

EFB 435/635 Flowering Plants: Diversity, Evolution, & Systematics **Fall 2021**



Instructor: Dr. Martin Dovciak; Office: 459 Illick; Office hours: MW 9:30-10:30 am, or by appointment;
E-mail: mdovciak@esf.edu; Phone: (315) 470-6749.

Teaching Assistant: Adam Doniger; Office: 318 Illick; Office hours: TuTh 1-2pm, or by appointment;
Email: adoniger@syr.edu; Phone: (516)366-9279.

Class Times: Lectures: MW 8:25–9:20 am, 12 Illick. Labs/Field Trips: F 12:45–3:35 pm. Labs & Pre-Lab are in 238 Illick. Field trips leave from 307 Stadium Place (behind Lawrinson Hall); be early to board on time.

Course Website: <http://www.esf.edu/efb/dovciak/EFB535.htm> (see Blackboard for course materials)

Communication: Announcements will be posted on Blackboard and students will receive email notifications at their @syr email address. Students are expected to check their email regularly every day.

Course Description: The course develops conceptual understanding and practical identification skills that will further students' appreciation of the diversity and evolution of flowering plants, including their ecological, economic and cultural significance. Course topics cover plant evolution and systematics (including plant structure, pollination biology and reproduction, and evolution of plant diversity) as well as taxonomy and evolutionary relationships of important globally distributed flowering plant families. Special emphasis is given to taxa that are ecologically important in the northeastern US and those with global economic or cultural significance. Selected taxa are examined in detail during lectures, field trips, and in laboratories to gain plant identification skills and appreciation of ecological and evolutionary significance (and beauty!) of flowering plants. EFB 435 is an undergraduate version and EFB 635 is a graduate version (3 credits). Prerequisites: General Biology I and II and at least junior standing (or equivalent).

Learning Outcomes: The course is devoted to the study of diversity, evolution, and systematics of flowering plants—the most diverse plant group that defines most of the world biomes. The college learning outcomes include scientific reasoning, critical thinking, communication skills, technological/information literacy, ethics, and diverse perspectives. After the completion of the course the student should be able to:

- ✓ Identify major families of flowering plants, with special reference to the flora of the northeastern U.S.
- ✓ Identify species of flowering plants from any region using dichotomous keys.
- ✓ To sight recognize representative species of the major families from the northeastern U.S.
- ✓ Explain evolutionary relationships among flowering plants.
- ✓ Describe the ecological, economic, and cultural significance of flowering plants.
- ✓ Apply the vocabulary and methods of plant systematics and taxonomy.
- ✓ Build and evaluate a professional botanical collection.
- ✓ Give a professional presentation on flowering plant evolution, systematics, and taxonomy (EFB 635).

Textbook and Study Materials

- Judd WJ, Campbell CS, Kellogg EA, Stevens PF, Donoghue MJ. 2015 [2016]. *Plant systematics: A phylogenetic approach*. 4th Edition. Sinauer Associates, Sunderland, MA. (course textbook).
- Study materials on Blackboard and public course website (slides, readings, species lists, links, videos)



Required Supplies

- Elementary Biocon Kit (Hamilton Bell #8145; dissection kit for indoor labs)
- Field attire for field trips (boots, rain-proof clothes, long pants/sleeves)
- Plant collecting tools, herbarium paper, glue, portfolio
- Plant Press (College has a limited number of presses for loan)
- Smartphone (or digital camera)

Course Components & Grading

- **Exams:** Three exams will cover material from lectures, readings, and laboratories. The exams are cumulative. Graduate students (EFB 635) will have added exam questions. See course schedule for the dates.
- **Field Trip Quizzes:** Field attendance is compulsory. Students need to pass timed online Blackboard species ID quizzes following the first 5 trips (50% of total quiz grade). At least 90% grade is required to pass each quiz, but each quiz can be taken multiple times until Wednesday midnight following each trip. Cumulative in-person Herbarium Quiz follows the conclusion of all field trips (50% of total quiz grade).
- **Lab Reports:** Due via Blackboard by the following Monday, midnight.
- **Bonus Points:** Up to 5% of the grade by active participation.
- **Independent Projects:**

Item	Points
Exam 1	20
Exam 2	20
Exam 3 (Finals week)	20
Quizzes	10
Lab Reports	10
Plant Collection	10
Field Portfolio	10
EFB 635 Presentation	10
Total	100-110

- i. Plant Collection: 15 pressed, mounted, & correctly labeled wild angiosperm species from unique families.
 - ii. Field Portfolio on iNaturalist: Uploaded records w/photos/locations of the species in the Plant Collection.
 - iii. Plant presentation (EFB 635): ~8(-10)-minute PowerPoint-aided talk on a selected angiosperm group.
- [Examples of student work may be used for assessment purposes (w/student names/identifiers removed).]

