

LECTURE SCHEDULE: (T-Th 11:00 - 12:20, MANDE B210)

Thur. Sept. 27	Course intro. On being a plant. I.
Week 1	Sections Begin
Tue. Oct. 2	On being a plant. II. Clonal plants
Thur. Oct. 4	Physiological ecology I and II.
Week 2	
Tue. Oct. 9	Plant demography
Thur. Oct. 11	Plant life-histories I. Theory
Week 3	
Tue. Oct. 16	Plant life-histories II. Data
Thur. Oct. 18	Ecological genetics. I and II
Week 4	
Tues. Oct. 23	Floral biology
Thur. Oct. 25	Mating systems I. Sex or no sex.
Week 5	
Tue. Oct. 30	Mating systems II. Self-fertilization vs. outcrossing
Thur. Nov. 1	MID-TERM
Week 6	Sections do not meet
Tues. Nov. 6	Mate choice and sexual selection in plants
Thur. Nov. 8	Seed biology, dispersal, and seedling establishment
Week 7	
Tues. Nov. 13	Plant-herbivore interactions I and II
Thur. Nov. 15	Interspecific Competition
Week 8	Sections do not meet
Tues. Nov. 20	Diversity, stability and ecosystem function
Thur. Nov. 22	Thanksgiving Holiday
Week 9	
Tues. Nov. 27	Historical reconstruction in plant evolutionary ecology
Thur. Nov. 29	Plant-fungus interactions
Week 10	
Tue. Dec. 4	Evolution and ecology of agroecosystems
Thur. Dec. 6	Plant conservation
Wed. Dec. 12	Final exam 11:30 – 2:29 MANDE B-210.

WEEKLY READING LIST

Journal articles in bold (found on the course website) are required reading BEFORE section and may be the subject of snap 5pt quizzes in section. Readings from texts reinforce and extend lecture material and can be used to aid study.

Week 1: On being a plant/ Clonal Plants:

Silvertown and Charlesworth, Chapter 1 and pp. 290-294 on clonal plants.

You may want to review plant growth and nutrient transport in any introductory biology text.

Week 2: Physiological Ecology/Demography:

If needed, review plant photosynthetic adaptations (C₃, C₄ and CAM) in any introductory biology text.

Read Silvertown and Charlesworth Chapters 5-5.3 and 6-6.4 for demography.

Journal Article: Karban and Shijori 2009. Self-recognition affects plant communication and defense. Ecology Letters 12: 502-506.

Week 3. Life history/Ecological genetics

Silvertown and Charlesworth, Chapters 2, 3, and 10.

Journal Article: Franks et al. 2007. Rapid evolution of flowering time by an annual plant in response to climate fluctuation. Proceeding of the National Academy of Sciences USA 104: 1278-1282.

Week 4. Floral Biology/Mating systems

Howe and Westley. Chapters 6 and 7 (parts of each chapter on pollination)

Review for first mid-term.

Week 5. Mating Systems.

Silvertown and Charlesworth Chapter 9

Midterm on Thur. Nov. 1

Journal Article: Anderson, B. and SD Johnson. 2007. The geographical mosaic of coevolution in a plant-pollinator mutualism. Evolution 62: 220-225.

Week 6. Mate Choice and Sexual Selection, Seed biology and dispersal.

Howe and Westley, Chapters 6 and 7 (parts of each chapter on seed dispersal) Chapter 9 pp. 191-198. **Sections do not meet.**

Week 7. Seed biology and dispersal. Plant-herbivore interactions/Competition.

Howe and Westley, Chapters 3-5. Silvertown and Charlesworth, Chapter 8. (Note: Section 8.2 (pages 117-120) covers standard Lotka-Volterra two-species competition equations. This is covered in detail in Introductory Ecology and you will not be responsible for it here (read: not on exam).

Journal Article: Quellar, DC. 1983. Sexual selection in an hermaphroditic plant. Nature 305: 706-707.

Week 8. Community ecology. **Sections do not meet.**

Week 9. Historical reconstruction.

Journal Article: Midgley JJ, White JDM, Johnson SD, Bronner GN. 2015. Faecal mimicry by seeds ensures dispersal by dung beetles. *Nature Plants* 1: DOI: 10.1038/NPLANTS.2015.141

Week 10. Agroecology and evolution in agroecosystems.

This week the reading and the journal article are the same:

Journal Article: Gould, F. 1991. The evolutionary potential of crop pests. *American Scientist* 79: 496-507.

