

FIELD BOTANY OF SAN DIEGO COUNTY
World Campus NC 0301, San Diego State University, Non-Credit Course
Saturdays - 20 Jan – 4 May, Spring 2024
Classroom: Life Sciences South - Room LS 270
(Version: 19 Oct 2023)

Co-taught: Dr. Michael G. Simpson (coordinator), Dr. Lluvia Flores-Rentería, Brenda McMillan, Scott McMillan, Margaret Mulligan (M.S.), Tom Oberbauer, Dr. Jon Rebman, Jessie Vinje

NOTE: We will use **Canvas to communicate and upload course materials.**
Plants of San Diego County: <https://plants.sdsu.edu/sdpls>
(Contact: msimpson@sdsu.edu for questions)

Note: Students are now required to purchase permits for parking at SDSU.
Please check <https://bfa.sdsu.edu/campus/parkingtrans/parkingportal>
for details about purchasing permits online or at a parking lot kiosk.

Illness Policy:

Masks are now optional in the classroom, but keep in mind that Covid is still around, with new variants appearing. If any student is ill, especially with a fever, please do not attend class and let the instructor know. You will be able to make up materials if you do so. If you have any kind of cough, please consider not attending, but at a minimum wear a mask in class to inhibit spreading to others.

CNPS Fellowships:

There will be a limited number of fellowships from the San Diego Chapter of the California Native Plant Society, to pay for registration fees. These will be announced after the course begins, with the details of application.

Learning Outcomes:

This course is designed for the serious student, amateur botanist, environmental consultant, or employee of environmental governmental organizations to acquire the basic knowledge and skills of plant taxonomy, native plant identification, and plant community assessment.

The primary objectives of this course are both to learn the native and naturalized vascular plant species of our area (primarily our county) and to learn how to know these plants. Thus, the basic training will go beyond simply memorizing names and will encompass the four components of taxonomy: description, identification, nomenclature, and classification. After taking this course, students should be able to:

1. Identify on-sight (scientific names, correctly spelled) many of the common, native and naturalized plants of our area, primarily San Diego County but possibly beyond.
2. Identify an unknown taxon using a taxonomic key and specimen comparisons.
3. Identify, on-sight or using a hand-lens or dissecting scope, ca. 12 angiosperm families.
4. Learn how to properly collect, document, and process (press, dry, label, mount) a plant from the field. Toward this, each of you will prepare a collection of plants, pressed, dried, labeled, and mounted.
5. Properly use the collections of the herbarium.
6. Learn the major plant communities/vegetation regions of our area.
7. Learn basic plant community surveying techniques.

Important Web Links:

Plants of San Diego County: <https://plants.sdsu.edu/sdpls/>

San Diego Plant Atlas: <https://sdplantatlas.org>

Jepson eFlora: <https://ucjeps.berkeley.edu/eflora>

CCH2 (Consortium of California Herbaria 2): <https://cch2.org/portal/index.php>

SEINet: <https://swbiodiversity.org/seinet/collections/index.php>

Letter of Completion for Field Botany of San Diego County:

A Letter of Completion of this course from the Global Campus will be awarded to those enrollees who meet all of the following:

1. Attend a minimum of 12 sessions, both morning and afternoon sections.
2. Receive an average of 70% or more on class quizzes.
3. Prepare a plant collection, with proper collection label information, of at least two plants.

Credit for SDSU Registered Students:

Undergraduate SDSU students can receive credit for either Biol 299 or Biol 499, depending on their standing in the major. Biol 499 requires students be a Biology major, have a 2.7 GPA, and have taken upper division courses. Students may earn 2 units and a grade upon completion of the requirements listed above and a written assignment. Registration for Biol 299 or 499 requires submissions of the standard form (obtained at Biology Advising, LS 102) to Biology Advising for a project titled "Field Botany of San Diego Co", to be signed by Dr. Lluvia Flores-Rentería as the sponsoring faculty, subsequently approved by Biology Advising. Students should be aware that the maximum eligibility for combined 299 and 499 courses is 9 units applied to their degree. Likewise, a combined limit of 6 units of 499/497 can be applied to the major. Students should also be aware that there are 299 and 499 opportunities that do not require registration through the College of Extended Studies and the extra associated cost.

Graduate and undergraduate SDSU students can take this course through the College of Extended Studies and earn credit in Biol 495 or 798 upon approval by an advisor and obtain 2 units of credit, upon completion of the above requirements and a project assignment. See the coordinator for more information.

