ANTH 362: Human Biological Variation

Winter 2018

University of Oregon
(4 Credit Hours; Satisfies SC & IP requirements)

Note: Please print this document for your records.

Course Location: Room 101, Jaqua (JAQ)
Course Time: Monday and Wednesday, 2-3:20pm

Instructor: Dr. Lawrence Ulibarri

Office: 354 Condon Hall
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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.

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.

LEARNING OBJECTIVES

After successful completion of this course, students will have an understanding of the following key issues:

- The history of the use of the term “race” in biological anthropology
- Why race is not a useful term for describing contemporary human biological variation
- How race is a sociocultural phenomenon that has biological consequences including for health
- How genetic and environmental factors shape human skeletal variation
- How knowledge of skeletal variation is used in applied fields such as bioarchaeology and forensic anthropology
- The difference between sex and gender, and an appreciation for how cultural factors contribute to gender diversity cross-culturally
- The pattern of global human genetic variation and how genomics provides us with the ability to document evolutionary change and detect recent selection in human populations
- How environmental stressors such as temperature, solar radiation, and hypoxia shape contemporary human biological variation
- The links between chronic psychosocial stress and disease, including the specific factors that influence how stress ‘gets under the skin’ to affect health
- How a political economy perspective helps explain the impact of social stratification on health
- The evolution of the human diet and how contemporary health problems are in part a consequence of the discrepancy between what we eat now and what our ancestors ate

COURSE FORMAT

The course is designed in a Lecture/Discussion and Lab Format. There will be two lecture meetings per week. Lectures will occasionally combine in-class discussion related to the material we are exploring.

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 the health effects of chronic psychosocial stress and human nutritional evolution.

In total, students should expect to spend 10 to 20 hours of work outside of class time for this course, including the time devoted to reading, studying, lab assignments, lab and presentation research papers, and developing and designing your presentations.

WORKING IN STUDENT GROUPS

Each student will participate in a group, and as a group you will give one presentation. Groups will typically consist of between 3 to 4 people. This presentation should be a combined presentation/discussion that is cohesive (i.e. not 4 individual presentations on 4 different topics), and all people in the group need to work on the presentation and present. After group sign-up, if you wish to change groups please let me know ASAP. Otherwise, switching groups will not be permitted unless extenuating or special circumstances warrant switching groups later in the term. Because you are developing a presentation and critical analysis as a group, you might consider using online resources to develop, create, and edit your group presentations, such as Google Docs (http://www.google.com/docs/about/) and Prezi (http://prezi.com/). Each presentation needs to be 25 minutes in length at most, and should include at least one discussion question.
CANVAS

This course is supported by an online CANVAS site. Our Canvas learning support site will allow you to complete academic work in a timely manner on your computer. Online articles, relevant links, and other relevant information will be included on the course site.

When you register for the class, you will automatically be enrolled to the site. All problems concerning the use of Canvas should be handled at the ITC center in the Knight Library. Issues more specifically related to the accessibility of course material should be directed to me.

Make sure that you regularly check your e-mail account which will notify you of material and announcements placed on our Canvas site.

EXPECTATIONS AND GRADING

Regular attendance, participation, and maintaining course readings are required to pass this course. Grades are based on a midterm exam, final exam, in-class presentation as a group, presentation research paper (1x), weekly lab exercises, and lab section attendance. Under no circumstances will make-up assignments or extensions be given without a documented and cleared excuse (see Accommodations). You will not receive credit for a late assignment unless you notify me in advance. Evaluation will be based on the following four components:

1) 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, so don’t forget everything from the first half!

2) Lab Participation – this includes attendance and your participation in our weekly Lab Sections.

