BIOLOGY 59500 - Teaching Evolution: Online Course for Teachers
http://bilbo.bio.purdue.edu/~npelaez/evolution/

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765.494.0876 (fax)

Office Hours: By appointment. Email response within 48 hours.

Optional face-to-face meeting: Monday at 6:45 pm - 8:50 pm in Lilly Hall of Life Sciences G424 during first week of class or on Tuesday, Sept 8 in Lilly G-127 at 6 pm during the third week of class. Web-based participation is available for the Sept 8 meeting with Adobe Acrobat Connect (formerly Macromedia Breeze) for those using a computer headset with microphone. The Cyber Acoustics AC-201 "Speech Recognition Stereo Headset with Boom Mike" costs about $10 online. Meetings are held at Purdue University in Lilly Hall G-127 or contact npelaez@purdue.edu for details about Web-based participation.

SYLLABUS

Evolution is one of the most important and most widely misunderstood concepts in science. Teaching Evolution is an online course to help you deepen your understanding of evolutionary concepts, develop instructional strategies, and address obstacles in the teaching of evolution. It may also be of interest to anyone who would like to learn more about evolution and how to teach it.

Teaching Evolution addresses the history of evolutionary thought and how scientists investigate the history of life on earth. The instructional strategy is to focus on “why” questions about ultimate causation: Why do specific organisms have particular features rather than others? The course will help teachers deepen their understanding of evolutionary concepts, develop instructional strategies, and address obstacles in the teaching of evolution. Those who successfully complete this course will know: (1) The nature of scientific processes, (2) The value and limitations of scientific process, (3) The scientist's use of terms such as fact, law, theory, and hypothesis, (4) How multiple forms of evidence are used to test theories, (5) Applications of scientific processes in different situations, and (6) How and why evolution is a cornerstone of biology.

Throughout their study of evolution, participants in this course will (a) Explore methodologies for teaching evolution (b) Examine how student misconceptions about evolution can be raised and addressed, (c) Understand how assessment strategies are integrated into inquiry-based science lessons, (d) Examine how questions facilitate student thinking about and discussion of science, (e) Identify what it takes to develop a respectful, productive science learning environment, (f) Understand legal and professional support for teaching evolution, (g) Learn strategies for minimizing conflict about teaching evolution by understanding how students of diverse race, ethnicity, religion, and cognitive abilities perceive the idea of evolution, (h) Engage in reflective practices and make continuous efforts to improve while using technology for the design of instruction, and (i) Collaborate with peers, professors and others in a professional manner.

INSTRUCTIONAL MATERIALS


Interactive Web: http://bilbo.bio.purdue.edu/~npelaez/evolution/index.html

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In addition to reading and writing assignments, using the interactive web, you will complete eight interactive online course sessions that cover rigorous evolutionary content (sessions 1-5); methodologies for teaching evolution in technology-rich school classrooms (sessions 6-7); and strategies for dealing with the controversy that sometimes arises in teaching evolution (session 8). Each session uses a variety of multimedia resources to explore different facets of evolution and teaching. The course draws on the PBS Evolution broadcast series, primary data sources, interactive Web activities, streaming videos illustrating concepts and instructional strategies, and a digital Evolution
library to extend conceptual learning. Activities include reading, reflective writing, discussion, concept mapping, and peer review.

**SCHEDULE OF ASSIGNMENTS**

See [http://bilbo.bio.purdue.edu/~npelaez/evolution/schedule.html](http://bilbo.bio.purdue.edu/~npelaez/evolution/schedule.html) for assignment details and deadlines. At first the various activities may seem confusing but if you step through this schedule week by week and do not leave your work for the last minute you should be able to handle the workload. Instead of three hours of lectures on campus (plus driving and parking and study time), the schedule is planned with activities that require about eight hours of asynchronous online activity each week in addition to readings and other assignments. Activities plus reading assignments and assessments are due on Mondays by midnight. Discussions are conducted and assignments submitted using Blackboard.

