

FIELD BOTANY OF SAN DIEGO COUNTY
Global Campus NC 0301, San Diego State University
Non-Credit Course
Saturdays - 25 Jan – 9 May, Spring 2020
Classroom: Life Sciences South - Room LS 270

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

Registration: Begins ca. November 2019

See: <https://ces.sdsu.edu/science-computers-technology/field-botany-san-diego>

NOTE: We will use Blackboard to communicate and upload course materials.

Plants of San Diego County: <<http://www.sci.sdsu.edu/plants/sdpls>>

(Contact: msimpson@sdsu.edu for questions)

**NOTE: A parking permit for SDSU lots 3, 4, 6, or 7 (see https://sunspot.sdsu.edu/map/sdsu_map.pdf)
will be provided for all students registered in the course.**

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, 10-20 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.

Letter of Completion for Field Botany of San Diego County:

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

1. Attend a minimum of 12 of the 15 sessions, 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 5-10 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 SDSU Global Campus and the extra associated cost.

Graduate SDSU students can take this course through the SDSU Global Campus and earn credit in Biol 798 upon approval by their thesis advisor and Dr. Marshal Hedin as the Biology Graduate advisor and obtain 2 units of credit, upon completion of the above requirements and a written assignment. However, this offering for Graduate students is only available as Credit/NonCredit. Pick up form from Medora Bratlian, Dept. of Biology offices.

CEU credits:

For students requesting CEUs (Continuing Education Units) for the course, please contact Evon Yousif (eyousif@sdsu.edu). Requirements are as for a Letter of Completion.

General format of class:

The class will consist of **16 sessions**, each held all day Saturday. 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	Classroom or meet at field trip site.
	11:30 AM - 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 2020: Revised 5 Nov 2019

(SDSU=San Diego State University; SDNHM=San Diego Natural History Museum)

Sa 25 Jan	SESSION 1: Classroom (LS 270, SDSU) 8:30-11:30: Introduction to Taxonomy, Botanical names; Character/identification exercise 1:00-4:00: Vegetative morphology; Plant family: Brassicaceae Assignment for next week: Take home quiz on plant systematics, vegetative morphology. Study Chaparral/CSS-1: Spp. 7-13; fill out Pl. Morph. Rev.: pp. 1-6; study Ericaceae	M. Simpson & L. Flores-Rentería
Sa 1 Feb	SESSION 2: Classroom (LS 270, SDSU) 8:30-11:30: Reproductive (Flowers) 1:00-4:00: General Terminology Plant family: Ericaceae Assignment for next week: Study Chaparral/CSS-1: Spp. 1-20; study Rhamnaceae	M. Simpson & L. Flores-Rentería
Sa 8 Feb	SESSION 3: Coastal Sage Scrub and Chaparral Plants 8:30-11:30: Field Trip: Mission Trails Regional Park-Cowles Mtn.; Meet HERE 8:30 AM: https://goo.gl/maps/h1XvHZczhxB2 QUIZ (in field): Spp. 1-20. 1:00-4:00: Classroom (LS 270, SDSU); Inflorescences; Plant family: Rhamnaceae Assignment for next week: Take home quiz on flowers/inflor; study Riparian spp. 1-4; Chaparral/CSS-2: 1-8; study Fabaceae	M. Simpson, L. Flores-Rentería, & M. Mulligan
Sa 15 Feb	SESSION 4: Classroom (LS 270, SDSU) 8:30-11:30: Plant species review; plant collecting; Plant family: Fabaceae 1:00-4:00: Fruit morphology; plant communities; plant species review Assignment for next week: Riparian: Spp. 1-4; Chaparral/CSS-2: 1-21; study Salicaceae	M. Simpson & L. Flores-Rentería
Sa 22 Feb	SESSION 5: Riparian, Woodland, and Chaparral Plants 8:30-11:30: Field Trip: 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: Classroom (LS 270, SDSU); plant nomenclature; plant identification; family characteristics; Plant family: Salicaceae Assignment for next week: Study Herbarium & Database Resources, study Asteraceae	M. Simpson, L. Flores-Rentería, & M. Mulligan
Sa 29 Feb	SESSION 6: Herbarium and Database Resources: sdplantatlas, bajaflora, SEINet, CCH1, CCH2, GBIF, iNaturalist 8:30-12:00: Meet at San Diego Natural History Museum at 8:30 AM . SDNHM classroom; Balboa Park 1:00-4:00: SDNHM Herbarium; Plant family: Asteraceae QUIZ (take home): Herbarium and taxonomic web resources. Assignment for next week: Study Vernal Pool Spp. 1-11; study Lamiaceae	J. Rebman
Sa 7 Mar	SESSION 7: Vernal Pool Plants 8:30-11:30: Field Trip: Hard Pan Vernal Pools, Claremont Mesa Blvd. Meet HERE 8:30 AM: https://goo.gl/maps/aACu1r4taSoAmCkbA 1:00-4:00: Classroom (LS 270, SDSU); Plant family: Lamiaceae ; QUIZ (take home): Lamiaceae & Vernal Pool plants Assignment for next week: Study Field Transects lecture; study Rosaceae	S. McMillan
Sa 14 Mar	SESSION 8: Field transects/quadrats; plant communities 8:30-10:00: Classroom (LS 270, SDSU); Plant family: Rosaceae 10:30-4:00: Field trip Mission Trails Reg. Park; field transects, plant collecting; Meet HERE 8:30 AM: QUIZ (take home): Transect Techniques. Assignment for next week: Study Cyperaceae, Juncaceae, Poaceae	J. Vinje & M. Mulligan
Sa 21 Mar	SESSION 9: Cyperaceae, Juncaceae, Poaceae 8:30-11:30: Classroom (LS 270, SDSU): Lectures: Succulent Maritime Scrub, Dune Plants, Estuary Plants 1:00-4:00: Classroom (LS 270, SDSU): Plant families: Poaceae, Cyperaceae, Juncaceae QUIZ (take home): Poaceae, Cyperaceae, Juncaceae. Assignment for next week: Desert Species; Desert Plant Adaptations; Plant family: Cactaceae	S. Vanderplank
Sa 28 Mar	SESSION 10: Desert Plants, Desert Plant Adaptations 8:00-5:00: All day field trip, Anza Borrego Desert State Park; Family: Cactaceae QUIZ (in field): 5-10 common desert species; desert adaptations; collecting &/or use of iNaturalist Assignment for next week: Study Vernal Pool Spp. 12-22; study Alliaceae, Themidaceae	J. Rebman
Sa 4 Apr	SESSION 11: Vernal Pool Plants 8:30-11:30: Field Trip: Vernal Pools of Otay Mesa, Dennery Canyon; Meet HERE 8:30 AM: https://goo.gl/maps/BNMyAX9KdpfZ2jKAA QUIZ (in field): 5 vernal pool plants. 12:30-ca. 3:00: Additional field sites; Families: Alliaceae, Themidaceae Assignment for next week: Otay Valley Regional Park species list; study Plantaginaceae	S. McMillan
Sa 11 Apr	SESSION 12: Plant Collecting Expedition: Otay Valley (or to be announced) 8:30-11:30: Field plant collecting: Bring collecting gear! Meet HERE 8:30 AM: https://goo.gl/maps/htYJyRPdzoS2 1:00-4:00: Classroom (LS 270, SDSU); Plant family: Plantaginaceae QUIZ (take home) Assignment for next week: Study Succulent Maritime Scrub Spp. 1-15, Salt Marsh Spp. 1-13; Freshwater Marsh Spp. 1-3, Coastal Dune: 1-4; study Chenopodiaceae	M. Mulligan & J. Rebman

