

Biological Sciences 3040: Evolution – CxC
Location: 220 Tureaud Hall
Time: Monday/Wednesday/Friday, 8:40 – 9:30 pm
Professor: Dr. Bryan Carstens
Office: Life Sciences Annex 114
carstens@lsu.edu



Office Hours: MW 9:30-11:00
Prerequisite: Genetics (BIOL 2153)
Course Web Site: <http://www.lsu.edu/faculty/carstens/courses.html>

Recommended texts:

1. Freeman & Herron. *Evolutionary Analysis* 4th Edition, Prentice Hall
2. *Science, Evolution, and Creationism*. The National Academies Press. Free pdf available at: http://www.nap.edu/catalog.php?record_id=11876
3. Selected chapters of *On the Origin of Species*, by Charles Darwin. Available on-line at: <http://www.talkorigins.org/faqs/origin.html>
4. *Evolution: The remarkable History of a Scientific Idea*, by Edward J Larson.

Grading:

20 %	<i>Exam 1</i>
25%	<i>Exam 2</i>
10 %	<i>Presentation</i>
20 %	<i>Research paper Literature Reviews</i>
5 %	<i>Research paper, Introduction</i>
20 %	<i>Research paper, Final Draft</i>

Grading Scale:

A = >90%, B = 80-90%, C = 70-80%, D = 60 – 70%, F = <60%. Curved by highest grade.

Schedule:

- 8.24.09—Intro: What are phylogenies? *FH chapter 1, 4.*
8.26.09—Fossils! *FH chapter 2. Science, Evolution, and Creationism chapter 1.*
8.28.09—Origin(s) of life, science vs. speculation, and metaphysical questions about the LUCA. *FH chapter 17.*
8.31.09—Biological thought before Darwin. *Larson chapters 1-2.*
9.2.09—The Beagle, islands and lines, and the discovery of natural selection. *Larson 3-5.*
9.4.09—Evidence for evolutionary change. *FH Chapter 3; Jones Reithel 2001.*
9.7.09—Labor day, no class.
9.9.09— The modern synthesis. *Larson Ch. 7 Proposal due.*
9.11.09— What is Natural Selection? *Langerhans et al. 2005 Origin chapters 3-4.*
9.14.09—Genetic variation: What is it, how does it form, and just how variable is the typical species? *FH chapter 5.*
9.16.09—The genomics revolution and the human genome project: \$3 billion and worth every penny. *DeLisi (2008); Genome Guide.*
9.18.09—Hardy-Weinberg equilibrium, and a mathematical proof of evolution. *FH chapter 6. Ten potential references due.*
9.21.09—Adding selection to the model. *FH chapter 6.*
9.23.09—Mutation, genetic drift, and heterozygosity. *FH chapter 7.*
9.25.09—Non-random mating: Why you shouldn't mate with your cousin (even if they are hot)! *FH chapter 7.*
9.28.09—Migration, gene flow, population substructure, and the Wahlund effect. [Lit. Rev. I due.](#)
9.30.09—Fall Holiday, no class.
10.2.09—Fall Holiday, no class.