General format of class:

The class will consist of **16 sessions** (plus one optional and possibly one for making up any cancellation), each held Saturday, 8:30-4:00. It will involve a combination of short lectures/slide shows, field hikes and collecting, and lab time for identifying and processing plants. A general schedule is:

Saturday	8:30 AM - 11:30 AM (field)/12:00 PM (classroom)	Classroom or meet at field trip site.
	11:30 AM/12:00 Noon - 1:00 PM	Break for lunch; transit to next site or to classroom
	1:00 - 4:00 PM	Classroom or meet/continue at field trip site.

SCHEDULE 2024

(FIELD=Meet in field; SDSU=San Diego State University; SDNHM=San Diego Natural History Museum)

- Sa 20 Jan **SESSION 1: SDSU** M. Simpson & L. Flores-Rentería
8:30-8:40: Review of course objectives (MGS); **8:40-9:00:** Instructor Introductions; **9:00-9:50:** What is a plant? (LFR); **9:50-10:00:** Break; **10:00-10:50:** Taxonomy and Systematics (MGS). **10:50-11:00:** Break; **11:00-12:00:** Character/identification exercise. **12:00-1:00:** Lunch break. **1:00-1:40:** Root & Stem Morphology (MGS). **1:40-2:20:** Leaf Morphology (LFR). **2:20-2:30:** Break; **2:30-3:30:** Vegetative morphology lab. **3:30-3:40:** Review of lab material; **3:40-3:50:** Review spp. 1-5 (MGS); **3:50-4:00:** Review spp. 6-10 (LFR). **Assignment for next week: Online quiz** on plant systematics, vegetative morphology. Study Chaparral/CSS-1: Spp. 1-10.
- Sa 27 Jan **SESSION 2: SDSU** M. Simpson & L. Flores-Rentería
8:30-8:40: Self-test on spp. 1-10. **8:40-9:20:** Botanical Names (MGS). **9:20-9:30:** Break. **9:30-10:10:** General Terminology1 (through Division; LFR). **10:10-10:50:** General Terminology2 (from Disposition; MGS). **10:50-11:00:** Break. **11:00-12:00:** Leaf exercise. **12:00-1:00:** Lunch break. **1:00-1:40:** Reproductive: Flowers through perianth (LFR). **1:40-2:10:** Reproductive: Flowers through androecium (MGS). **2:10-2:20:** Break. **2:20-3:40:** Flower exercise. **3:40-4:00:** Field Trip map; Review spp. 11-20.
Assignment for next week: Online quiz on general terminology. Study Chaparral/CSS-1: Spp. 1-20 for field quiz next Sat.
- Sa 3 Feb **SESSION 3: Coastal Sage Scrub and Chaparral Plants/SDSU** M. Simpson, L. Flores-Rentería, & M. Mulligan
8:30-11:30: FIELD: Mission Trails Regional Park-Cowles Mtn.; Meet **8:30 AM:** <https://goo.gl/maps/CxznP5E863bpBeeU6>
QUIZ (in field): Spp. 1-20. 11:30-1:00: Leave field; lunch break, back to SDSU.
1:00-4:00 SDSU: Classroom (LS 270, SDSU). **1:00-1:25:** Gynoecium morphology (LFR). **1:25-1:50:** Inflorescence morphology (MGS). **1:50-2:00:** Break. **2:00-3:40:** Flower dissection, some plant families (Brassicac., Ericac., Crassulac., Rhamnac.). **3:40-3:50:** Review Riparian spp. 1-4; Chaparral/CSS-2: 1-2. (MGS); **3:50-4:00:** Review Chaparral/CSS-2: 3-8. (LFR).
Assignment for next week: iNaturalist account; online quiz on flowers/inflor; study Riparian spp. & Chaparral/CSS-2 spp.
- Sa 10 Feb **SESSION 4: SDSU** M. Simpson & L. Flores-Rentería
8:30-9:30: Plant collecting, CCH2, field images/iNaturalist (MGS). **9:30-10:30:** Assign collecting bags, notebooks; plant collecting exercise. **10:40-11:30:** Transfer to plant presses; review collection data. **11:30-12:00:** Calif. Pl. communities: Chaparral, CSS, Riparian/oak woodland, grassland. **1:00-1:30:** Fruit morphology(LFR). **1:30-2:30:** Fruit morphology lab. **2:30-3:40:** Plant identification, family; **3:40-4:00:** Plant spp. review.
Assignment for next week: online quiz on fruits; Enter collection data; Study for FT#2: Ripar:Spp. 1-4; Chap./CSS-2: 1-21.
- Sa 17 Feb **SESSION 5: Riparian, Woodland, and Chaparral Plants/SDSU** M. Simpson, L. Flores-Rentería
8:30-11:30 FIELD: Mission Trails Park-Old Mission Dam (FT#2); Meet **HERE** 8:30 AM: <https://goo.gl/maps/YpGf2ytJmrN2>
QUIZ (in field): Riparian1-4, Chaparral/CSS-2 Spp.1-21.
1:00-4:00 SDSU: Classroom (LS 270, SDSU); **1:00-1:30:** Herbaria (LFR); **1:30-2:00:** Plant collections/database/process specimens; tour of herbarium. **2:00-3:00:** Identification exercises (MGS); **3:00-4:00:** Scavenger hunt.
Assignment for next week: Study Cactaceae & Fouquieriaceae.

