Instructions for the Qualifying Exam in
Ecology & Evolutionary Biology -- May 2011

The goals of the qualifying exam in this cluster are to address the fundamental concepts underlying Ecology and Evolutionary Biology, evaluate the student's knowledge of these concepts in written and oral forms, and assess the student's research potential in these fields.

Requirements:

1. Passing BIOL 65200 and BIOL 65300 with a grade of B (3.0 on the grade point scale) or better in each course. These two courses will expose students to all faculty members in the Ecology and Evolutionary Biology cluster.

2. Obtaining a grade of B (3.0) or better on a “Trends in Ecology and Evolution” - style literature review and accompanying oral presentation.

Course requirement: BIOL 65200/65300

BIOL 65200 -- Advanced Ecology Discussion

Offered in the fall semester, 1 credit. Weekly meetings will evaluate and discuss topical papers in the field. Each faculty member will be responsible for one or two meetings during the semester. The faculty member organizing each week’s discussion will determine the readings. As in any discussion class, the students must participate rather than just attend for the experience.

On the last class meeting, students will be given an assignment to critically evaluate one paper from a selection of additional articles provided by the faculty. Each participating faculty member will supply one paper. The students will complete their critiques within one week of receiving the assignment. Critiques will be assessed on writing quality, content, originality, rigor, and clarity.

The student's final grade for the course will be based on seminar participation (50%) and paper critique (50%).

BIOL 65300 -- Advanced Evolution Discussion

Offered in the spring semester, 1 credit. Weekly meetings will evaluate and discuss topical papers in the field. Each faculty member will be responsible for one or two meetings during the semester. As in Biol 65200, the faculty member organizing each week’s discussion will determine the readings.

On the last class meeting, students will be given an assignment to critically evaluate one paper from a selection of additional articles provided by the faculty. Each participating faculty member will supply one paper. The students will complete their critiques within one week of receiving the assignment. Critiques will be assessed on writing quality, content, originality, rigor, and clarity.

The student's final grade for the course will be based on seminar participation (50%) and paper critique (50%).
Qualifier: paper & oral presentation

Student must write and orally present a critical review of a topic of his/her choice. A grade of B (3.0) or better must be obtained to satisfy the qualifier requirements, with 30% of the grade determined from the quality of the oral presentation and 70% from the quality of the manuscript.

This paper should be a critical review of a fundamental idea (rather than a compendium of descriptions of studies) that is forward-looking. The goal is for the student (rather than the research advisor) to provide a thorough review of a current area and then identify a series of novel questions or develop a novel theoretical framework for answering existing questions. In other words, explain the state of the science in a given subdiscipline, identify where the gaps are, and propose novel questions or novel approaches to address an existing broad question. A good critical review will both identify the scientific problems and outline ways that we can solve them.

In preparing their paper, students are encouraged to follow the format of the journal Trends in Ecology and Evolution (TREE): http://www.sciencedirect.com/science/journal/01695347. TREE publishes both review and opinion papers, and students are encouraged to read examples of both to get a sense of the scope, style, and degree of specificity involved.

TREE defines review papers as
“concise reviews of recent research in rapidly progressing or emerging areas. They should briefly set the background and then concentrate on setting recent findings in context. They should provide a balanced view of developments, even in fields that are controversial, and authors must never concentrate unduly on their own research.”

TREE defines opinion papers as
“a personal viewpoint on a research-related topic, rather than a balanced review of the topic. The aim should be to stimulate debate or new research, cover controversial topics, or provide a new framework for, or interpretation of, an old problem or current issue, or speculate on the implications of some recent research.”

For the final preparation of the paper students can follow TREE guidelines for review papers: http://download.cell.com/images/edimages/Trends/ecologyevolution/TREE_Review_Author_Guidelines_Feb_2009.pdf

Students can choose the specific topic of their paper/oral presentation. The paper may even be within the general realm of their intended thesis research. However, the scope of the paper must be significantly broader than the student’s dissertation topic, and the paper must aim to merge at least one other subfield in ecology and evolution with any discussion related to the thesis topic. For instance, if the thesis topic was “mechanisms antbirds use to exchange information about ant colonies”, the paper might review mechanisms of cooperation and reciprocity across taxa.

We encourage students to consider this paper as an opportunity to expand their thinking on a biological issue and to integrate novel ideas that may potentially influence their dissertation (i.e., think outside of the box). This is an opportunity to produce a publishable manuscript.
Qualifier exam steps:
The qualifying exam convener will select a review panel of four faculty members, including the (intended) research advisor, to evaluate the paper and the oral presentation for each student. Each review panel shall select its own chair. The review panel will meet with the student twice: (1) by October to evaluate the review/opinion prospectus, and (2) after the preliminary draft/oral presentation to provide feedback. The panel will also meet within a week of the 6 May deadline to evaluate both the written and oral presentation, and if necessary to provide further guidance to the student.