- 10.5.09—Speciation I: Concepts, definitions, and allopatric divergence. [Lit. Rev. II due.](#)
- 10.7.09—Linkage, hitchhiking and draft. *FH chapter 9.*
- 10.9.09—Quantitative genetics. *FH chapter 9.* [Introduction to paper due.](#)
- 10.12.09—[Exam I: \(Aug. 24th—Oct. 8th\).](#)
- 10.14.09—Adaptation. *FH chapter 10.*
- 10.16.09—Kin Selection & the evolution of altruism. *FH chapter 12.*
- 10.19.09—Sexual Selection. *FH chapter 11.*
- 10.21.09—Evo-Devo & Macroevolution. *FH chapter 18.* [Outline due.](#)
- 10.23.09—Extinction: All things come to an end.
- 10.26.09—Adaptive Radiations. [Original Table/Figure due.](#)
- 10.28.09—Speciation II: Reproductive isolation and secondary contact. *FH chapter 16.*
- 10.30.09—Speciation III: Speciation by adaptation. [Lit. Rev. III due.](#)
- 11.2.09—The evolutionary lineage leading to *H. sapiens* and the other great apes. *FH chapter 20.*
- 11.4.09—Are we still evolving? Domesticated animals, lice, and agriculture. *FH chapter 20. Origin chapter 1.*
- 11.6.09—What makes us human? Tools, speech, or *BBQ*? *FH chapter 20.* [Lit. Rev. IV due.](#)
- 11.9.09—Models of human evolution. *FH chapter 20.*
- 11.11.09—Cultural evolution: Do religions evolve? [Abstract of paper due.](#)
- 11.13.09—Cultural critics of evolutionary theory. *Larson chapter 9. Science, Evolution, and Creationism (all).*
- 11.15.09—Is *Intelligent Design* intelligent? *Larson chapter 11.*
- 11.18.09—Student presentations (5).
- 11.20.09—Student presentations (5).
- 11.23.09—[Exam II \(Oct. 5th—Nov. 13th\).](#)
- 11.25.09—[Thanksgiving, no class.](#)
- 11.27.09—[Thanksgiving, no class.](#)
- 11.30.09—Student presentations (5).
- 12.2.09—Student presentations (5). [Term paper due.](#)
- 12.4.09—Student presentations (5).
- 12.8.09—Final Exam period: Student presentations (10).

Course notes: Most of the factual material will be presented via lectures, with some supplementation. I will make available a pdf containing the basic material from each lecture available on the course web-site well before each class, but there will be a lot of material presented via whiteboard or verbally. Reading assignments will be posted on the first page of the lecture, as well as on the syllabus. Few students will be able to pass the course without reading the assigned readings.

Research paper assignment: Write a paper that explores the evolution of something: a particular group of organisms, anatomical feature, or behavior, etc. Reference a minimum of ten sources from the primary literature. Address relevant questions such as: Why is this topic important? How well do scientists understand the evolution of this group, feature, or behavior? Critique each piece of evidence, and suggest what types of information would be valuable to add to the existing data. Each paper must include:

- i. Abstract—a short (1 ¶) summary of the topic, findings, and conclusion.
- ii. Introduction—why is this topic of interest/important?
- iii. In depth synopses of at least five (5) research papers from the primary literature that are relevant to the topic.
- iv. An original table and figure, created using information from the primary literature or other sources.
- v. A conclusion, with a summary of the information and an evaluation of the evidence.
- vi. References, written following the citation style of the journal [Evolution](#).

Grading will be based on both scientific content and writing style. To facilitate the process, many portions of the term paper will be turned in throughout the semester, graded and returned. All written assignment must use 1 inch margins, Times New Roman 12 pt font, and double-spacing. All written assignments must be turned in as paper copies and electronically as PDFs. PDFs of papers reviewed for the Literature Reviews must also be turned in. All assignments will be electronically checked for plagiarism, and all plagiarists will be reported and given a zero for that assignment.

Presentation. Each student will present a short (8 minutes) talk on the topic of their term paper and answer one question in front of the class. Grading will be based on factual content and presentation.

Open door policy: Please call my office, e-mail me, or drop by my office anytime you have a question or concern. My office is close to the Union in the middle of campus, and I hope to get visits from all of you during the semester. Office hours are a formality; you can come by at other times if needed.

Communication-Intensive Course: This course is certified as a “Communication-Intensive Course” and meets all of the requirements explained on the CxC Web site: <http://cxc.lsu.edu>, including the following: Emphases on formal and informal assignments in written and visual communication, class time spent on communication, 40% of the final grade based on communication projects, revisions after faculty feedback on 2 formal projects (Research Paper & Poster Presentation), and a student/faculty ratio of no more than 35:1. Because it meets these requirements, students may count it toward “Distinguished Communicator” certification on LSU transcripts.

The College of Basic Sciences has its own Communication Studio, located in 155 Howe-Russell. Staff members in the studio are available to assist students with the professional execution of poster production, oral presentations, scientific writing documents, and other communication assignments. Visit their website for more information: <http://cxc.lsu.edu/basc>

Letters of Recommendation: I am happy to write letters of recommendation for those of you applying to graduate school, medical school or other post-BS programs, but I have two requirements for letters—the student must earn an ‘A’ in my class, and you must visit with me during the semester so that I know something of your personality, background, objectives and goals. These requirements are in place so that I can write an effective letter on your behalf.