- Sa 24 Feb **SESSION 6: SDNHM: Herbarium and Database Resources** J. Rebman
8:30-11:00: Lectures (possibly virtual): Herbaria and Database resources; plant families: **Cactaceae & Fouquieriaceae**
12:00-2:00: GROUP 1 (last name A–K) SD Herbarium tour; meet at San Diego Natural History Museum
2:00-4:00: GROUP 2 (Last name L-Z) SD Herbarium tour; meet at San Diego Natural History Museum
QUIZ (take home): Herbarium and taxonomic web resources.
Assignment for next week: Study Vernal Pool Spp. 1-11; **study** Lamiaceae
- Sa 2 Mar **SESSION 7: Vernal Pool Plants** S. McMillan
8:30-11:30 FIELD: Hard Pan Vernal Pools, Miramar Mounds National Natural Landmark, Convoy Street
 Meet **HERE** 8:30 AM: <https://goo.gl/maps/nRHLP5oeFDQ1yBB59>
1:00-4:00 SDSU: Classroom (LS 270, SDSU); Plant family: **Lamiaceae**;
QUIZ (take home): Lamiaceae & Vernal Pool plants
- Sa 9 Mar **SESSION 8: Qualitative and Quantitate Field Monitoring: Adobe Falls/SDSU** J. Vinje & M. Mulligan
8:30-4:00 FIELD: SDSU Adobe Falls Ecological Reserve; field transects, plant collecting; Meet **HERE** at 8:30 AM:
<https://goo.gl/maps/cFWxuTStcU7p4H3u6>
QUIZ (in the field): Species Identification and Vegetation Cover Values
Assignment for next week: Study Desert Plants
- Sa 16 Mar **SESSION 9: Desert Plants, Desert Plant Adaptations** J. Rebman
8:00-5:00 FIELD: All day field trip, Anza Borrego Desert State Park
QUIZ (in field): 10-20 common desert species; desert adaptations; collecting &/or use of iNaturalist
Assignment for next week: Study Vernal Pool Plants
- Sa 23 Mar **SESSION 10: Vernal Pool Plants** S. McMillan
8:30-11:30 FIELD: Vernal Pools of Otay Mesa, Dennerly Canyon;
 Meet **HERE** 8:30 AM: <https://goo.gl/maps/BNMyAX9KdpfZ2jKAA>
QUIZ (in field): 5 vernal pool plants.
12:30-ca. 3:00 FIELD: Additional field sites; Families: **Alliaceae, Themidaceae**
Assignment for next week: Study Graminoids.
- Sa 30 Mar **SESSION 11: Graminoids: Cyperaceae, Juncaceae, Poaceae; Field/SDSU** M. Mulligan & M. Simpson
8:30-4:00 FIELD: Adobe Falls Ecological Reserve (tentative). Meet **HERE** at 8:30 AM: <https://goo.gl/maps/cFWxuTStcU7p4H3u6>
 Observe/review structures of grasses, sedges, and rushes
1:00-4:00 SDSU: Classroom (LS 270, SDSU): Lecture on/practice keying grasses, sedges, and rushes
QUIZ (take home): Poaceae, Cyperaceae, Juncaceae.
Assignment for next week: Study Asteraceae, Fabaceae.
- Sa 6 Apr **SESSION 12: Plant Family and Keying Exercises: Asteraceae & Fabaceae; SDSU** J. Rebman & M. Mulligan
8:30-12:00: Classroom (LS 270, SDSU); Plant family & keying exemplars: **Asteraceae**
1:00-4:00: Classroom (LS 270, SDSU); Plant family & keying exemplars: **Fabaceae**
QUIZ (take home)
Assignment for next week: Study Torrey Pines Species List Spp. 1-16.
- Sa 13 Apr **SESSION 13 FIELD: Torrey Pines State Park** M. Mulligan, J. Rebman, & M. Simpson
 Bring your lunch and plenty to drink!
8:30-11:30: First Site: Park and meet at lower parking lot, hike up road to Guy Fleming Trail, then south. Quiz at end.
11:30-ca. 1:00: Hike down to parking lot; eat lunch on beach.
1:00-4:00: Estuary and Torrey Pines Extension.
Assignment for next week: Study McGinty Mountain Species List Spp. 1-
- Sa 20 Apr **SESSION 14: Gabbro/Metavolcanic Associated Plants: McGinty Mtn.** T. Oberbauer
8:30-4:00 FIELD: Field trip to McGinty Mountain. Meet **HERE** 8:30 AM: <https://goo.gl/maps/DkPqrtsMZvy>.
 You will be in the field the entire time, so be sure to bring a lunch and plenty of water.
QUIZ (in field): 5-10 montane species from McGinty Mountain Species List Spp. 1-16.
Assignment for next week: Study 16 Succulent Maritime Scrub Spp. 1-14, Salt Marsh Spp. 1-13; Coastal Dune: 1-4.
- Sa 27 Apr **SESSION 15 FIELD: Succulent Maritime Scrub, Dune Plants, Estuary Plants** M. Mulligan & J. Vinje
 Bring your lunch and plenty to drink!
8:30-11:30: First Site: Field Trip: Border Field State Park: Meet **HERE** 8:30 AM: <https://goo.gl/maps/5ejNeKbaeV2K8STD8>
Second Site (Time to be determined): Tijuana River Valley Park. Meet **HERE:** <https://goo.gl/maps/LnJEMtzKvJTgTv349>
 Return to our cars at Border Field State Park
Third Site (Time to be determined): Tijuana Slough. Meet **HERE:** <https://goo.gl/maps/4KzKZdV3jJrgMYvRA>
QUIZ (in field): Estuary plants: Study Succulent Maritime Scrub Spp. 1-14, Salt Marsh Spp. 1-13; ; Coastal Dune: 1-4
Assignment for next week: Study Cuyamaca and Laguna Species Lists; **study** Solanaceae
- Sa 4 May **SESSION 16 FIELD: Montane Plants: Cuyamaca Mtns.** T. Oberbauer
 Bring your lunch and plenty to drink!
8:30-4:00: All day field trip, Cuyamaca Mountains; Meet **HERE** 8:00 AM:
 Park and Ride off Hwy 79, just north of I-8 on the left side at 8:00 AM sharp. From there, we will car pool into Cuyamaca Rancho State Park. See more detailed itinerary on course web site.
QUIZ (in field): 5 common montane species. Family: Solanaceae