*Textbook and reading assignments.*

Textbook readings and assigned activities, including quizzes, should be done by the Monday following the week when the assignment appears on the schedule. It is essential that you complete these activities throughout the scheduled week rather than putting them off until the last minute. Read each text chapter early in the scheduled week, explore the associated web pages, answer the posted review questions both for yourself and in the corresponding discussion forums (see below), respond with thoughtful discussion to other posted answers in these discussion forums, take a “pre-quiz” on the material for a particular chapter, discuss the concepts more, and then take the culminating timed quiz to evaluate your understanding of the chapter. Note that your pattern of posting to the discussion forums will indicate how involved you are with the content of the course, and these will be graded. If you regularly post only in the last day before the quiz deadline, then you are not allowing sufficient time for your peers to respond to your posts. Likewise, if you post only early in the scheduled week failing to follow up on your peers’ subsequent comments on your posts then you are not engaging in the intended discussion.

*Email and Discussion Forums*

*Weekly review questions* will be addressed through participation in an online collaborative Blackboard Vista Discussion Board. The goal is for you to participate in educated discussions. From Monday through Friday, the instructor will monitor the discussion daily to guide the discussion when needed but may check in only once over the weekend. Ideas presented are to be substantive and supported by reference to the textbook, online resources, or empirical evidence. Try to post on a wide variety of discussion questions. Post responses, present issues, and respond to ideas or issues presented by other students. Try to be a "first poster" on one discussion question each week. But please **be the early poster for only one item for each chapter of assigned reading.** Save your ideas for some of the threads until late in the week. In this way you can see how your initial ideas compare to the ideas posted by others. The review questions are to help you discuss what you learn from the assignments and to clarify your thoughts about the content presented, so there is no penalty for posing doubtful ideas.
Use the following rubric to help you improve your discussions about evolution and to identify evidence that reflects the quality of your scientific discussion skills. The five questions are scored on a 0-2 scale for a total of 10 points. Try to participate so that you can answer these questions as "yes, definitely." Work to turn "no" answers into "yes" answers. Items where it becomes difficult to answer either yes or no locate your developmental area that should be your focus. Your score is calculated as follows:

No = 0 points.
Difficult to answer yes or no = 1 point.
Yes, definitely = 2 points.

1) Do you write at least ten substantive posts and present new ideas and do you start at least one discussion thread and participate in most of the threads each week?

2) Do you post at various times throughout the week (i.e. early/middle/late in each week)? (Provide comments and new information in a regular manner.)

3) Do you read others’ ideas and use their comments and do you respond to other postings to raise new ideas and/or to ask new questions? (Interact with a variety of participants.)

4) Do you write substantive posts, show skepticism, and demand evidence to support statements and do you revisit the discussions to respond to what other students write about your postings? (Offer a critical analysis of existing posted ideas or introduce a different interpretation to an existing idea.)

5) Is your writing clear and free from mechanical errors (complete sentences, well organized, grammatically correct, and free of spelling errors) and referenced to your sources (with page numbers or URLs)?

When you contact the instructor of record (Dr. Pelaez) by email, you will get a response within 48 hours if you include BIOL5950 EVOLUTION in the subject line. In case of technical problems or emergencies, you can also contact the instructor via phone or fax through the Department of Biological Sciences. Please provide a phone number and times when you can be contacted for a return call. Extra credit (5 pts.) will be assigned if you reply within 48 hours to special email alerts sent by the instructor to clarify tasks. Extra credit BIOL5950 EVOLUTION will appear in the subject line of emails when a response is expected. Please make every attempt to follow this subject line convention because email SPAM has become so common, including emails with subjects such as “Urgent reply requested.”

**Assessment of knowledge and ability to use the course content**

Each week, you will complete a practice quiz followed by a timed quiz or an essay writing assignment followed by peer review.
**Quizzes:** Practice self-assessment quizzes with questions that require critical thinking about the readings and online activities will be posted on Blackboard. After each quiz deadline, explanations of the answers can be posted on a Blackboard Quiz Discussion forum, but please refrain from discussing specific answers to quiz questions until after the deadline. Instead, ask about the ideas. Once you are ready, based on your self-assessment and discussion board participation, you will take a timed quiz on Blackboard for credit. Self-assessment quiz and graded quiz deadlines are posted on the assignment schedule.

