ANTH 362: HUMAN BIOLOGICAL VARIATION
Winter Quarter 2013
166 Lawrence   TTh 8:30-9:50 am
(4 Credit Hours; Satisfies SC & IP requirements)

Instructor: Dr. Josh Snodgrass (http://www.pinniped.net/snodgrass.html)
Office: 354 Condon Hall
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E-mail: jjosh@uoregon.edu

Graduate Teaching Fellow (GTF): Melissa Liebert (http://pages.uoregon.edu/anthro/people/graduates/#liebert)
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Phone: 346-5109
E-mail: liebert@uoregon.edu

Prerequisite: ANTH 270, BI 213, BI 283H, or permission of the instructor

Course Description: Genetic and biological structure of human populations; population dynamics and causes of diversity; analysis of genetically differentiated human populations and their geographic distribution.

Extended Course Description: This is a science group satisfying course that examines key issues related to human biological variation, with a focus on human adaptation and adaptability. This course examines genetic and phenotypic variation in contemporary human populations. It uses an evolutionary biocultural framework to understand how adaptation to various ecological stressors (e.g., temperature, solar radiation, altitude, and nutrition) promotes human biological diversity. In addition, the course focuses on how recent cultural changes (e.g., agriculture, industrialization, and urbanization) shape human variation and health, with an emphasis on chronic diseases such as obesity, cardiovascular disease, and diabetes. This course uses a scientific approach, drawing on the methods, theories, and bodies of knowledge from various scientific disciplines, including anthropology, evolutionary biology, human physiology, nutritional science, medicine, and epidemiology.

This course has three main sections:

Section 1 concentrates on describing human biological variation. This section begins with an historical overview of approaches to classifying human biological diversity. This includes a discussion of the rise and fall of the concept of “race” in anthropology, as well as the complex topic of racial differences in health. This section of the course also describes how genetic and environmental factors shape human skeletal variation, and discusses how knowledge of skeletal variation is used in applied fields such as forensic anthropology.

Section 2 focuses on understanding the factors that shape biological variation in contemporary human populations. This section of the course uses an evolutionary approach and, in particular, relies on life history theory and biocultural theory to understand the forces that shape variation within and between contemporary human groups. This section of the course also describes how genetic tools allow us to document evolutionary change and detect recent selection in human populations. Further, this section of the course describes how specific environmental stressors, such as temperature, solar radiation, and hypoxia, shape contemporary human biological variation.

Section 3 focuses on selected topics in human biology research. This section of the course will examine human aging, the health effects of chronic psychosocial stress, and human nutritional evolution.

Course Format: Lecture, in-class discussion, and required weekly laboratory sections.
Required Readings:
Assorted articles and book chapters (see below)

Expectations and Grading: Regular attendance at lectures and participation in discussions is required, as is attendance of laboratory sections. Grades are based on a midterm exam, final exam, in-class discussion participation, weekly lab exercises, lab section attendance, and submission of two short (2-3 page) response papers on discussion topics. Required readings are essential to passing exams, completing lab assignments, and participating in lab section activities. Further, the readings will help you get the most out of the course.

Midterm Exam (Tuesday, 2/12) 25%
Final Exam (Wednesday, 3/20 @ 8:00am) 25%
In-Class Discussion Participation 10%
Response Papers to In Class Discussion Topics (2 @ 5% each) 10%
Lab Exercises (Short lab write-ups of each lab) 20%
Lab Section Attendance 10%

Grades will be assigned as follows: A = 90-100%, B = 80-89%, C = 70-69%, D = 60-69%, F < 60% (with minus and plus grades assigned at appropriate cutoffs).

The grading system used in this course is as follows:
A – Outstanding performance relative to that required to meet course requirements; demonstrates a mastery of course content at the highest level.
B – Performance that is significantly above that required to meet course requirements; demonstrates a mastery of course content at a high level.
C – Performance that meets the course requirements in every respect; demonstrates an adequate understanding of course content.
D – Performance that is at the minimal level necessary to pass the course but does not fully meet the course requirements; demonstrates a marginal understanding of course content.
F – Performance in the course, for whatever reason, is unacceptable and does not meet the course requirements; demonstrates an inadequate understanding of the course content.