Sa 11 May If necessary, we will use this date for a make-up lab.
If make-up not needed, then **Mounting Party** (optional and tentative)
8:30-11:30 only SDSU: Classroom (LS 270, SDSU)

All available instructors

Classroom and Lab Rules:

Please arrive on time for class or field trip and stay for the full period of the class. Attendance will be taken in the morning and afternoon. In class (LS 270, SDSU) you may get a snack during a break, but unfortunately there is a "no eating in lab" rule because of the possibility of hazardous chemicals in the environment.

During class and in the field, we always expect you to respond to the instructors and other students in a positive, respectful, and civil manner. We encourage discussion of course-related topics, but keep personal conversation to a minimum. There will be some "quiet times" when we ask everyone to stop talking and concentrate on an exercise. Please silence (completely) cell phones and close computers (unless we're doing an exercise using computers) during class. No texting in class! (The latter can be very distracting. If you have to use your phone, please go outside.) Feel free to go to the restroom (very briefly) at any time; just try to avoid doing so during lecture and during the last half hour of lab. Please clean up your area completely at the end of class; use the hand brush (cabinet to right of front sink) as needed.

Due to liability concerns, no friends, relatives, or pets can go on class fieldtrips. No smoking on campus (SDSU is smoke free) or on any field trips; it is both discourteous to others and a potential fire hazard.

Lecture and Labs:

Due to the cumulative nature of this course, ***We will not enroll anyone after the beginning of the second Saturday class.***

Canvas:

Upon registering, you should have been given a unique email address and access to our online teaching tool, Canvas. Please log into Canvas for course communication and resources. We will communicate to you this way, so be sure to check your SDSU email address regularly. We will occasionally post hand-outs and up-dates on Canvas.

Learning Assessment:

Weekly quizzes are given. An herbarium collection of 5-10 plants is required. See requirements for a Letter of Completion, registered student units, and CEU units.

