

Anthropology 475/675: Evolutionary Medicine

Lecture: 8:30-9:45 Tuesdays, Thursdays, WRI C144

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Course Description

This course provides an introduction to evolutionary medicine, a relatively new and exciting field that emphasizes the interplay between human evolutionary history, adaptation, and proximate mechanisms. Examples are drawn from societies around the world. Topics include growth, reproduction, diet, activity patterns, aging and infectious and chronic disease.

Course Objectives

Students focus on current theoretical and empirical evidence concerning evolutionary medicine. Through readings, students develop critical thinking skills to assess issues of human variation and health. Through a research paper, students have the opportunity to apply course theory to a topic of particular interest.

Course Requirements and Grading

Assigned readings:

There is one text assigned for this course: Gluckman, P., Beedle, A., and Hanson, M. 2009. *Principles of Evolutionary Medicine*. New York: Oxford University Press.

Eleven additional papers will be discussed in class. These are available through the UNLV library e-reserves. The last 30-40 minutes of each Thursday will be dedicated to in-class discussion of the paper assigned for a given week.

Exams and grading: Two exams are given in the course, a midterm (20%) and a non-cumulative final (20%). Four short quizzes are also given during class (10%). A worksheet based on a visit to the Atomic Testing Museum must also be completed (10%). A research paper of 15 double-spaced pages is due at the end of the term (40%). Makeup exams and quizzes are not permitted without medical documentation. No late term papers are accepted. Graduate student grades are determined by these assignments and additional criteria: participation in discussions conducted every other week (with other graduate students and professor); professional quality of term paper; and leading discussion of the papers assigned in class.

The research paper involves addressing a topic that falls under the broad scope of this course. The paper may be structured either as a review paper or as a paper based on the formulation and testing of a research hypothesis. For example, one might postulate that

more melanized (i.e., darker-skinned) human populations have less folate depletion in high-ultraviolet (i.e., tropical) environments than less melanized human populations, and attempt to find data to test that hypothesis. As another example, one might undertake a review paper investigating the rise and fall of malaria in the U.S. along with the factors related to these changes across time. Your paper should be approximately 15 pages of text, double-spaced, using 12-point font. Your paper should include a clear title, employ sub-headings to help structure components of it, and cite at least 15 scholarly references.

UNLV Academic Integrity and Misconduct Code

“Academic integrity is a legitimate concern for every member of the campus community; all share in upholding the fundamental values of honesty, trust, respect, fairness, responsibility and professionalism. By choosing to join the UNLV community, students accept the expectations of the Academic Misconduct Policy and are encouraged when faced with choices to always take the ethical path. Students enrolling in UNLV assume the obligation to conduct themselves in a manner compatible with UNLV’s function as an educational institution.”

An example of academic misconduct is plagiarism: “Using the words or ideas of another, from the Internet or any source, without proper citation of the sources.” See the “Student Academic Misconduct Policy” (approved December 9, 2005) located at: <http://studentconduct.unlv.edu/misconduct/policy.html>.

Plagiarism or cheating of any kind will not be tolerated in this class, and the student will AUTOMATICALLY FAIL THE CLASS and will be referred to an ADMINISTRATIVE BOARD in case of a violation.

UNLV Copyright Policy

Using somebody else's work without permission is just not right. Whether it is copying a chapter or two from a book, pirating a video copy of a new movie, or using photographs off the Internet, the copyright of the owner of that material must be protected. The University requires all members of the University Community to familiarize themselves and to follow copyright and fair use requirements. You are individually and solely responsible for violations of copyright and fair use laws. The university will neither protect nor defend you nor assume any responsibility for employee or student violations of fair use laws. Violations of copyright laws could subject you to federal and state civil penalties and criminal liability, as well as disciplinary action under University policies. To familiarize yourself with copyright and fair use policies, you are encouraged to visit the following website: <http://provost.unlv.edu/copyright/>.

UNLV Disability Policy

The Disability Resource Center (DRC) coordinates all academic accommodations for students with documented disabilities. The DRC is the official office to review and house disability documentation for students, and to provide them with an official Academic Accommodation Plan to present to the faculty if an accommodation is warranted. Faculty should not provide students accommodations without being in receipt of this plan.

UNLV complies with the provisions set forth in Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990. The DRC is located in the Student Services Complex (SSC-A), Room 143, phone (702) 895-0866, fax (702) 895-0651. For additional information, please visit: <http://drc.unlv.edu/>.