Learning Strategy: This is a challenging course that requires students to progressively assimilate complex botanical terminology into their scientific vocabulary and to use it to describe plant structure and function. Keeping up to date with the material from lectures, field trips, and laboratories, and the timely progress on the independent projects, are essential. All materials are integrated, so doing poorly in one course component (e.g., field or laboratory activities) will have negative effects on another (e.g., exams). Students work hands-on directly with plant specimens and dichotomous keys during field trips and laboratories in order to build their plant identification skills and professional botanical terminology. The course requires accurate observation and recognition of specific plant characteristics. Active use of greenhouse collections, internet resources, and field observations ('botanizing') is encouraged.

Make-up exams/quizzes/assignments: Provided only for valid reasons such as: (1) Illness– requires a note from a physician or health-related authority, (2) Death in the family– requires an Obituary/Mass card, (3) Traumatic personal issues–requires ESF Student Life notification.

EFB 435/635 Flowering Plants: Diversity, Evolution, & Systematics **Fall 2021**

Lecture Schedule[†]

Month	Day	Lecture Number and Topic	Assignments Due
August	30 (M)	1- Course Overview & Introduction	
September	1 (W)	2- Flowers & Pollination [Flowering-The Private Life of Plants by D. Attenborough]	
	6 (M)	Labor day (no class)	
	8 (W)	3- Flower Morphology	
	13 (M)	4- Fruits & Vegetative Morphology	
	15 (W)	5- Internal Structure of Plants	Trip 1 Quiz
	20 (M)	6- ARCHAIC ANGIOSPERMS: ANA GRADE & MAGNOLIIDS	
	22 (W)	7- BASAL EUDICOTS: RANUNCULALES	Trip 2 Quiz
	27 (M)	8- CORE EUDICOTS: SAXIFRAGALES & VITALES	
	29 (W)	9- ROSIDS-MALVIDS: MYRTALES, GERANIALES, BRASSICALES, MALVALES	Trip 3 Quiz
October	4 (M)	Exam 1	
	6 (W)	10- ROSIDS-FABIDS: ROSALES, CUCURBITALES & OXALIDALES	Trip 4 Quiz
	11 (M)	11- ROSIDS-FABIDS: MALPHIGIALES & FABALES	
	13 (W)	12- The Evolution of Plant Diversity 1	Trip 5 Quiz
	18 (M)	13- The Evolution of Plant Diversity 2	Presentation Topics Due (EFB 635)
	20 (W)	14- SUPERASTERIDS: CARYOPHYLLALES	
	25 (M)	15- ASTERIDS: CORNALES & ERICALES	Lab Report 1 Due
	27 (W)	16- CORE ASTERIDS-LAMIIDS: SOLANALES & GENTIANALES	
November	1 (M)	17- CORE ASTERIDS-LAMIIDS: LAMIALES	Lab Report 2 Due
	3 (W)	18- CORE ASTERIDS-CAMPANULIDS: APIALES & DIPSACALES	
	8 (M)	Exam 2	Lab Report 3 Due
	10 (W)	19- CORE ASTERIDS (CAMPANULIDS-ASTERALES)	
	15 (M)	20- Methods & Principles of Systematics	Lab Report 4 Due
	17 (W)	21- Dr. Fernando - Origins of Angiosperms	
	22-28	Thanksgiving Recess (no classes)	Lab Report 5 Due (by Monday, Nov. 22)
	29 (M)	22- MONOCOTS: ALISMATALES	
December	1 (W)	23- MONOCOTS: LILIALES & ASPARAGALES	
	6 (M)	24- COMMELINOID MONOCOTS: POALES	
	8 (W)	25- Review & History of Classifying Flowering Plants	
	TBA	Final Exam	

Schedule for Field Trips, Labs, and Plant Collections[†]

Month	Day	Trip/Lab Number and Topic	Assignments Due
September	3 (F)	PreLab (238 Illick): Orientation to Field Trips & Independent Projects	
	10 (F)	Field Trip 1: Rand Tract	Plant Presses/Collecting/Mounting Supplies Prepared
	17 (F)	Field Trip 2: Skytop	
	24 (F)	Field Trip 3: Long Branch Park	
October	1 (F)	Field Trip 4: Clark Reservation	
	8 (F)	Field Trip 5: Green Lakes	Field Plant Collections Completed
	15 (F)	Field Trip 6: Labrador Hollow	
		End of Field Trips. Indoor labs start in 238 Illick.	
	22 (F)	Lab 1: Laboratory specimen identification	Cumulative Herbarium Quiz
	29 (F)	Lab 2: Laboratory specimen identification	
November	5 (F)	Lab 3: Laboratory specimen identification	The Last Day to Return Plant Press
	12 (F)	Lab 4: Laboratory specimen identification	
	19 (F)	Lab 5: Laboratory specimen identification	
	21-28	Thanksgiving Recess (no classes)	
December	3 (F)	Lab 6: Featured Plants Miniconference	Presentations & Plant Collections Due
	10 (F)	December Convocation (no lab)	

[†] Actual class schedule may vary somewhat from this template; updates will be provided via the course website.

