Goals:
This class has two major goals. The first goal is to gain a better understanding of how plants evolve. This is an important topic. Plants provide the food we eat, the oxygen we breathe, the homes that shelter us, the clothes we wear, and many of the drugs that protect us from disease. Plants mitigate pollution, lessen climate change, contribute to healthy watersheds, control erosion, provide habitat for animals, and add beauty to the places we live. Thus, there is considerable incentive for understanding their origin and diversification.

The second goal is to make the transition from textbook learning to learning from the scientific literature. We believe in total immersion, so there will be no textbook for this class. All readings will be from refereed journal publications. To ease the transition, we will employ a lecture/discussion format and focus on high-profile case studies and/or reviews of important topics in plant evolution. Our emphasis will be the evolution of land plants, of which approximately 300,000 species are extant today.

Expectations:

1. Preparation. This seminar will be a series of short lectures and discussions. To encourage preparation of the participants and to allow time for integration and synthesis before class, each of you should provide by 9 pm on Wednesday a one-paragraph summary of each paper as well as a list of three or four salient points/questions for discussion. Such points could include: (a) aspects of the study you did not understand or were unclear; (b) the significance of the research to the field; (c) interesting methodology; (d) potential flaws (e.g. problems with the experimental design or aspects of the analysis and interpretation); (e) further directions; (f) connections to prior readings. Make sure you provide evidence to support your points and be sure to properly cite any additional material where appropriate. For each paper, these assignments should be no more than one page double-spaced. Summaries will be graded on a scale of 0 to 6 points. Please avoid all types of plagiarism!

2. Discussion. Each of you will be asked to lead one Thursday discussion. This should include a brief 5-10 minute presentation that describes the goals, experiments, results, and conclusions of the papers to be discussed. Where appropriate, please introduce the plant(s) that are the focus of the discussion. You may also wish to provide a short list of questions or topics for discussion. It is your responsibility to encourage discussion among your peers, but not to dominate the conversation.

3. Experiments. Propose two experiments that ought to be done to advance our understanding of evolution. Ideally these would be experiments that you would be tempted to carry out, but this is not a requirement. For each explain: (a) the question that motivates the proposed study; (b) why it is important; (c) the appropriate methodology; (e) predicted results; and f) the potential significance of the findings. Your proposal also should provide background for the study, as well as a list of one or more appropriate organisms and why you chose them. The research proposals should be approximately 5 pages in length double-spaced (12 point font, Times New Roman). The first proposal is due February 28, whereas the second proposal is due April 6. In addition, you will be asked to summarize one of these experiments for the class in the last few days of the semester.

4. Quizzes. To encourage review and synthesis of lecture material, there will be short bi-weekly quizzes on lecture material. Each quiz will take place on Thursday at the start of class, be 10 minutes in length and cover four lectures. The questions will be short answer or multiple choice and be 10 marks in total.

Grades:
Grades will be based on preparedness as demonstrated by your paper summaries/discussion points, on your participation in class, and on the proposed experiments. There will also be short bi-weekly quizzes on lecture material to encourage you to review and synthesize important information and concepts. There will be a 10% penalty for each day an assignment is late or awaiting revision.

Paper summaries/discussion points 1% each (25% total)
Quizzes 20%
Written research proposal 20% each (40% total)
Presentation of research proposal 5%
Discussion presentation 5%
Participation 5%

Some Relevant Books:


