

Archaeology 305: Human Variation and Adaptation (Winter 2009)

Professor: Warren Wilson

Lecture: TR 12:30-13:45, MFH 160

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Course Description

In *Natural History*, Roman scientific writer Pliny the Elder remarked that, although human countenance is made up of only “ten parts or a little more,” people were so fashioned that “among the many thousands no two exist who cannot be distinguished.” How are we to explain this rich multiplicity of human physical forms? The goal of this course is to introduce you to the scientific study of human variability. We will begin with a consideration of the impact of the misunderstanding of human variation, then proceed with an overview of the scientific method and the anthropological approach to the study of human diversity. We will then cover the biological bases of human variation in discussions of genes in human populations, the heritability of traits, and population genetics. In the latter part of the course we will look at human variation as the outcome of adaptation to a variety of environmental factors. This course should help you to understand the biology underlying the variation of human physical and psychic forms and to sort fact from fiction in the contentious and clouded debates over human variation.

Course Conventions

- 1. Lecture:** In order to meet the goals of the course you have to come regularly to class and ON TIME. Be prepared by reading what is assigned for the day. You are responsible for lecture material and any announcements concerning changes in schedule, etc. Please note that lectures are not a summary of the material presented in the text and that, on the balance, exam questions will be drawn from material emphasized in lecture.
- 2. Prerequisites:** While I will briefly cover molecular genetics and the of inheritance of simple (Mendelian) traits, you should have a basic understanding of these topics prior to taking this course. If you are concerned about this, please see or contact me during the first week of classes.
- 3. Reading:** reading assignments will be found both in the text book, Kormondy & Brown, 1998. *Fundamentals of Human Ecology*, and online in the “Course Documents” section of the class Blackboard site. In addition, there are several recommended readings. The recommended readings are not required, they are provided to enhance your knowledge of the subject in question. Keep in mind that *you are not finished with the reading assignment until you thoroughly understand it*. This will sometimes require you to read an assignment more than once. An effective way of ensuring comprehension is to read the assignment then go back through it and summarize its main points in your notebook.

4. Evaluation: You will be evaluated based on your performance on **three mid-term exams** (multiple choice and short answer) and **take-home, short-answer questions** assigned during the semester. Prior to each exam I will hand out a list of key terms and concepts that will be covered on the exams. In preparing for each exam, you should not define each key term in isolation; rather, define and understand it in relation to the other key terms within the context of the course.

You must provide advance notice to the instructor if you are unable to take an exam. All requests for deferral of an examination due to health reasons must be accompanied by written documentation as outlined in the University Calendar and should be obtained while the student has the physical or emotional problem rather than after recovery. Deferred exams may be allowed in the following circumstances: illness, domestic affliction or religious conviction. If you have missed an exam for a legitimate reason, you will be able to write a “make up” exam as close to the original exam as possible. The date and location will be at the convenience of the Archaeology Department. Travel arrangements and misreading of the syllabus are **not** valid reasons for requesting a deferred exam. Deferred exams and take-home, short-answer questions will not be granted if it is determined that just cause is not shown by the student.

Please note that requests to defer term work past the end of a term go through the Undergraduate Programs Office (UPO) and must be processed by the deadlines that are established in the U. of C. Calendar. You can find the forms you need at: Deferred Term Work Form: <http://www.ucalgary.ca/registrar/files/registrar/defTW.pdf>. You must submit these deferral forms to the Social Sciences Associate Dean (Students) through the UPO office: Undergraduate Programs Office, 4th Floor, MacEwan Student Centre. To make an appointment with the Associate Dean, phone (403) 220-8155. Only the Associate Dean approves requests for deferrals which extend beyond the end of a term. Instructors are not involved in such decisions.

Your final grade will be calculated as follows:

Mid-Term Exam #1:	_____	30%
Mid-Term Exam #2:	_____	30%
Mid-Term Exam #3:	_____	10%
Short Answer Assignments (Questions on Readings)	_____	30%

Letter grade assignment: At the end of the course, the numerical marks will be summed and a final letter grade will be assigned based on the following basis:

Percentage range	Letter grade	Percentage range	Letter grade
95 or higher	A+	68-72	C+
90-94	A	64-67	C
85-89	A-	59-63	C-
81-84	B+	54-58	D+
77-80	B	50-53	D
73-76	B-	49 or lower	F

5. Academic Misconduct: cheating is regarded as a serious academic offense. Students are advised to consult the University Calendar, which presents a Statement of Intellectual Honesty and definitions and penalties associated with cheating, plagiarism, and other academic misconduct.

6. Retrieving Assignments: The Freedom of Information and Protection of Privacy (FOIP) legislation disallows the practice of having students retrieve assignments from a public place, e.g., outside an instructor’s office or the Department main office. Term assignments must be returned to students individually, during class, or during the instructor’s office hours; if a student is unable to

pick up her/his assignment s/he may provide the instructor with a stamped, self-addressed envelope to be used for the return of the assignment.