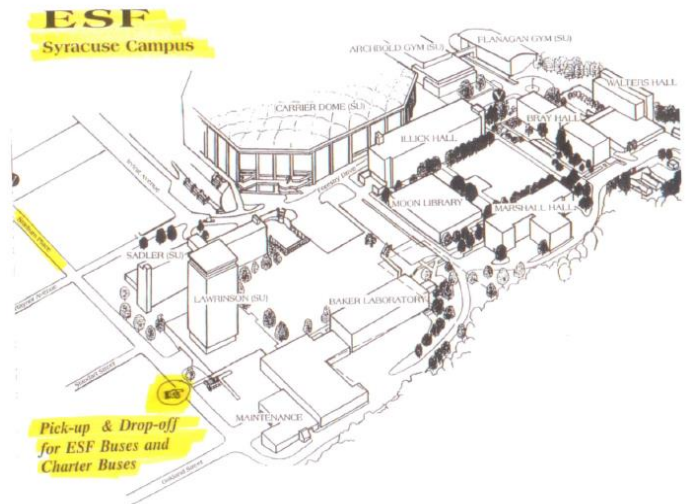
EFB 435/635 Flowering Plants: Diversity, Evolution, & Systematics **Fall 2021**

COVID-19 Guidance: Students are required to follow the college's evolving Covid-19 protocols and restrictions, which can be found on the college website at: <https://www.esf.edu/restart/>

Location for Bus Departures for Field

Trips: 307 Stadium Place, behind Lawrinson Hall (see the map).

Academic Dishonesty: Academic dishonesty is a breach of trust between a student, one's fellow students, or the instructor(s). Examples of academic dishonesty includes but is not limited to plagiarism and cheating, and other forms of academic misconduct. By registering for courses at ESF you acknowledge your awareness of the ESF Code of Student Conduct. More information on Academic Integrity, including the process for resolving alleged violations, can be found in the Student Handbook (<https://www.esf.edu/students/handbook/>).



Students with Learning and Physical Disabilities: Field trips require hiking on trails of variable difficulty. Students requiring disability-related accommodations can contact the Center for Disability Resources (CDR, <https://disabilityresources.syr.edu/>; 804 University Av., Suite 303, 315-443-4498) to schedule an appointment and discuss their needs and the process. Students may also contact ESF Office of Student Support (110 Bray Hall, 315-470-6660; <https://www.esf.edu/students/support/>) for assistance. Authorized accommodation forms must be in the instructor's possession at least 1 week prior to any anticipated accommodation. Accommodations require early planning and generally are not provided retroactively. [Contact CDR as soon as possible to schedule exam if needed; although CDR does accommodate short timelines, that does not mean that course instructors can do that too. Scheduling exams at CDR early will help to make sure your instructor can provide the exams to CDR in time].

Religious Holiday Observance: All students have a right under NYS law and ESF college policy to observe the religious holidays of their choice, according to their individual faith. If students wish to observe a religious holiday, they should provide written notification to the instructor and/or TA (via email) of their intent to observe a particular religious holiday **within the first two weeks of the semester**, and prior to missing any required course meetings or activities. Reasonable requests for absence from course meetings or activities will be accommodated whenever possible, though students may be responsible for independently making up missed materials or activities on their own time, and in a timely fashion.

Inclusive Excellence Statement: As an institution, we embrace inclusive excellence and the strengths of a diverse and inclusive community. During classroom discussions, we may be challenged by ideas different from our lived experiences and cultures. Understanding individual differences and broader social differences will deepen our understanding of each other and the world around us. In this course, all people (including but not limited to, people of all races, ethnicities, sexual orientation, gender, gender identity and expression, students undergoing transition, religions, ages, abilities, socioeconomic backgrounds, veteran status, regions and nationalities, intellectual perspectives and political persuasion) are strongly encouraged to respectfully share their unique perspectives and experiences. This statement is intended to help cultivate a respectful environment, and it should not be used in a way that limits expression or restricts academic freedom at ESF.