**Calibrated Peer Review™ Essay Assignments**

Calibrated Peer Review™ is a network tool that will be used to help you practice writing and revising scholarly essays. CPR is accessible from a campus computer or any place that has Internet access using an assigned username and a password you select at [http://128.97.1.49:82](http://128.97.1.49:82) (Due to an upgrade, this URL for CPR at UCLA is subject to change soon when a Purdue system will make it possible for you to log in with your Purdue ID). CPR has three important deadlines per assignment: the release of source material, the text entry deadline, and the peer/self review deadline. The tentative deadlines are specified within each CPR assignment to alternate with quiz deadlines. Please check the schedule on the Web site and the Blackboard announcements for any changes to the deadline information. Below is a table with the deadlines expected for the four CPR assignments to be completed this semester. You will be asked to write an essay with a word limit around 1000 words for each CPR assignment. Note that as a free service at Purdue, to help you improve your writing you can access the Online Writing Lab (OWL) ([http://owl.english.purdue.edu/owl/](http://owl.english.purdue.edu/owl/)) for writing resources. Check each assignment for grammar, mechanics, academic writing quality, and the word limit.

<table>
<thead>
<tr>
<th>Week</th>
<th>CPR Assignment</th>
<th>Source Available</th>
<th>Text Entry Deadline</th>
<th>Peer/Self Review Deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-4</td>
<td>Darwin’s Discovery (Sep 7 Labor Day)</td>
<td>08/24/09</td>
<td>09/14/09</td>
<td>09/21/09</td>
</tr>
<tr>
<td>5-6</td>
<td>Applied Natural Selection</td>
<td>09/21/09</td>
<td>09/28/09</td>
<td>10/05/09</td>
</tr>
<tr>
<td>9-10</td>
<td>Human Influence (Oct 12-13 fall break)</td>
<td>10/5/09</td>
<td>10/19/09</td>
<td>10/26/09</td>
</tr>
<tr>
<td>11-13</td>
<td>Evolution Misconceptions (Nov 25-28 Thanksgiving)</td>
<td>10/26/09</td>
<td>11/16/09</td>
<td>11/30/09</td>
</tr>
</tbody>
</table>

**Teaching Evolution Portfolio**

At the end of the course, you will submit a teaching portfolio with an overall plan for teaching some aspect of evolution in the classroom. The portfolio may be a unit plan with a few lessons as examples, or, for those who teach evolution as a unifying theme throughout a course, then the structure of that approach would be described and samples of lessons would be included. The lessons will be developed using the principles of “Backward Design” according to guidelines given during the course of the semester.

One expectation of the “Backward Design” approach is to facilitate accommodation of instruction to diverse learners with sensitivity for students with disabilities, second
language learners, and those who face reading, emotional, intellectual, or educational challenges. Accommodation plans will be developed collaboratively to help you be open and interested in new ideas as you develop commitment to keeping the joy of learning alive for all students. Through thoughtful approaches, you will gain confidence in your ability to access resources and gain understanding of how to make evolution content meaningful to diverse learners.

You will work with a partner on the teaching portfolio assignments. One portfolio is due for the pair of students. You will be asked to plan ways to distribute the work and self-assess and peer review each other’s participation. The instructor and your peers will provide feedback on components of the portfolio you submit by various deadlines on the assignment schedule. Use their feedback to revise your work for the final portfolio.

Final Exam

The final exam will consist of two parts: (1) a mini-lesson from your Teaching Portfolio that you will present within 10 minutes (face-to-face or remotely using Adobe Connect) and (2) a multiple choice, short question, and essay exam on the Evolution course content. If you cannot participate in a face-to-face meeting for the final exam at Purdue West Lafayette, you will need a proctor. Contact npelaez@purdue.edu for a copy of the proctor request form. Arrangements must be made three weeks before the final exam!