Exams and assignments must be taken/turned in at the scheduled time—under no circumstances will make-up exams or assignment extensions be given without a documented excuse (e.g., note from your doctor). If you will not be able to take an exam or turn in an assignment, you must notify me in advance (preferably by e-mail).

Midterm & Final Exams: The midterm and final exams will be based on lectures, readings, videos, and discussions, and will include objective (multiple choice & matching), fill-in-the-blank, short answer (2-3 sentences), and short essay sections (4-5 sentences). The final exam is cumulative.

Lab Exercises: During the quarter, each student will write eight short (1-2 page) lab write-ups based on the exercises and questions from lab activities. Lab exercise write-ups are due in lab the following week. All lab sections are held on Thursdays in Condon 204 and will be run by Melissa.

Response Papers: During the quarter, each student will write two short (2-3 page) response papers on the discussion topic of the week (out of 5 choices—weeks 3, 4, 5, 8, and 10). These response papers provide opportunities for discussion and critical analysis. These papers are only 2-3 pages long so writing should be concise and focused around a couple of main points. Response papers are due in class on the day of discussion. Whether you write a response paper for the week or not, your participation in the in-class discussions is an essential component of this course.

Accommodations: Appropriate accommodations will be provided for students with documented disabilities. If you anticipate needing accommodations in this course, please make arrangements to meet with me soon.
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<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topics</th>
<th>Required Readings</th>
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<tbody>
<tr>
<td>1</td>
<td>1/8</td>
<td><strong>Course Overview &amp; Requirements</strong>&lt;br&gt;<strong>Setting the Stage</strong>: Human Evolutionary Biology; Are Humans Still Evolving?</td>
<td>For Tuesday: &lt;br&gt;1) Stinson et al. 2012&lt;br&gt;2) Gibbons 2010&lt;br&gt;3) Tyson 2009&lt;br&gt;<strong>For Thursday</strong>: &lt;br&gt;Mielke et al. 2011 Ch. 1&lt;br&gt;&lt;br&gt;<strong>Lab resource</strong>: &lt;br&gt;Antón &amp; Snodgrass 2009</td>
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<td>1/10</td>
<td><strong>Historical Perspectives on Human Variation</strong>: The Rise and Fall of the Race Concept</td>
<td>&lt;br&gt;<strong>Lab 1</strong>: An Introduction to Craniometry, Anthropometry, &amp; the Methods of Physical Anthropology&lt;br&gt;---Due in lab on 1/17---</td>
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<td>2</td>
<td>1/15</td>
<td><strong>Human Skeletal Variation I</strong>: Age, Sex, Stature, Identification of the Individual; Sex vs. Gender—Vive la Différence</td>
<td>For Tuesday: White 2005&lt;br&gt;<strong>For Thursday</strong>: Ousley et al. 2009</td>
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<td>1/17</td>
<td><strong>Human Skeletal Variation II</strong>: Applied Skeletal Variation and the Concept of Race</td>
<td>&lt;br&gt;<strong>Lab 2</strong>: Human Skeletal Variation (Age, Sex, and Stature); Applied Human Variation (Forensic Anthropology)&lt;br&gt;---Due in lab on 1/24---</td>
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<td>3</td>
<td>1/22</td>
<td><strong>Discussion</strong>: Describing human variation &amp; Interpreting human skeletal variation</td>
<td>&lt;br&gt;<strong>For Tuesday’s Discussion</strong>: Review week 1 &amp; 2 readings&lt;br&gt;<strong>For Thursday</strong>: &lt;br&gt;1) Frisancho 2010&lt;br&gt;2) Gravlee 2009&lt;br&gt;3) Kuzawa &amp; Sweet 2009</td>
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<td>1/24</td>
<td><strong>Human Evolutionary Biology Today</strong>: Population Thinking &amp; Biological Anthropology; Human Adaptation &amp; Adaptability; Revisiting Race—Untangling Biology &amp; Genetics</td>
<td>&lt;br&gt;<strong>Lab</strong>: 3 Human Skeletal Variation (Race/Ancestry); Applied Human Variation (Forensic Anthropology)&lt;br&gt;---Due in lab on 1/31---</td>
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<td>4</td>
<td>1/29</td>
<td><strong>Discussion</strong>: Revisiting Race—Untangling Biology &amp; Genetics; Stress &amp; Health; Developmental Origins of Health and Disease (DOHaD)</td>
