Anthropology 31: Ecology, Evolution, and Human Health

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Office Hours: TBA and by appointment

Meeting Time and Location:
Tuesday/Thursday 10:00-11:50
Building 160-124

Course Description

This course examines human ecology, human environments, adaptation and plasticity, and their relationship to health and well-being. All are considered in the broad comparative context. Topics include human population history, subsistence ecology, demography, reproductive decision making, urbanization, migration, infectious disease, the physiology of stress and the inflammatory response, social capital and social networks, nutrition, nutritional deficiencies, growth, and social inequalities.

To understand human ecology and adaptation, we must understand the range of human behavior and adaptations. We use adaptation as a foil to teleology, the fallacious idea of inexorable progress toward greater complexity (social, cultural and biological). Adaptation is local and specific and if we are to hope to make general statements about the nature of human adaptations to the environment, we must understand a broad range of human responses to environmental challenges. As a result, we will examine a very broad range of human populations in this class, both cross-culturally and through time.

The homogenizing influence of global culture threatens to undermine local adaptations to environmental challenges at the very time in human history that the maintenance of a broad and versatile toolkit of adaptive responses is acutely needed. Through this course, we will emphasize this versatility of human populations while attempting to synthesize generalities about the nature of human adaptation.

We will spend much of our time considering small-scale subsistence populations. Humans evolved in small face-to-face societies and many human adaptations can be usefully understood in this context. Furthermore, small-scale societies demonstrate an enormous range of variation in both environmental challenges faced and adaptations thereto. The process of human adaptation simply cannot be understood in the absence of a broad grounding in this range of challenge and adaptation. Populations considered from both the ethnographic present and recent past include hunter-gatherers of such as the Ju/'hoansi, Ache, Western Shoshone, Hadza, and Martu; horticulturalists and pastoralists such as the Yanomamó, Owens Valley Paiute, Gabbra, Dayak, Penan, Melayu, Dani and Polynesians. We will necessarily compare and contrast these small-scale populations with numerous contemporary and historical smallholders, agrarian peasants, and urbanites.

This course fulfills GER:EC-GlobalCom and GER:DB-SocSci requirements.
Readings

There are three required texts for the class. In addition, there will be a number of readings from the primary scientific literature made available on the class web site. The texts for the class include:


Specific chapters from the Nesse & Williams book are required for particular weeks but it would probably make more sense to read the book straight through. Both Nesse & Williams and Ridley are popular science books that, while loaded with good information, are very quick reads.

We will read a few papers from the primary scientific literature. These papers will be made available on the course website: [http://anthro31.stanford.edu](http://anthro31.stanford.edu).

Grading

Grading will be based on a weighted combination of short assignments, a midterm exam, a brief written assignment, and a final exam. All assignments are due at the beginning of class on Thursday unless otherwise specified in the syllabus.

Approximately every other week, you will write a brief (1000 word) summary essay on a topic related to the reading to date. For these, you will be expected to incorporate the general theoretical ideas and themes covered to that point in the course and discuss their relationship to the topic at hand. You will receive the specific assignment the week prior to the due date.

Students taking the class for five credits will write a short written assignment (8-10 pages) providing your own analysis of either (1) an environmental challenge faced by some contemporary or historical population and the (adaptive or not) response of people within this population to this challenge, or (2) a contemporary health recommendation or proscription (e.g., a reduction diet, an exercise regime, behavioral or lifestyle treatment for a chronic disease) within the evolutionary and ecological framework of the class.

Late work will received a one-third grade reduction each day that it is late.

The breakdown of grading is as follows for five (5) credits:

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<tr>
<th>Assignment</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Short Assignments</td>
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<tr>
<td>Written Assignment</td>
<td>30%</td>
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<tr>
<td>Midterm Exam</td>
<td>20%</td>
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<tr>
<td>Final Exam</td>
<td>30%</td>
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The breakdown of grading is as follows for three (3) credits:

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<thead>
<tr>
<th>Assignment</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Short Assignments</td>
<td>30%</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>30%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>40%</td>
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If you want to take the class for four (4) credits, you must do the work for five (5).
Expectations

Attendance at lecture is mandatory. Information discussed primarily in lecture will make its way onto exams, so it is in your best interest to attend and be engaged with all lectures.