UNLV Religious Holidays Policy/Missed Class(es)

Religious Holidays Policy -- Any student missing class quizzes, examinations, or any other class or lab work because of observance of religious holidays shall be given an opportunity during that semester to make up missed work. The make-up will apply to the religious holiday absence only. It shall be the responsibility of the student to notify the instructor no later than the last day of late registration of his or her intention to participate in religious holidays which do not fall on state holidays or periods of class recess. This policy shall not apply in the event that administering the test or examination at an alternate time would impose an undue hardship on the instructor or the university which could have been avoided. For additional information, please visit:

<http://catalog.unlv.edu/content.php?catoid=4&navoid=164>.

UNLV Tutoring

Tutoring -- The Academic Success Center (ASC) provides tutoring and academic assistance for all UNLV students taking UNLV courses. Students are encouraged to stop by the ASC to learn more about subjects offered, tutoring times and other academic resources. The ASC is located across from the Student Services Complex, #22 on the current UNLV map. Students may learn more about tutoring services by calling (702) 895-3177 or visiting the tutoring web site at: <http://academicsuccess.unlv.edu/tutoring/>.

Writing Center at UNLV

One-on-one or small group assistance with writing is available free of charge to UNLV students at the Writing Center, located in CDC-3-301. Although walk-in consultations are sometimes available, students with appointments will receive priority assistance. Appointments may be made in person or by calling 895-3908. The student's Rebel ID Card, a copy of the assignment (if possible), and two copies of any writing to be reviewed are requested for the consultation. More information can be found at: <http://writingcenter.unlv.edu/>.

Course Outline

Week 1 (August 28/30): Introduction and Evolutionary Theory
(Text: Chapters 1, 2)

Week 2 (September 4/6): Inheritance, Development and Variation
(Chapters 3, 4); Nesse et al. 2010. Making evolutionary biology a basic science for medicine. *PNAS* 107: 1800-1807.

Week 3 (September 11/13): Human Evolution and the Origins of Human Diversity
(Chapter 6); Laland KN et al. 2010. How culture shaped the human genome: bringing genetics and the human sciences together. *Nature Reviews Genetics* 11: 137-148.

- Week 4 (September 18/20): Human Adaptation to Climate**
Video shown on Tuesday: "Patterns of Adaptation" (39AU4987); Jablonski NG. 2012. Human skin pigmentation as an example of adaptive evolution. *Proceedings of the American Philosophical Society* 156: 45-57.
- Week 5 (September 25/27): Evolution of Human Life History: Growth**
(Chapter 5); Ulijaszek SJ. 2006. The International Growth Standard for Children and Adolescents Project: Environmental influences on preadolescent and adolescent growth in weight and height. *Food and Nutrition Bulletin*, 27(4s): S279-S294.
Worksheet based on visit to the Atomic Testing Museum due in class on Tuesday.
- Week 6 (October 2/4): Evolution of Human Life History: Aging**
Carnes BA et al. 2008. Does senescence give rise to disease? *Mechanisms of Ageing and Development* 129: 693-699.
- Week 7 (October 9/11): MIDTERM on Tuesday; Library visit on Thursday**
- Week 8 (October 16/18): Reproduction**
(Chapter 7); Short RV. 1976. The evolution of human reproduction. *Proceedings of the Royal Society of London B* 195: 3-24.
- Week 9 (October 23/25): Nutritional and Metabolic Adaptation**
(Chapter 8); Krebs JR. 2009. The gourmet ape: evolution and human food preferences. *American Journal of Clinical Nutrition* 90: 707S-711S.
- Week 10 (October 30/November 1): Chronic Disease**
Eaton SB et al. 1988. Stone-agers in the fast lane: chronic degenerative diseases in evolutionary perspective. *American Journal of Medicine* 84: 739-749.
- Week 11 (November 6/8): Defense: Infectious Disease**
(Chapter 9); Video shown on Tuesday: "Medicine Men Go Wild, Episode 1" (on Baka lifeways in the Congo); Wolfe et al. 2007. Origins of major human infectious diseases. *Nature* 447: 279-283.
- Week 12 (November 13): Evolution of Social Organization**
(Chapter 10); Lende DH and Smith EO. 2002. Evolution meets biopsychosociality: an analysis of addictive behavior. *Addiction* 97: 447-458. No class on Thursday (American Anthropological Association conference).
- Week 13 (November 20): Video: "Stress." No class on Thursday (Thanksgiving holiday).**
- Week 14 (November 27/29): Principles of Evolutionary Medicine**
(Chapter 11); Gravlee CC. 2009. How race becomes biology: embodiment of

social inequality. *American Journal of Physical Anthropology* 139: 47-57.

Week 14 (December 4/6): Course Wrap-up and Review
(Chapter 12); Term papers due in class on Tuesday.