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 evolutionary medicine. 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. 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 introduces students to the basic principles of evolutionary medicine, and emphasizes differences between proximate and ultimate explanations of patterns of human health and disease. This section of the course uses the evolutionary medicine framework to examine infectious diseases, and includes a discussion of how major cultural transitions in human history have altered exposure to infectious disease. This section of the course pays particular attention to chronic diseases such as cancer, obesity, diabetes, and cardiovascular disease.

Course Materials

The required text for this course are available from the Duck Store (https://literaryduck.uoduckstore.com/Home.aspx):


I will supplement the text with articles posted to Blackboard.
Course Structure

There is a lesson for each week that has:

- Readings
- Lectures
- Assignments due Friday of each week (see schedule)
- Weekly Participation in a Discussion Board on the Blackboard Site.

There is no assignment for Week 5 to give you time to study for the midterm due at the end of the week. Instead of a final exam, a research paper is due during week 8.

The best way to work through the course is to complete the reading, review the lecture, and then complete the assignment.

Schedule

Week 1
- Setting the Stage: Introduction to the Course & Human Genetic Variation
- Assignment 1: Watch the film, *Ghost in Your Genes*, and complete worksheet of questions that accompanies the film
- Discussion Board
- DUE DATE: FRIDAY

Week 2
- Human Evolutionary Biology Today: Population Genetics; Documenting Evolutionary Change
- Assignment 2: Population Genetics; complete a sample problem on Blackboard and upload a worksheet
- Discussion Board
- DUE DATE: FRIDAY

Week 3
- Historical Perspectives on Human Variation: The Rise and Fall of the Race Concept, Untangling Biology and Genetics
- Assignment 3: Understanding Race
- Discussion Board
- DUE DATE: FRIDAY

Week 4
- Human Skeletal Variation: Applied Anthropology
- Midterm Exam (no assignment this week)
- Discussion Board
- DUE DATE: FRIDAY

Week 5
- Climatic Adaptation: Heat, Cold, Solar Radiation, High Altitude
- Assignment 4: Body Composition & Adaptation
- Email me at tcepon@uoregon.edu with your research paper topic
- Discussion Board
- DUE DATE: FRIDAY

Week 6
- Evolutionary Medicine: History & Theoretical Approach; Asthma, Allergy, & Autoimmune Disease
- Assignment 5: Evolutionary Medicine Worksheet
- Discussion Board
- DUE DATE: FRIDAY
Week 7
- Evolutionary Medicine: Infectious Disease; Changing Disease Patterns; Obesity; Type 2 Diabetes, Cardiovascular Disease and Stress
- Assignment 6: Watch the film Stress - Portrait of a Killer and answer questions on the accompanying worksheet
- Discussion Board
- DUE DATE: FRIDAY

Week 8
- Final Paper Due by FRIDAY, at 5pm Pacific Time
  o Research paper guidelines and submission details are available in the "Final Research Paper" link on the main course content page

Expectations and Grading

Grades are based on a midterm exam, a research paper, and weekly assignments. Required readings are essential to passing exams and completing weekly assignments.

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Assignment</th>
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</thead>
<tbody>
<tr>
<td>30%</td>
<td>Midterm Exam</td>
</tr>
<tr>
<td>25%</td>
<td>Weekly Assignments (6 total; 10 points each)</td>
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<tr>
<td>10%</td>
<td>Weekly Participation on Discussion Board (7 total; worth 10 points each week)</td>
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<tr>
<td>35%</td>
<td>Research Paper (Due Finals Week)</td>
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Grades will be assigned as follows:

- A = 90-100%
- B = 80-89%
- C = 70-79%
- D = 60-69%
- F < 60%

I'll assign minus and plus grades 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.
The midterm exam 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.** Additionally, there will be no extra credit opportunities in this course.

**Weekly Assignments:** Each week you are responsible for completing the readings, reviewing lectures, and submitting assignments based on that week’s materials. Assignments vary from watching films to posting resources to a blog. Some weeks require two assignments, so pay close attention to your schedule. Each assignment is to be completed by Friday of that week by 5pm. Late assignments will be deducted 1 point for each day the assignment is late; each weekly assignment is worth 10 points total. Weekly assignments are worth 25% of your grade.

**Midterm Exam:** The midterm exam will be based on lectures, readings, videos, and weekly assignments, and will include objective (multiple choice & matching), fill-in-the-blank, and short answer sections (2-3 sentences). Your midterm exam is worth 30% of your grade.

**Discussion Board:** In this discussion board, you are asked to participate weekly in an online discussion either by asking a new, insightful question or answering/discussing topics already posed by your classmates. You will receive 5 points for participating each week (35 points total). Discussion participation is worth 10% of your grade.

**Research Paper:** A 10-12 page (double-spaced) research paper on a topic of your choice related to human biological variation or specifically focused on evolutionary medicine will be due during finals week. In the *Final Research Paper* link on the main course content page, paper guidelines and suggested topics are made available from the first week. I encourage you to email me with your topic idea during Week 6 and Week 7. The research paper must be submitted by **Friday at 5pm.** A letter grade will be deducted for each day that the paper is submitted late. This research paper is worth 35% of your grade.