<td>&lt;br&gt;<strong>For Tuesday’s Discussion</strong>&lt;br&gt;Review week 3 readings&lt;br&gt;<strong>For Thursday</strong>: &lt;br&gt;1) Meier &amp; Raff 2010&lt;br&gt;2) Steiper 2010</td>
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<td>1/31</td>
<td><strong>Human Genetic Variation</strong>: Genetics in Human Population Biology; Classic Markers &amp; DNA Markers of Human Variation</td>
<td>&lt;br&gt;<strong>Lab 4</strong>: Video: NOVA—Cracking Your Genetic Code&lt;br&gt;---Video questions do NOT get turned in---</td>
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<td>5</td>
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<td>Human Genetic Variation: Genetics and the Concept of Race; Detecting Selection &amp; How Humans Have Adapted; What Makes Humans Unique?</td>
<td>For Tuesday: 1) Madrigal &amp; Barbujani 2007 2) Pritchard et al. 2010</td>
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<td>2/7</td>
<td>Discussion—Human Genetic Variation &amp; the Concept of Race; What makes us human; Recent Evolution</td>
<td>For Thursday’s Discussion: Pollard 2009 Video—What Darwin Never Knew</td>
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<td>Lab 5: Population Genetics —Due in lab on 2/14—</td>
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<td>6</td>
<td>2/12</td>
<td>Midterm Exam</td>
<td>No new readings for Tuesday</td>
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<td>Lab 6: Video: BBC Horizon—Are We Still Evolving? --Video questions do NOT get turned in--</td>
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<td>7</td>
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<td>Climatic Adaptation: Cold Stress; Conservation vs. Metabolic Strategies</td>
<td>For Tuesday: Snodgrass et al. 2007</td>
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<td>2/21</td>
<td>Climatic Adaptation: High Altitude; Hypoxia</td>
<td>For Thursday: Brutsaert 2010</td>
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<td>Lab 7: Body Size/Proportions; Cold Stress; Oxygen Saturation --Due in lab on 2/28--</td>
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<td>8</td>
<td>2/26</td>
<td>Climatic Adaptation: Solar Radiation; Selection in High vs. Low Sunlight Environments</td>
<td>For Tuesday: Mielke et al. 2011 (Ch. 12)</td>
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<td>Lab 8: Symmetry, Strength, and Skin Reflectometry --Due in lab on 3/7--</td>
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<td>9</td>
<td>3/5</td>
<td>Psychosocial Stress: What is Stress?; Acute vs. Chronic Stress; Adverse Social Environments; Biomarkers; Allostatic Load</td>
<td>For Tuesday: 1) Ice &amp; James 2012 2) Seeman et al. 2004</td>
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<td>3/7</td>
<td>Aging: Wear and Tear vs. Programmed Senescence</td>
<td>For Thursday: Wiley &amp; Allen 2009</td>
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<td>Lab 9: Biomarkers--Due in lab on 3/14--</td>
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<td>3/14</td>
<td>Discussion: Energetics &amp; Ecology; Aging and Stress</td>
<td>For Thursday’s Discussion: Review week 9 &amp; 10 readings</td>
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<td>Lab 10: Human Energetics (Diet &amp; Physical Activity) --Due on date of the final--</td>
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<td>3/20</td>
<td>Final Exam (cumulative) Wednesday, March 20, 8:00-10:00am</td>
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Anthropology 362: Human Biological Variation (Winter 2013)

Required Course Readings

WEEK 1

For Tuesday:

For Thursday:

Lab resource:

WEEK 2

For Tuesday:

For Thursday:

WEEK 3

For Tuesday’s Discussion:
Review week 1 & 2 readings

For Thursday:
WEEK 4

For Tuesday’s Discussion
Review week 3 readings

For Thursday:


WEEK 5

For Tuesday:


For Thursday’s Discussion:
Review week 4 & 5 readings AND read/watch:


  • Video—NOVA What Darwin Never Knew; http://video.pbs.org/video/1372073556/

WEEK 6

Midterm Exam: No new readings for Tuesday

For Thursday:


WEEK 7

For Tuesday:

For Thursday:
WEEK 8

For Tuesday:

For Thursday’s Discussion:
Review week 6-8 readings AND read:

WEEK 9

For Tuesday:

For Thursday:

WEEK 10

For Tuesday:

For Thursday’s Discussion:
Review week 9 & 10 readings