Required supplies:

Hand lens (10X - 14X): some available in SDSU bookstore (have this with you at all times, in class and in the field!)
[A Bauch & Lomb Hastings Triplet 10x hand lens, is recommended. It is available on Amazon.com]

Optional Books:

- Allen, R. L. and F. M. Roberts, Jr. 2013. *Wildflowers of Orange County and the Santa Ana Mountains*. Laguna Wilderness Press, Laguna Beach, California. [Perhaps the best color picture guide to plants of our region; although of Orange Co., almost all the species also occur in San Diego Co.]
- Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti (eds). 2012. *The Jepson Manual: Vascular Plants of California. Second Edition*. Berkeley: University of California Press. [Note: We will have three hard copies of the book in class. However, taxonomic keys and descriptions are available on-line, at Jepson eFlora: <http://ucjeps.berkeley.edu/LJM.html>]
- Lightner, James. 2011. *San Diego County Native Plants*, 3rd edition. San Diego Flora, San Diego. [Highly recommended; best color photo book of our plants.]
- Rebman, J. P. and M. G. Simpson. 2014. *Checklist of the Vascular Plants of San Diego County*, 5th edition. [Available as a PDF at: <https://sdplantatlas.org/pdf/files/SDCoChecklist5ed2014.pdf>. May be revised 2023]
- Simpson, M. G. 2019. *Plant Systematics*. 3rd edition. Elsevier-Academic Press. [For more in-depth, comprehensive coverage of the principles and content of plant systematics]
- Simpson, M. G. 2020. *Plant Collection and Documentation Field Notebook*. 5th edition. Rynchops Press. [Available for purchase in class; we will supply a smaller version of this.]

Herbarium Collection / Project:

A herbarium collection of 3–5 (minimum of 2) specimens will be required of all enrolled students. Generally, students will collect with the instructor on one of a few independent trips to a specific region (to be determined). Additional specimens may be collected as part of a project, e.g., a floristic survey of a general region (such as a small region in San Diego County), in which all plants in the area are collected, with documentation (to be discussed).

Alternatively, extra projects, for the interested/advanced student might involve a taxonomic problem, such as evaluating the validity of a subspecies versus a species or annotating our specimens of a particular group (e.g., a family or genus).

Photography:

We will be teaching, and encouraging, the use of iNaturalist this term. Learning to use iNaturalist may be a class assignment. Images from personal cameras or from iNaturalist observations may be linked to herbarium collections.

We will also encourage high magnification shots (e. g., of small flowers or flower parts) using the photo-dissecting microscope in the lab.

Field Trips:

This is largely a field course. Thus, scheduled field trips are extremely important. Please do everything you can to attend them all. You will be responsible for your own transportation to field trip sites.

Be field hardy! Participants must be in reasonable physical condition to take moderate hikes on required field trips. Wear appropriate clothing: light-weight boots or tennis shoes (with good tread); pants and shirt you don't mind getting dirty or scratched up; hat, jacket, sunblock, sunglasses, etc. as appropriate. **If rain is even a remote possibility, bring a rain jacket; we won't let a little drizzle stop us!** Be ready to go in the field as soon as we arrive at a sight. You should plan to bring water and a snack on all field trips. Bring a lunch and drinks for the all-day field trips; you might bring a small ice chest in your car, or share with someone else.

Bring the following to the field:

If collecting: Portable Plant Press; Plant Collection and Documentation Field Notebook; pencil; GPS unit if you have one (we will supply some)

Checklist of the Vascular Plants of San Diego County (optional)

Class Species List (I suggest making copies of appropriate pages to be taken into the field.)

Hand lens

Cell phone or tablet, to access the *Jepson eFlora* or *iNaturalist*

If collecting, we will always press plants in the field using the portable plant presses and will try to transfer to a regular plant press at the car(s), to be placed on a drier at the end of the day.

In the field, don't wander off alone or far away from the bulk of the class. Be cautious and use common sense. **Watch out for snakes!** Don't reach for a plant without looking over the area. Even though we will always collect in regions where collection is allowed, be discrete about it.

Despite all of the above precautions and rules, you can still have fun. We will be visiting some beautiful areas, so enjoy the wildlife and your time in the field.

Other Books on Plants of California and Adjacent Regions:

Belzer, T. J. 1984. *Roadside Plants of Southern California*. Mountain Press Publishing Co., Missoula. [NOTE: A good, inexpensive assemblage of color photographs of common plants in our area. Recommended!]

Dale, Nancy. 1986. *Flowering Plants: the Santa Monica Mountains, Coastal & Chaparral Regions of Southern California*. Capra Press, Santa Barbara. In cooperation with California Native Plant Society.

Ornduff, R. 1974. *Introduction to California Plant Life*. University of California Press, Berkeley. [Excellent reference to plant communities of California.]

Rebman, J. P. and N. C. Roberts. 2012. *Baja California Plant Field Guide*. San Diego Natural History Museum w/ Sunbelt Publications, San Diego, California.