Possible points expected for the course are distributed as follows:

<table>
<thead>
<tr>
<th>Assignment Category</th>
<th>Activity</th>
<th>Point Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Discussion Forums (7, 10 points each)</td>
<td>70</td>
</tr>
<tr>
<td>2</td>
<td>Pre-quizzes (5, 5 points each)</td>
<td>25</td>
</tr>
<tr>
<td>3</td>
<td>Quizzes (5, 10 points each)</td>
<td>50</td>
</tr>
<tr>
<td>4</td>
<td>CPR”™ assignments (4, 20 points each)</td>
<td>80</td>
</tr>
<tr>
<td>5</td>
<td>Teaching portfolio development modules</td>
<td>55</td>
</tr>
<tr>
<td>6</td>
<td>Peer review of portfolios</td>
<td>20</td>
</tr>
<tr>
<td>7</td>
<td>Final Exam</td>
<td>100</td>
</tr>
<tr>
<td>8</td>
<td>Final Portfolio</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL POINTS POSSIBLE (TENTATIVE)</strong></td>
<td><strong>500</strong></td>
</tr>
</tbody>
</table>

GRADING

Your final grade in the course will be based on the percentage of the total points you accumulate according to the scale depicted below. Course grades are based upon mastery, not a normal curve. The number of A's depends only on how well you perform. Because there will be no grading on the curve you should cooperate and not compete with your fellow classmates. Give advice to help others meet the standards for each assignment. A PASSING GRADE IS REQUIRED ON EACH ASSIGNMENT CATEGORY TO PASS THE COURSE. Since all exams and written work will be given
a numerical score, you can estimate where you stand in the course at any time with the following letter grades and their corresponding values, assigned as follows:

<table>
<thead>
<tr>
<th>Percent of Possible Points</th>
<th>Letter Grades</th>
<th>Their Corresponding Grade Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>90-100%</td>
<td>A</td>
<td>4.0</td>
</tr>
<tr>
<td>80-89.9%</td>
<td>B</td>
<td>3.0</td>
</tr>
<tr>
<td>70-79.9%</td>
<td>C</td>
<td>2.0</td>
</tr>
<tr>
<td>60-69.9%</td>
<td>D</td>
<td>1.0</td>
</tr>
<tr>
<td>below 60%</td>
<td>F</td>
<td>0.0</td>
</tr>
</tbody>
</table>

MAKE-UP POLICY

Missed assignments can be made up or rescheduled ONLY under the following conditions:

1. Arrangements are made a week or more prior to the exam or assignment for important, unavoidable conflicting activities (e.g., surgery, out-of-town job interview, etc.). Documentation is required.
2. For illness, personal tragedy, or unavoidable emergencies, call the instructor or leave a message with the department before the assignment or within two days thereafter.

All make-up assignments will be done immediately following the final exam (not during the course of the semester). Contact your instructor to confirm whether you meet the requirements for make-up exams or assignments. That is your responsibility. Failure to follow the above guidelines will result in a zero grade for an exam or assignment. Failure to complete any graded assignment may result in a grade of “incomplete” for the course.

SPECIAL NEEDS. If you have been certified by the Office of the Dean of Students as someone needing a course adaptation or accommodation because of a disability OR if you need special arrangements when a building must be evacuated, please contact your instructor during the first week of classes.

If you have a letter from ODOS stating that you may have extra time on the exams or use the testing center, you will also need to make arrangements with your instructor at least a week before each scheduled exam to let us know your situation and to find out if the accommodation can be done during the regularly scheduled exams. Otherwise, you will take the exam in the ODOS testing center or with the other make-up exam students after the final exam.

GRADES ON BLACKBOARD. It is your responsibility to make sure the grades recorded on Blackboard are correct. You should let your instructor know within one week if you think something was graded incorrectly. All of this should be done in a timely manner. Grades in Blackboard (other than the final exam) should be finalized by the end of Dead Week.