Reminder: The LSU code of student conduct can be found here: [http://appl003.lsu.edu/slas/dos.nsf/\\$Content/Code+of+Conduct?OpenDocument](http://appl003.lsu.edu/slas/dos.nsf/$Content/Code+of+Conduct?OpenDocument)

Particularly important:

5.1. Academic Misconduct

- A. High standards of academic integrity are crucial for the University to fulfill its educational mission. To uphold these standards, procedures have been established to address academic misconduct.
- B. An instructor may not assign a disciplinary grade, such as an "F" or zero on an assignment, test, examination, or course as a sanction for admitted or suspected academic misconduct in lieu of formally charging the student with academic misconduct under the provisions of this Code.

C. "Academic Misconduct" includes, but is not limited to, cheating, plagiarism, collusion, falsifying academic records, and any act designed to give an unfair academic advantage to the student (such as, but not limited to, submission of essentially the same written assignment for two courses without the prior permission of the instructors, providing false or misleading information in an effort to receive a postponement or an extension on a test, quiz, or other assignment), or the attempt to commit such an act. Other specific examples of academic misconduct include:

1. Copying from another student's test paper or assignment;
2. Allowing another student to copy from a test paper or assignment;
3. Using during a quiz/test the course textbook or other materials such as a notebook normally brought to a class meeting but not authorized for use during a quiz/test by the person giving the quiz/test. Having such forbidden material open and in sight of the student will be considered prima facie evidence of use;
4. Failing to thoroughly follow requirements related to the preparation and presentation of work, including group projects, submitted for credit in a manner that results in submitting as one's own the work of another or misleading an instructor as to the condition under which the work was prepared;
5. Collaborating during a test or any other assignment with any other person by giving, receiving or otherwise sharing information without prior approval of the instructor. Speaking to another person without the consent of the person proctoring the exam may be considered prima facie evidence of collaboration;
6. Using specially prepared materials (e.g., notes, formula lists, notes written on student's clothing or body) during a test. Bringing such forbidden material to a test will be considered prima facie evidence of use or attempted use;
7. Stealing, buying, or otherwise obtaining through unauthorized access, all or part, including answers, of an unadministered test;
8. Seeing or giving away all or part of an unadministered test, including answers to an unadministered test;
9. Bribing any other person to obtain an unadministered test or information about an unadministered test;
10. Substituting for another student, or permitting any other person to substitute for oneself, to take a test;
11. Submitting as one's own, in fulfillment of academic requirements, any work (such as, but not limited to, a theme, report, term paper, essay, computer software, other written work, painting, drawing, sculpture, or other scholastic art work) prepared totally or in part by another;
12. Selling, giving, or otherwise supplying to another student for use in fulfilling academic requirements any theme, report, term paper, essay, computer software, other written work, painting, drawing, sculpture, or other scholastic art work;
13. Entering a building or office for the purpose of changing a grade in a grade book/computer, on a test paper, or on other work for which a grade is given;
14. Changing, altering, or being an accessory to changing and/or altering a grade in a grade book/computer, on a test paper, on other work for which a grade is given, on a "drop slip," or on any other academic record of the University;
15. Entering into an arrangement with an instructor to receive a grade of "F" or any other reduced grade in a course, on a test, or any other assigned work in lieu of being charged with academic misconduct under the Code of Student Conduct;
16. Committing Plagiarism. "Plagiarism" is defined as the unacknowledged inclusion of someone else's words, structure, ideas, or data. When a student submits work as his/her own that includes the words, structure, ideas, or data of others, the source of this information must be acknowledged through complete, accurate, and specific references, and, if verbatim statements are included, through quotation marks as well. Failure to identify any source (including interviews, surveys, etc.), published in any medium (including on the internet) or unpublished, from which words, structure, ideas, or data have been taken, constitutes plagiarism;
17. Violating any applicable professional code of ethics or conduct while enrolled in a course of study designed to qualify the student for certification in a profession or while in the course or scope or any required practicum or clinical experience;
18. Attempting to commit, or assisting someone in the commission or attempted commission of an offense listed above.