3) Group presentation – each student group will present and lead discussion during one of the designated discussion days (out of 5 possibilities — weeks 4, 5, 8, 9, and 10). This will require you to go beyond the reading and lecture, and to work in groups. Grading will be based on the quality put into your presentations / discussions. I will provide a rubric so you are aware of how this is graded. The following is expected of your group presentation:
   a. Design a short presentation (25 min) based on your groups thoughts, ideas, and new material that you read for the discussion. This might include a short interactive assignment or video, but does not need to.
   b. Send me a seminal research paper that you are basing your presentation around, which will be uploaded for everyone to access and read before your give your presentation. This should be sent to me at least 3 days before you present.
c. **Design at least one question based on the material covered that we can discuss as a class.** You might even send out your question to our class a few days before the discussion to allow people a chance to develop ideas.

4) **Presentation Research Paper** – On your presentation day, you’ll be required to submit a short research paper (2 to 4 pages) that highlight your thoughts, ideas, questions that you developed, the research that you did for your presentation, how this relates to the course and course material, and any additional material you want to include. **This should be brought to me in hard copy.** This is NOT a rehash of your entire groups’ discussion, but a highlight of what you personally did to prepare for and contribute to the discussion, and to demonstrate critical thinking. Include a References Cited section, and be sure to cite your sources in-text appropriately.

5) **Lab write-up assignments** – 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.

**GRADING**

The weight of each form of evaluation to the total course grade is as follows:

- **Midterm exam** 25% (150)
- **Final exam** 25% (150)
- **Presentation / discussion** 11% (65)
- **Research paper for presentation** 5% (30)
- **Lab exercises (short write-ups of each lab)** 26.5% (160)
  (8 lab assignments, 20 points each)
- **Lab attendance** 7.5% (45)
  (10 labs, 4.5 points each)

**TOTAL** 100% (600)

Grades will be assigned as follows:

- **A+** = 97% and above.
- **A** = 93-96.9%.
- **A-** = 90-92.9%

- **B+** = 87-89.9%
- **B** = 83-86.9%.
- **B-** = 80-82.9%

- **C+** = 77-79.9%
- **C** = 73-76.9%.
- **C-** = 70-72.9%

- **D+** = 67-69.9%
- **D** = 63-66.9%,
D- = 60-62.9%

F = 59.9% and below

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.

There is **no extra credit** for this course

**REQUIRED TEXTS**

Articles and book chapters posted to our Canvas site (no required purchased textbook). Regular Canvas readings will be posted, be sure to regularly check. A list of all Required Readings is provided below (see Course Reading Schedule below) following the Course Schedule.

**ACCOMMODATIONS**

Appropriate accommodations will be provided for students with documented disabilities. If you have a documented disability and anticipate needing accommodations in this course, please make arrangements to meet or discuss with me immediately. You will need to provide me with a notification letter from Disability Services outlining your approved accommodations.

I will post my lecture slides online after each lecture.

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** (see Personal issues). If you will not be able to take an exam or turn in an assignment, you **must** notify me or our GE in advance (preferably by e-mail).
PERSONAL ISSUES

If there is a serious issue related to your ability to participate in our course, you need to contact me immediately. Delay in asking for help right away will cause you to fall seriously behind in the course, and make-up work will not be accepted unless prior accommodations have been made. Examples of serious issues include you are ill and can provide a doctor’s note explaining that it is not advisable for you to participate in our class, a family death, conference participation, and participation in or travel associated with other events related to campus organizations, clubs, or groups.

ACADEMIC HONESTY

The University of Oregon and I consider academic honesty to be essential for each student’s intellectual development. As an institution fundamentally concerned with the free exchange of ideas, our University depends on the academic integrity of each of its members. In the spirit of this free exchange, students and teachers of our University recognize the necessity, and accept the responsibility, for academic honesty. As a student who enrolls in this course, you agree to respect and acknowledge the research and ideas of others in your work and to abide by those rules in our discussions in both lecture and lab classes.