COURSE GOALS

1. Student should become familiar with fundamental aspects of plant population biology and ecology from the whole plant to community levels.
2. Student should learn about major interactions between plants and other types of organisms (pollinators, dispersers, herbivores, pathogens).
3. Student should become familiar with reading and interpreting research papers in the field of plant evolutionary ecology
4. Student should gain working knowledge of some of the reasons behind, and tools used, in plant conservation biology.

COURSE ORGANIZATION

Professor: Dr. Joshua Kohn, 1258 Muir Biology, 534-8233, email: jkohn@ucsd.edu. Office hours: Mondays 2-3 or by appointment (just e-mail, **do not hesitate**). **E-mail questions at any time. Dr. Kohn usually responds within 24 hours.**

Grad IA's: Dillon Travis (dtravis@ucsd.edu) and Jonathan Bricke (jbricke@ucsd.edu). Their office hours will be announced the 1st day of class.

1. **Lectures.** Each student is **expected to attend lectures**. Because no text adequately covers all of the topics discussed in this course, attendance at lectures and careful note taking will be essential to your success. Even with pdfs of powerpoint slides and podcasts, do not expect to be able to consistently miss lectures and do well. There is no substitute for being there yourself to see what is emphasized and to ask questions in real time.

2. **Sections.** **SECTION MEETINGS START FIRST FULL WEEK (WEEK 1).** Each student is expected to attend and participate in one, one-hour, section per week. Section meetings have three goals: 1) To reinforce concepts and other material discussed in lecture. 2) To present additional material relevant to lecture topics. 3) To discuss assigned reading, primarily research papers. **At the start of each section meeting a 5pt. quiz will be given.** Quizzes will cover lecture material from the previous week as well as any assigned research papers. The purpose of these quizzes is to motivate the student to stay abreast of the lecture material and to do the assigned reading of research papers to be discussed before attending section. Quiz questions are designed to be relatively easy if the student has prepared. Questions about research papers will

not require deep understanding of statistical or other details of the paper. Just be aware of the basic question(s) being asked, how experiments were designed, and what the major findings were. **The five highest quiz grades will count toward your course score (see below).**

3. **Readings.** There are two texts for this course.

Silvertown, J.W. and D. Charlesworth. 1993. Introduction to Plant Population Biology, 4th edition. John Wiley and Sons Inc. NY.

Howe, H.F. and L.C. Westley. 1988. Ecological Relationships of Plants and Animals. Oxford University Press. NY.

Both of these texts are small and cover a limited amount of the topics discussed in this course. Silvertown and Charlesworth will be most useful for lectures on demography, clonal plants, life-history evolution, and competition while Howe and Westley will be used for aspects of the course dealing with plant-pollinator, plant-disperser, and plant-herbivore interactions. Copies of both texts will appear on reserve in the Geisel library. Readings from these texts are meant to reinforce and augment the lectures. Questions on exams will come primarily from lecture material and never be on topics covered in the texts that are not mentioned in lecture.

In addition, research papers from the scientific literature will be assigned some weeks to augment text material. One goal of this course is to introduce students to primary scientific literature (research papers). Journal article readings will form the basis for discussion in section meetings on weeks when papers are assigned. You are expected to have done the week's reading **BEFORE** attending section. Scientific writing is dense and often difficult. I do not expect an in-depth understanding of every detail or statistical analysis. I do expect you to try and understand what the paper is about, how it relates to lecture, and, if experimental, basically what was done. In addition, questions may appear on exams that relate to assigned readings. **THE LIST OF WEEKLY READINGS ABOVE SHOULD BE CONSULTED EACH WEEK.**

4. **Course website and podcast.** There will be a course website for BIEB 126 at <https://tritoned.ucsd.edu/> On it will appear this course syllabus, .pdf files of powerpoint presentations to assist note-taking, the journal articles for weekly discussion sections, and also lecture notes that briefly outline the lecture and list some of the major sources for them. .pdf files of lecture powerpoint presentations will appear at least two hours before lecture, but usually by the night before. The site will also disseminate practice exams, answer keys to exams, and information on your grades as the quarter progresses. There is a discussion forum on the site but Dr. Kohn does not monitor it. Use this at your own risk as students can occasionally disseminate incorrect information. If you want a question answered promptly, it is usually best to email Dr. Kohn jkohn@ucsd or your IA (see addresses above) directly. Please put BIEB 126 in the subject line. Podcasts of lectures will be available at <https://podcast.ucsd.edu/> so long as Dr. Kohn remembers to wear a microphone (remind him if he doesn't use it).