DROPS AND WITHDRAWALS

Purdue students are subject to Purdue drop and withdrawal policies. Refunds may be issued during weeks one and two (80 percent), three and four (60 percent), and five and
six (40 percent) of a sixteen-week semester. Refunds for this course will be prorated according to the number of weeks in our schedule. Refunds will not be issued for drops after the fifth week. Improper withdrawal could affect fees and grades.

TECHNOLOGY AND ASSESSMENT TOOLS
Calibrated Peer Review: http://128.97.1.49:82 (subject to change soon)
Blackboard Vista http://www.itap.purdue.edu/tlt/blackboard/index.cfm
You must remember your Username and Password for the CPR and Blackboard tools.

TECHNOLOGY REQUIREMENTS
Ideally, you should have “fully enabled browsers,” and a fast Internet connection, but we recognize that there may be limitations. In that event, here is an outline of what is needed to make the most of the course features at the “user level.”

User Types:
**Fully enabled web browsers**
Some content will be provided in interactive formats such as Flash, Shockwave and streaming video in order to enhance understanding and motivation for learning. Use of these materials may require higher bandwidth or greater download time for modem users and will require installation of Flash, Adobe Acrobat Reader, Real Player or QuickTime, and Macromedia Shockwave.

**Text and graphics browsers**
Interactive content will also be represented in a non-interactive way as text and graphics.

**Text-only users & Screen-Reader users**
Non-interactive content will be fully accessible with images turned off. Interactive content will be accessible in versions that are compatible with current screen reader technologies.

Browser Requirements:
- **Minimal requirements for Interactive browsers:**
  - Internet Explorer 4 or higher, Netscape 4.7 or higher with Shockwave plugin/Active X control version 8 or higher, Flash 5 or higher plugin
- **Minimal requirements for text and graphics browsers:**
  - Any HTML 4.01 or higher browser
- **Minimal requirements for text-only users:**
  - Any Web browser

Internet Connection:
- **Minimal requirements for interactive content:**
  - 56kbps connection
  - Interactive pages shall not exceed 120K of uncached content to allow for streaming.
- **Minimal requirements for text/graphics content:**
  - 56kbps connection
  - The text and graphics portion of any page shall not exceed 50k of uncached content.
- **Minimal requirements for text connection:**
  - 28.8kbps connection
  - The text portion of any page shall not exceed 20k.
ACADEMIC DISHONESTY POLICY
Academic dishonesty includes such things as cheating, inventing false information or citations, plagiarism, and helping someone else commit an act of academic dishonesty. It usually involves an attempt by a student to show possession of a level of knowledge or skill that he or she does not possess. With the start of fall semester, instructors will be able to check the originality of their students’ papers through a service called SafeAssign, which is built into Blackboard, Purdue’s course management system. For this class we will use a SafeAssignment depository to which you can directly submit your paper after you upload it to CPR, or I can upload all of the CPR papers directly without your involvement (See http://www.itap.purdue.edu/newsroom/detail.cfm?NewsId=1955). Acts of academic dishonesty will not be tolerated. To become familiar with Purdue’s official policy, see http://www.purdue.edu/ODOS/osrr/academicdishonesty.htm to read the university regulations.

CAMPUS EMERGENCY: In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances. Information regarding changes in the course will be made available through email (npelaez@purdue.edu), phone (49-63261), and the course web page.

I value your perceptions about the course and your instructors
Periodically throughout the semester and especially during the last two weeks of the semester, you will be provided opportunities to evaluate this course and your instructors. My goal is to provide you with a challenging and useful learning experience. If at any time you have concerns, please talk to me. In fact, I will periodically give you the chance to provide your feedback. Please keep me informed of any issues at all times. Your participation in this evaluation is an integral part of the development for this course. To this end, Purdue has transitioned to online course evaluations. On Monday of the fifteenth week of classes, you will receive an official email from evaluation administrators with a link to the online evaluation site. You will have two weeks to complete this evaluation. Your feedback is vital to improving education at Purdue University. We strongly urge you to participate in the evaluation system.

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