Plagiarism:
Plagiarism is defined as the use of intellectual material produced by another person without acknowledging its source. For example:
• Wholesale copying of passages from works of others into an discussion or presentation
• Using the views, opinions, or insights of another without acknowledgment
• Paraphrasing another person’s characteristic or original phraseology, metaphor, or other literary device without acknowledgment
For further information about the UO policy on plagiarism and matters of social conduct, please refer to your student handbook. Also, the UO provides excellent resources to help you avoid plagiarism. Check out https://researchguides.uoregon.edu/citing-plagiarism
Please, for your protection and development, cite you sources properly and do not plagiarize. You can find proper use and examples of the APA citation method at the University of Oregon library website: http://researchguides.uoregon.edu/citing-plagiarism/styleguides
NOTE: Class schedule is subject to change in the event of extenuating circumstances, or otherwise modified as appropriate.

## COURSE SCHEDULE

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates (m/d)</th>
<th>Topics</th>
<th>Required Reading</th>
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</table>
| 1    | 01/08       | Course Overview & Requirements | For Monday:  
1) Stinson et al. 2012  
2) Gibbons 2010  
3) Tyson 2009  
For Wednesday:  
Mielke et al. 2011 Ch. 1 |
|      | 01/10       | Setting the Stage: Human Evolutionary Biology; Are Humans Still Evolving? | |
|      |             | Historical Perspectives on Human Variation: The Rise of the Race Concept | Lab resource:  
Antón & Snodgrass 2009 |
|      |             | Lab 1: An Introduction to Craniometry, Anthropometry, & the Methods of Physical Anthropology, | |
| 2    | 01/15       | Historical Perspectives on Human Variation cont: The Fall of the Race Concept | For Monday:  
No new readings for Monday |
|      | 01/17       | Human Skeletal Variation I: Age, Sex, Stature, Identification of the Individual | For Wednesday:  
White 2005 |
|      |             | Lab 2 (Video): BBC Horizon—Are We Still Evolving?  
--Video questions do NOT get turned in-- | |
| 3    | 01/22       | Sex and Gender: Sex vs. Gender—Sex, gender, & health; The sicker sex; Gender, performance, and sports; Gender diversity | For Monday’s Discussion:  
1) Sobo 2013 Ch. 11  
2) Zuk 2007  
For Wednesday:  
1) Kennedy 1995  
2) Ousley et al. 2009 |
|      | 01/24       | Human Skeletal Variation II: Applied Skeletal Variation and the Concept of Race | |
|      |             | Lab 3: Human Skeletal Variation (Age, Sex, and Stature); Applied Human Variation (Forensic Anthropology) | |
| 4    | 01/29       | Presentation Day 1: Describing human variation & deconstructing race | For Monday’s Discussion:  
Review week 1 & 2 readings;  
Optional Reading: Levy 2009 |
|      | 01/31       | Human Evolutionary Biology Today: Population Thinking & Biological Anthropology; Human Adaptation & Adaptability; Revisiting Race—Untangling Biology & Genetics | For Wednesday:  
1) Frisancho 2010  
2) Gravlee 2009  
3) Kuzawa & Thayer 2013  
+ Optional Reading: Pitts 2014 |
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<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Mondays</th>
<th>Wednesday's Discussion</th>
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<td>5</td>
<td>02/05</td>
<td><strong>Human Genetic Variation</strong>: Genetics in Human Population Biology; Classic Markers &amp; DNA Markers of Human Variation</td>
<td>For Monday: 1) Meier &amp; Raff 2010, 2) Steiper 2010</td>
<td>For Monday’s Discussion Review week 4 readings &amp; Hartigan 2013</td>
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<td>02/07</td>
<td><strong>Discussion &amp; Review—Revisiting Race—Untangling Biology &amp; Genetics; Stress &amp; Health; Developmental Origins of Health and Disease (DOHaD)</strong></td>
<td>For Wednesday: Video questions do NOT get turned in--</td>
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<td>Lab 5: Video: <em>NOVA—Cracking Your Genetic Code</em> --Video questions do NOT get turned in--</td>
