Goals of the course:
1. To become familiar with techniques and concepts in plant reproduction.
2. Discussion of contemporary issues.
3. Participation in weekly discussions of papers from the primary literature.
4. Completion of a library research paper.

Grading and requirements:

Exams - Two midterm exams and a cumulative final will be given. The format will be short answer and take-home essay. **There will be no makeup exams.**

Paper summaries - Weekly summaries of the paper being read for discussion will be required. The summary will include a description of major goals/results and will include questions for discussion.

Paper discussions - All students are expected to read the paper selected by their group leader. Each student is responsible for reporting for one paper discussion.

Term paper - Each student will be responsible for writing a research paper that summarizes the reproductive biology of your study species.

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**There will be a 5% per day penalty for late items.**

Grading Rubric - to get the most out of this course you should:
1. **Attend all lectures, labs, and discussions.**
2. **Read assigned material before class.**
3. **Take notes that summarize the main points of the lecture.**
4. **Read discussion papers with adequate lead time to think about questions.**
5. **Meet deadlines - start working on your research paper now.**
General instructions for all papers and reports.

1. All papers and take home exams will only be excepted in an electronic format (Microsoft Word, Wordperfect, or pdf) submitted via email.

2. Reports must be prepared with a standard 12 point font (i.e., Times Roman, Helvetica, or similar appearance). Script or line fonts are not acceptable. The paper should be double spaced with one inch margins all around (8.5 x 11 inch standard letter size paper).

3. Any paper or report not received by the specified deadline will be counted as late. Late papers and reports are subject to a 5% reduction per day (24 hour period from the deadline).

4. Macintosh users please take note of the following:
   All versions Microsoft Word running on Macintosh/Apple computers contain a bug that causes gibberish to be added to the end of your file when “fast save” is used. To avoid this problem turn off the “fast save” option under preferences.

Writing style:

The key to effective scientific writing style is to be efficient without being overly abrupt. Leave out embellishments and minute detail descriptions, but do not distill your paper down to a list of statements. The goal is to produce a compact accurate essay that flows well and is pleasant to read. We will make suggestions on each report to help guide your efforts. More guidelines:

A. Do not “vocabulate.” Ok, so that’s not a real word, but what I mean is that it is dangerous to string together impressive-sounding words because sometimes the meaning of what you are trying to say gets swallowed by the verbosity (that is a real word). If there is a simpler way to say it then do so.

B. Avoid overusing words (repeatedly using the same verb, adjective, or noun in successive sentences). It is a good idea when you are done writing your first draft is to read it for flow. Try to pick up on instances where you use the same word two sentences in a row- try changing one to a different word.

Guidelines for the research paper.

Picking a topic. The general idea is to choose a topic that is specific enough so that you are not overwhelmed, but general enough so that you can find enough papers. This is a bit tricky since you do not know the depth of the literature ahead of time. One clue is not to choose topics that correspond to major headings in your textbook, but rather to use specific examples as a starting point. The authors of your text have done us a tremendous favor by incorporating citations into their textbook. These are “gateways” to the primary literature that will allow you to quickly find a good number of papers on a particular topic of interest.

How to proceed with library research. As you read the text take note of the examples/papers that sound interesting. You are also welcome to read ahead in the text if you think that topics later in the text are more to your liking. As you read you will see papers cited; for example, Epperson and Clegg (1987) is cited on page 36 of your text. If you look in the Literature Cited section on page (481) you will find the full reference as follows:

You can tell this is a primary reference (as opposed to a book or book chapter) because there is a journal listed (Heredity), volume (58) and page numbers (5-14). You can find this paper if you go to the library catalogue and search under journals for “Heredity.” You will then get the call number and can find this volume (58) on the shelf or in storage. You may also find references to books, which would look like this:


A book chapter (from an edited volume) would look like this (the author and title of the paper, and page numbers are listed first, the editor and name of the book second):


It will be to your advantage to choose primary research papers, reviews of the topic or book chapters. Books will usually be too general, but may contain more ideas for appropriate topics. In any case, the papers you find cited in this text or other books and reviews will be starting points- you’ll need to go to a literature data base to really flesh out your topic to an appropriate level for your paper.