Schedule

Week 1 (29-31 March). Introduction to Human Evolutionary Ecology

Approaches to Human Behavioral Biology (HBE, Evolutionary Psychology, Dual Inheritance, etc.), Biological Causation, Tinbergen’s Causes, Genotype, Phenotype, Environmental Interactions, Reaction Norms, Plasticity, Trade-Offs, Phenotypic Gambit, Evolutionary Disequilibrium, Big-A Adaptation, Typology vs. Adaptation, Misuse of Evolutionary Ideas (Typology, Teleology, Social Darwinism)

Reading: Ridley (all), Futuyuma (HEB, Ch. 1), Frisancho (HEB, Ch. 2); Jones & Bird (2008)

Week 2 (5-7 April). Population History of the Human Organism

Population history, population regulation, r/K selection theory, mechanistic (endogenous) models of population regulation, revolution(s) vs. evolution(s): Neolithic, agricultural, etc.

Reading: Coale (1974); Cohen (2005); Dye (2008)

Assignment: Nature Via Nurture

Week 3 (12-14 April). Managing Risk

Complex Adaptive Systems, Complexity, Trade, Mobility, Exchange, Small-a Adaptation, Averaging, Social Networks; Vulnerability, Resilience

Reading: Lansing (2003), Cashdan (1990), Kaplan et al. (1990)

Week 4 (19-21 April). Relations, Social Organization, Social Networks

Trade, Mobility, Exchange, Small-a adaptation, Averaging, Social Networks

Reading: Barnes (1954); Gluckman (1968); Rivera et al. (2010)

Take-Home Midterm

Week 5 (26-28 April). Subsistence

Hunting and gathering, horticulture, pastoralism, agriculture, Settlement, Malthus vs. Boserup, Chayanov and household production

Reading: Winterhalder and Kennett (2006), Kaplan & Hill (1992)

Week 6 (3-5 May). Mortality

Anatomy of the Human Mortality Curve, Life Tables, Measures of Mortality, Heterogeneity and Frailty, Mortality Cross-overs, Major Causes, Inequality and the Political Economy of Mortality Differentials

Reading: Jones (HEB, Ch. 5), WWGS Chs. 1-4
Week 7 (3-5 May). Infectious Disease

Disease Ecology, Disease Transmission Networks, Social Structure and Disease Risk, Infection Dynamics, Control and Eradication, Infection and Subsistence, Ecology and Political Economy of Eradication

Reading: Morens et al. (2008); Grassly & Fraser (2008)

Assignment: Why Do We Get Sick?

Week 8 (10-12 May). Fertility and Reproductive Decisions

Measures of Fertility, Historical Trends, Tempo and Quantum, Timing of First Birth, Conflict, Risk and Uncertainty, Demographic Transitions, The Relationship between Fertility and Development

Reading: Pike & Milligan (HEB, Ch. 20), Mace (2008), WWGS Ch. 13

Week 9 (17-19 May). Growth, Development, and Nutrition

Growth Curves, Standards, Z-Scores, Sex Differences, Brain Growth, Sexual Maturation, Comparative Growth, Wasting, Stunting, Inequality, Fetal Programming, Growth as Indicator of Inequality and the Political Economy of Body Size, Nutritional Deficiencies, Over-Nutrition, Evolutionary Disequilibrium, Metabolic Syndrome, Social Disparities in Nutritional Disorders

Reading: Bogin (HEB, Ch. 22), Ulijaszek (HEB, Ch. 23), WWGS Ch. 9-11

Week 10 (24-26 May). Social Relationships, Stress, and Disease

Social networks, Social Capital (I and II), Support, Networks and Inequality, Resiliency and Response to Environmental and Social Crises

Reading: Berkman & Syme (1979); Berkman et al. (2000)

Short Paper Due for 5-Credit Students

Final Exam: Tuesday, 8 June, 3:30-6:30, Location TBA

Additional Readings