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<td>6</td>
<td>02/12</td>
<td>Midterm Exam (same time, same room)</td>
<td>No new readings for Monday</td>
<td>For Monday: 1) Long 2013, 2) Lee 2013</td>
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<td>02/14</td>
<td><strong>Human Genetic Variation</strong>: Genetics and the Concept of Race; Detecting Selection &amp; How Humans Have Adapted; What Makes Humans Unique?</td>
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<td>Lab 6: Population Genetics</td>
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<td>02/21</td>
<td><strong>Climatic Adaptation</strong>: Cold Stress; Conservation vs. Metabolic Strategies</td>
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<td>Lab 7: Body Size/Proportions; Cold Stress; Oxygen Saturation</td>
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<td>8</td>
<td>02/26</td>
<td><strong>Discussion: Genetic variation &amp; Heat/Cold Adaptation</strong></td>
<td>For Monday’s Discussion Review week 6 &amp; 7 readings</td>
<td>For Wednesday: Brutsaert 2010</td>
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<td>02/28</td>
<td><strong>Climatic Adaptation</strong>: High Altitude; Hypoxia</td>
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<td>Lab 8: Symmetry, Strength, and Skin Reflectometry</td>
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<td>9</td>
<td>03/05</td>
<td><strong>Climatic Adaptation</strong>: Solar Radiation; Selection in High vs. Low Sunlight Environments</td>
<td>For Monday: Mielke et al. 2011 (Ch. 12)</td>
<td>For Wednesday's Discussion: Leonard et al. 2009</td>
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<td>03/07</td>
<td><strong>Discussion: Climatic Adaptation &amp; Conducting Research on Human Population Biology</strong></td>
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<td>Lab 9: Biomarkers</td>
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<td>10</td>
<td>03/12</td>
<td><strong>Human Stress and Energetics</strong>: What is Stress?; Acute vs. Chronic Stress; Adverse Social Environments;</td>
<td>For Monday: 1) Ice &amp; James 2012</td>
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<td>Date</td>
<td>Biomarkers; Allostatic Load. Human Ecology &amp; Nutritional Evolution; Paleolithic Nutrition; Economic Development and the Obesogenic Environment</td>
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<td>03/14</td>
<td><strong>Discussion: Energetics &amp; Ecology; Stress</strong></td>
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<td><strong>Lab 10: Human Energetics (Diet &amp; Physical Activity)</strong> --Due on date of the final--</td>
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<td>03/19</td>
<td><strong>Final Exam (Friday, 2:45 pm – 4:45 pm)</strong></td>
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<td><strong>Same room (101 JAQ)</strong></td>
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<td>The final exam will emphasize material from the second half of the course (Weeks 6-10), but will be cumulative.</td>
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<td>2) Murray et al. 2006</td>
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<td>3) Sobo 2013 Ch. 9</td>
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<td>4) Snodgrass 2012</td>
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<td><strong>For Wednesday’s Discussion: Review week 9 &amp; 10 readings</strong></td>
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COURSE READING SCHEDULE

WEEK 1

For Monday:

For Wednesday:

Lab resource:

WEEK 2

For Monday:
- No new readings

For Wednesday:

WEEK 3

For Monday:

For Wednesday:
WEEK 4

For Monday’s Discussion:
Review week 1, 2, & 3 readings

Optional Reading:

For Wednesday:

Optional Reading:

WEEK 5

For Monday:

For Wednesday’s Discussion
Review week 4 & 5 readings

Optional Reading:

WEEK 6

For Monday:
No new readings for Monday — Midterm Exam

For Wednesday:

WEEK 7

For Monday:

For Wednesday:

WEEK 8

For Monday’s Discussion:
• Review week 6-7 readings

For Wednesday:

WEEK 9

For Monday:

For Wednesday’s Discussion
Review week 8 & 9 readings AND read:

WEEK 10

For Monday:
For Wednesday’s Discussion:
Review week 10 readings