1. Students must arrange a meeting with the review panel by October 15th, 2010

Two days before the meeting, students should submit a preliminary prospectus (500 word summary) to their review panel members. During this meeting, students are expected to orally outline their idea for the paper/oral presentation to the review panel. This presentation should be short (maximum 15 min) and should include a rationale for the idea, why the idea is relevant, and the initial literature sources consulted. Students are allowed to use Power Point, but this is not a requirement. The idea of this meeting is to ensure discussion with the panel so that students get as much feedback as possible early in the process of developing their ideas.

2. Students must submit the final prospectus for topic matter approval by 1 December 2010.

The final prospectus (with a maximum length of 1,000 words) that outlines the student’s proposed paper should be submitted to the qualifier convener. The review panel will evaluate the student’s prospectus, each member providing approval or disapproval of the topic by 8 December.

There must be a consensus among the responding faculty that the prospectus reflects the student's independent achievement; in addition, the topic must not be merely an extension or restatement of previous work done by the student (e.g., the student's master’s degree or undergraduate honors thesis research).

The following additional criteria will be used to evaluate the final paper, so that the prospectus should address them:

1. Clarity and logic of the rationale and theoretical concepts important for the topic.
2. Comprehensiveness of the literature review (prospectus should provide a strategy).
3. Novelty of the questions or conceptual approaches to answer an existing question.
4. Logic of the proposed route from “where we are now” to “where we might go”.

If the topic is not judged suitable by the majority of faculty reviewing it, the qualifier convener will advise the student as to what modifications are necessary for approval. Students are encouraged to wait until the prospectus has been approved before developing the rest of the paper.

3. Students must have a final, approved prospectus by 17 Dec 2010.

During the spring semester, the student should develop oral and written versions of the approved prospectus. Good ideas can be transformed into excellent ideas by sharing them with the scientific community and receiving constructive criticism. Consequently, consultation with peers (grad students/ postdocs) is encouraged. Consultation with faculty (not only their research advisors, but also other faculty within the cluster and elsewhere, even other Departments on campus) is also strongly encouraged. Such consultations will likely provide the student with a diversity of views and suggestions, some even contradicting others. It is the student’s responsibility to consider these
suggestions and meld them with their own views on the subject to produce a paper that is the student’s own work (i.e., the written version should not be edited by the (intended) research advisor).

4. A draft of the written paper, followed by an oral Ecolunch presentation of its main points must be scheduled before the end of spring semester 2011.

The Ecolunch presentation (40-45 min presentation, 15-20 min questions) has two functions. First, the student is expected to provide a reasonably detailed overview of his/her ideas. The quality of presentation (clarity, organization, review quality, and novelty of future directions) will be considered in the overall grade. Second, students should see this as a good mechanism for getting additional feedback on their project, which they can incorporate into the final paper. With this in mind, the student should provide the qualifier convener two things:

A draft of the written review paper **one week before the scheduled oral presentation**. The convener will distribute this draft to the review panel, and its members will provide feedback to the student immediately after the oral presentation in a private meeting. No grade will be given for this draft.

A copy of his/her powerpoints **no later than the day of the presentation**. The convener will distribute the presentation to all faculty in the cluster, who will be encouraged to provide feedback and a grade to the convener within a week of the presentation. The convener will relay feedback to the student as quickly as possible.

5. Paper due by no later than 6 May 2011

The qualifier convener will distribute the paper to the review panel. Within one week, these faculty members will evaluate and critique the oral and written versions of the student’s proposal/paper, providing written comments and a grade for both the oral presentation (30% of total grade) and the written paper (70% of total grade). Each student’s panel will meet to determine the final grade and, if the student does not pass, to give one further round of feedback.

6. Paper revisions due by 3 June 2011, if applicable

If the student does not obtain a passing grade (B or 3.0) on their review paper, he/she will have the option of revising it in accordance with faculty comments. If a revised paper is submitted, the students must attach the critiques that they received from the faculty on their initial version along with point-by-point responses explaining how they addressed the particular concerns (as is done when revising a manuscript for publication). The grades on the revised version will replace the previous grades for the written portion of the paper.

If a student fails to obtain a B or better grade in any of the requirements (discussion courses or paper/oral presentation), the student must retake and pass the relevant part(s) of the qualifying exam in the subsequent year to remain in the Ph.D. program.

The qualifier convener in 2010-2011 will be Esteban Fernandez-Juricic.