

Systematic Leaf Morphology

Spring 2024 Bot 6935/4935

Instructor: Steven R. Manchester steven@flmnh.ufl.edu

What: 2 Credits

Where: Carr 221

When: Tuesdays (two successive periods): 12:50-2:45

Why: To provide experience in the recognition and identification of angiosperm families and genera by their morphological and epidermal leaf characters; to examine the patterns established in different clades of flowering plants; and assess the extent of convergence that occurs in the morphology of unrelated clades. At the same time, we will consider the evolutionary and ecological significance of different leaf adaptive syndromes. Both extant and fossil leaves representing a range of angiosperm families will be included. We will consider the orders of angiosperms as currently recognized from collective molecular and morphological evidence.



Course Format: Meets 2 hours per week. Combination of lectures, discussion of assigned reading (journal articles), and observation of demonstration specimens and images in class. Each student will be asked to prepare one (undergrad students) or two (graduate students) 15-minute presentations for the class on a relevant topic. Images of cleared leaves and epidermal anatomy will be made available as study aids and for discussion in presentations.

Textbook: B. Ellis et al. 2009. Manual of leaf architecture. Cornell Univ. Press. Available free online: https://personal.ems.psu.edu/~pwilf/Manual_of_Leaf_Architecture_small.pdf

Grading: Based on participation and quality of presentations.

Tentative Schedule:

Week	Date	Topic
1	Jan 9	Overview of leaves—what functions do they serve; how do they vary in morphology? How do they form in ontogeny?
		How do angiosperm leaves differ from those of other seed plants? Terminology of leaf architecture. Introduction to ANITA grade angiosperms. <i>Amborella</i> , Nymphaeales
2	Jan 16	Terminology of epidermal anatomy, Austrobaileyales, Chloranthales Magnoliids I. Canellales, Piperales, Laurales
3	Jan 23	Magnoliids II. Magnoliales

		Adaptive features of leaves and correlations with climate
4	Jan 30	Monocots
6	Feb 6	Leaf tooth types. Proteales
		Buxales, Gunnerales, Trochodendrales
7	Feb 13	Dilleniaceae, Zygophyllaceae
		Saxifragales (e.g <i>Cercidiphyllum</i> , Hamamelidaceae)
8	Feb 20	Local field trip
9	Feb 27	Vitaceae, intro to Rosids
		Proteales
10	Mar 5	Fabids: Cucurbitales, Fagales
		Celastrales, Malpighiales
	Spring Break	
11	Mar 19	Fabids: Rosales, Urticales, Fabales
		Malvids: Geraniales, Brassicales, Huerteales
12	Mar 26	Malvids: Sapindales, Malvales
		Ecologically significant convergence patterns
13	Apr 2	Asterids: Ericales 1
14	Apr 9	Ericales 2, Lamiids: Garryales, Lamiales,
15	Apr 16	Solanales, Borag. Campanulids: Aquifoliales
16	April 23	Asterales