- Sa 18 Apr **SESSION 13:** Succulent Maritime Scrub, Dune Plants, Estuary Plants S. Vanderplank & M. Mulligan
8:30-11:30: Field Trip: Border Field State Park: Meet **HERE** 8:30 AM: <https://goo.gl/maps/wXjPnY4RMTL2>
1:00-4:00: Field trip to Tijuana Estuary: Meet **HERE** 1:00 PM: <https://goo.gl/maps/g3wRFgLCN3K2>
QUIZ (in field): Common estuary/dune plants. Family: Chenopodiaceae
 Meet **HERE** ca. 3:00 pm: <https://goo.gl/maps/FR4bD1HLNpr>
Assignment for next week: Study McGinty Mountain Species List Spp. 1-10; **study** Onagraceae
- Sa 25 Apr **SESSION 14:** Gabbro/Metavolcanic Associated Plants T. Oberbauer
8:30-11:30: Field trip to McGinty Mountain. Meet **HERE** 8:30 AM: <https://goo.gl/maps/DkPqrtsMZvy>.
1:00-4:00: Classroom (LS 270, SDSU); montane plants lecture; plant family: **Onagraceae**
QUIZ (in field): 5 montane species
Assignment for next week: Study Cuyamaca and Laguna Species Lists; **study** Solanaceae
- Sa 2 May **SESSION 15:** Montane Plants T. Oberbauer
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 9 May Mounting Party (optional and tentative) All available instructors
8:30-11:30 only: Classroom (LS 270, SDSU)

Classroom and Lab Rules:

Please arrive on time for class or field trip and stay for the full period of the class. 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.***

Blackboard:

Please log into Blackboard (<http://blackboard.sdsu.edu>) and select the Field Botany page. We will communicate to you this way and occasionally post hand-outs and up-dates.

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/IJM.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. [Highly recommended. Available for purchase in class or at the San Diego Natural History bookstore. May be revised 2020]

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 5-10 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:

I wish to emphasize photography, both in the lab and on field trips. Some of you may wish to photograph plants in the field or in the lab. I will ask that you download images to add to our web page. In addition, a color print makes a nice addition to an herbarium sheet. It is important to practice, in order to get good depth of field and crisp focus; a flash is often useful.

We will be teaching, and encouraging, the use of iNaturalist this term. Learning to use iNaturalist may be a class assignment.

I 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.