5. **Grading.** There will one in-class **midterm** and one **final** (see lecture schedule for dates). The mid-term will be worth 150pts and the final will be worth 250pts. **The final is both a second mid-term (approx. 125pts) and cumulative (another 125 pts).** There will be short **quizzes in sections** each week worth five points each. The five best scores will count towards your grade. So there will be a maximum of 425pts for the course. Students will be graded on the curve based upon their total score. It is expected that approximately 15% of the students will receive A's, 35% B's, 35% C's and the rest D's and F's. Exact grade cut-offs will be determined by Dr. Kohn at the end of the course.

To summarize:	1 mid-term	150pts
	1 final	250pts
	5 highest quiz scores in section, 5pts each	25pts
	TOTAL	425pts

REGRADES: If a grading error has been made on your exam, you may submit a **regrade petition** to Dr. Kohn within one week of the return of the exam. *A regrade petition must clearly and concisely state the reason(s) why you think your answer is deserving of additional credit. Regrade requests will not be processed without a written petition.* **No regrades will be given for exams written in pencil or non-permanent ink.** Students who submit exams for regrading do so with the knowledge that we may (1) regrade the entire exam and your score could go up or down and (2) compare the submitted regrade to photocopies of the original exams.

MISSED EXAMS: *There are no make-up exams and missed exams will normally be considered zeroes.* If you know in advance that you cannot be present for an exam, you must contact Dr. Kohn at least one week before the exam and make arrangements. If you do not inform the professor and miss a midterm or final exam, then you will be required to provide official documentation of an unavoidable emergency (e.g., serious illness, etc.) Without such documentation, you will receive a zero for that exam. For a missed exam with valid documentation, Dr. Kohn will determine the method of makeup.

EXTRA CREDIT:

There are two ways to gain extra credit points in this class.

1) **2-5 points.** Take a digital photo (cell phone fine) of a plant or scene that is interesting and pertains to the course in some way. Put the photo on a single powerpoint slide with enough text to explain what the photo is and either what is interesting about the plant or how the picture portrays something that pertains to the course. Pictures can be of native or non-native (including ornamental) botanical objects (whole plants, leaves, flowers, landscapes). If you cannot identify the plant, just tell why it was of interest. The result should be emailed to your TA. You will receive **two points** for emailing the powerpoint slide to your TA and **an additional 3 points** if the TA uses it in section or Dr. Kohn shows it in lecture. To this end, **your name and section must appear on the top right corner of the slide.**

2) **5 points.** Maybe a certain topic or experimental result talked about in lecture appeals to you. Use the electronic library system to find, read, and digest a research paper that cites any paper used in lecture and pertains to a topic covered in this class. Then create a two-slide powerpoint presentation that explains 1) The bibliographic information of the paper (authors, year, title, journal, the paper discussed in lecture that it cited, the topic, and 2) the major finding(s) of the paper. You will then present this to your section (first send it to your TA along with a link to the .pdf of the research paper for comments and to arrange which section meeting you will present in. You may want to use one (usually) or two (max) figures from the paper to illustrate the main point. You can cut these out of any .pdf file using the select tool and paste them into your presentation. Papers cited in lecture can be found in the lecture notes downloadable from the course website. Papers assigned as reading for sections are also fair game. One method to find papers that cite a given paper is to go to the Web of Knowledge <http://apps.webofknowledge.com/> and search for the paper cited in lecture or one assigned for reading in section. When you find it, click on the paper and the right hand column will list papers that have cited the paper you looked up. Then find a paper from this list that is interesting to you and report on it.

DON'T WAIT TILL THE LAST WEEK to do extra credit work. These points can be garnered **at any time during the quarter**. No extra credit will be accepted after the student's final section meeting.

CHEATING: Students are expected to do their own work, as outlined in the UCSD Policy on Academic Integrity downloadable here: <http://senate.ucsd.edu/Operating-Procedures/Senate-Manual/Appendices/2>). Cheating will not be tolerated, and we will fail any student caught engaging in academic dishonesty. **All exams will be closed book and closed-notes with NO CALCULATORS**; all personal materials must be stowed under your seat while exams are in progress. Any student caught cheating on an exam will receive a failing grade for the course. He or she may also be suspended from UCSD.