	Stem- types, modifications (underground, aerial, subaerial with examples), branching pattern (monopodial and sympodial).	
	4	Leaves: parts, stipules, phyllotaxy, morpho types, leaf shape, margin, base, apex (basic types only needed), and leaf surface features – hairiness - tomentose, glabrous, scabrous, strigose, hispid, venation (reticulate and parallel). Modifications- leaf tendrils, spines, scales, pitcher, phyllode	
<b>III</b>	<b>Morphology of the Reproductive parts</b>		<b>10</b>
	5	Inflorescence- racemose (simple raceme, spike, catkin, spadix, corymb, umbel, and head), cymose (simple cyme, monochasial cyme-helicoid & scorpioid, dichasial and polychasial), and specialized types (cyathium, verticillaster, thyrus and hypanthodium) with examples.	
	6	Flower as a modified shoot - Detailed structure of flower parts- calyx, corolla, androecium, and gynoecium - arrangements, relative position, cohesion, and adhesion of floral parts;	

	7	Flower symmetry, cycly, merosity, aestivation (valvate, twisted, imbricate-ascending, descending, quincuncial), and placentation (axial, marginal, free-central, parietal, basal, pendulous, superficial).	
IV	<b>Fruits and seeds</b>		<b>08</b>
	8	Fruits - simple, aggregate, and multiple with examples; Seeds- dicot and monocot, albuminous and exalbuminous, aril, caruncle - hypogeal and epigeal germination, dispersal of fruits and seeds.	
V	<b>Importance of Morphology</b>		<b>15</b>
	9	Importance of Morphology in Identification, Nomenclature, and Morphology in Classification; Descriptive and Interpretative Morphology; Description of a plant in technical terms- Floral Diagram- Floral Formula -Art of scientific botanical illustration.	

<b>Practicals</b>			
	<ol style="list-style-type: none"> <li>1. Study of morphological characters of root, stem, and leaves.</li> <li>2. Study the morphological features of flowers, inflorescence, fruits, and seeds.</li> <li>3. Prepare a photo album of leaf forms.</li> <li>4. Prepare herbarium sheets for various types of inflorescences.</li> <li>5. Identify evidence for considering the flower as a modified shoot from nature and submit the same in the form of a photo album using geo-tagged photos or herbarium.</li> <li>6. Identify the cohesion and adhesion types of androecium from actual plant parts.</li> <li>7. Collect flowers belonging to various merosity and record.</li> <li>8. Study of various types of aestivation and placentation (ovary CS).</li> <li>9. Conduct a field survey (minimum 5) to identify the morphotypes studied.</li> <li>10. Create a floral formula for at least 10 named flowers and record the same.</li> <li>11. Create a floral diagram for at least five named flowers and record the same.</li> </ol>	<b>30</b>	

### **Suggested reading**

1. Simpson, Michael G. (2019) Plant systematics. Academic Press.
2. Singh, Gurcharan. (2019). Plant systematics: an integrated approach. CRC Press.
3. Sharma, OP. (2009). Plant taxonomy. Tata McGraw-Hill Education Private Limited.
4. Bell, Adrian D., and Alan Bryan. (2008). Plant form: an illustrated guide to flowering plant morphology. Timber Press.

### **Course Outcomes**

No.	Upon completion of the course the graduate will be able to	Cognitive Level	PSO addressed
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CO-1	Ability to identify the vegetative parts of angiosperms and understand their variation.	R, U	PSO-1
CO-2	Ability to identify different types of inflorescences, flowers and fruits, their arrangement and relative position.	R, U	PSO-1
CO-3	Remember the taxonomical terminology and acquire the skills to describe flowering plants in technical terms.	R, U,	PSO-1
CO-4	Acquire the skills to depict the structure of a flower through floral diagrams and floral formula	R, U, C	PSO-3

R-Remember, U-Understand, Ap-Apply, An-Analyse, E-Evaluate, C-Create

**Name of the Course: Morphology of Flowering Plants**

**Credits: 3:0:1 (Lecture:Tutorial:Practical)**

CO No.	CO	PO/PSO	Cognitive Level	Knowledge Category	Lecture (L)/Tutorial (T)	Practical (P)
1	1	1	R, U	F, C	LT	
2	2	1	R, U	F, C	LT	
3	3	1	R, U,	F, C	LT	P
4	4	3	R, U, C	F, An	LT	P

F-Factual, C- Conceptual, P-Procedural, M-Metacognitive

**Assessment Rubrics:**

- Quiz / Assignment/ Quiz/ Discussion / Seminar
- Midterm Exam
- Programming Assignments
- Final Exam

**Mapping of COs to Assessment Rubrics:**

	Internal Exam	Assignment	Project Evaluation	End Semester Examinations
CO 1	✓			✓
CO 2	✓			✓
CO 3	✓			✓
CO 4		✓	✓	✓