Once you have a list of candidate papers, get online with one of the primary literature data bases to determine that your topic is rich enough without being out of control. There are several appropriate data bases available: Agricola, Web of Science. Of these, the last is by far the best in terms of flexibility and ease of use, so I will use it as an example. Here’s what to do:
1. From the PSU web page choose Library under Campus Resources.
2. Choose Find It - Databases.
3. Scroll down and choose Web of Science (if you are accessing from off campus you will have to log on remotely- go to the helpdesk to get instructions).
4. Choose Easy Search.
5. Select checks for Science Citation Index Expanded.
6. Now, we want to use our paper as a starting point, so we will use a Person Search to find all papers by Susan Kalisz: Choose Person, and enter “kalisz s”. The papers are in reverse chronological order, so go to the second page and the last paper listed is the one you are looking for. Select it.
7. This is when the power of the search engine becomes clear. If we want to find all the related literature we have three choices:
   A. Cited References are all the papers that were cited in this paper (papers older than 1992).
   B. Times Cited gives you a list of all the papers that have cited this one since it was published (papers since 1992).
   C. Find Related Records searches for papers that cite papers and are cited by papers in common with this reference. This option will give you all of the papers that have show the highest connectivity with your selected paper in the web references. Note that the papers that are listed are much more numerous than the first two options and that they are listed in descending order of relationship with the original paper.
It should be obvious at this point that your work has just begun. The next step is to read the abstracts (you can do this on line) and text of these papers to determine if they really follow the thread of your topic. You will also need to obtain copies of the original paper and others that you identify as relevant to start building your bibliography. You can also use the list of cited references for the papers you find in this initial search to find more papers. In your initial exploration of the literature you will probably find that your ideas for your topic evolve as you learn about the literature that is available. You should expect that you will have to collect and read a much larger number of papers than what you will ultimately use in your research paper. Here are a few additional hints:

1. It is easy to get overwhelmed. Take it slow and narrow your search if you start finding too many papers.
2. It is better to be more selective at first- you can always expand your list later.
3. Don’t be biased just towards the newest papers- sometimes the older papers are critical for understanding your topic.
4. You will have to read more papers than you ultimately use. When writing a review it is ok to focus on the introduction and discussion of the paper to get the broad strokes.
5. Particularly early on in your research you will need to spend more time reading papers to get a general grasp of the topic. This effort will pay off in your additional library research since it will allow you to more quickly recognize relevant papers.
6. Expect to make several trips to the library and to conduct several searches before you completely flesh out your topic. If you do this well in advance of your due date it will help ensure that you come up with an acceptable review of your topic.
7. If you get stuck, confused, or overwhelmed, you are welcome to come by to ask questions. I’ll do my best to provide you with ideas that will get you on the right track.

Writing the paper. Now that you have most of the relevant literature on your topic on hand, it is time to start summarizing and synthesizing this information. Your ultimate goal is to produce a brief summary paper of your research topic that will give the reader an idea of 1) the most relevant papers, 2) the breadth and depth of the topic, and 3) the critical questions for past and future research. You should write the paper as a concise review of your topic, using the suggestions for scientific writing style that are outlined above. The format of the main body of the paper will be as described for a paper submitted to the journal Trends in Ecology and Evolution. Here is a brief summary:

1. Title should be short, but descriptive enough to let the reader to know what to expect.
2. The abstract should be less than 200 words.
3. The main body of the text should be less than 5000 words. The main body can be divided into sub sections to provide clarity, but the typical methods, results, etc., sections do not apply to a review paper.
4. You should include at least 10 papers, but no more than 30, in your cited reference list. The format for citations will be as in the examples above. Most of the citations should be from the primary literature- a few books and reviews are ok.