7. Academic Accommodation: Students with a disability, who require academic accommodation, need to register with the Disability Resource Centre (MC 295, telephone 220-8237). Academic accommodation letters need to be provided to course instructors no later than fourteen (14) days after the first day of class. It is a student's responsibility to register with the Disability Resource Centre and to request academic accommodation, if required.

8. Office Hours: I enjoy having visitors during my office hours and am happy to schedule additional times as necessary. These hours are yours and I encourage you to take advantage of them, whether you are having difficulty with some aspect of the course, or if you would like to discuss in greater detail something that was touched on in class.

9. E-mail: Students are encouraged to use the lectures and office hours to ask questions. For after-hours questions, the use of email is acceptable. Please write 'ARKY 305' in the 'Subject' portion of the email. The instructor and teaching assistant receive numerous e-mails everyday. By clearly identifying the subject of your email, you will help us reply more efficiently to your emails. Note that if the instructor or teaching assistant think that your question and related answer is of general interest, they may decide to post them on the course Blackboard space (your name will not appear).

Safewalk: The University of Calgary provides a "safe walk" service to any location on Campus, including the LRT, parking lots, bus zones, and campus housing. For Campus Security/Safewalk call 220-5333. Campus Security can also be contacted from any of the "Help" phones located around Campus.

Schedule¹

1	Jan.	13	hate crimes, anthropology, science as a way of knowing	Sagan (Scientists' Tools), CBC hate crimes reading
2	Jan.	15	History of the race concept: Morton, Social Darwinism, origins of the race concept	Marks (Black, White.); and <i>either Akpan or Wiesel</i>
3	Jan.	20	History of the race concept: Linnaeus, Buffon & Physical Anthropology, Why rejection of race concept?	SSRC (Is Race Real?)
4	Jan.	22	History of the race concept: Why the rejection of race concept? (cont.)	Ehrlich & Holm (Bio. View of Race)
5	Jan.	27	Sources of genetic variation	Cummings (Mutation); Lewis (Extensions & Exceptions); Rennie (Grading Gene Tests)
6	Jan.	30	Patterns of Inheritance: simple & complex traits	Groopman (Decoding Destiny); Lewis (Complex Traits)
7	Feb.	3	Complex traits: IQ, intelligence & heritability	Jones (Caliban's Revenge)
8	Feb.	5	Complex traits: IQ, intelligence & heritability	Lewontin (Mental Traits)
9	Feb.	10	Mid-Term Exam #1	
10	Feb.	12	Complex traits: sex determination	Lewis (Matters of Sex), Fausto-Sterling (5 Sexes)
	Feb.	17 & 19	– <i>Reading Break (no classes)</i>	
11	Feb.	24	Complex traits: gender roles	Sapolsky
12	Feb.	26	Complex traits: gender roles	Infinite Mind: - Educating Dick and Jane - Women & Mental Illness ³
13	Mar.	3	Human population biology: origins, theory, levels of adaptation	K & B: Ch. 1 & 6
14	Mar.	5	Climatic stress & human variation: solar stress, thermal stress	Loomis
15	Mar.	10	Climatic stress & human variation: thermal stress (cont.)	K & B Pp. 131–149
16	Mar.	12	Adaptation to thermal stress: heat and cold	K & B Pp. 149–161
17	Mar.	17	Adaptation to malnutrition: requirements	K & B Pp. 186–202, Nutrition Handout
18	Mar.	19	Adaptation to malnutrition: variation in susceptibility to starvation	K & B Pp. 162-173 & 202-204; Brown & Konner (Anthro & Obesity)
19	Mar.	24	Adaptation to Hypoxia	Hypoxia Handout (Beall's work)
20	Mar.	26	Adaptation to Infectious Disease	K & B Pp. Ch. 4
21	Mar.	31	Mid-Term Exam #2	
22	Apr.	2	Adaptation to Infectious Disease	K & B: pp. 202-224
23	Apr.	7	Adaptation to Infectious Disease	Dugger & McNeil (Polio), Kolata (plague & HIV)
24	Apr.	9	Population Ecology: terms & concepts in demography	K & B: Ch. 5
25	Apr.	14	Population Ecology: 4 evolutions in pop. growth, HIV & pop. growth rate, demographic transition.	to be determined
26	Apr.	16	Mid-Term Exam #3	

¹ Note, the schedule of topics may change, but the exam dates will not.

² For a detailed bibliography of the readings, please see pages 5-6 below.

* K & B = Kormondy & Brown's *Fundamentals of Human Ecology*. All readings not found in the Kormondy & Brown text can be found on the class Blackboard site under "Course Documents".

³ The Infinite Mind is a radio show. The URL for the website can be found in the Bibliography below.

Readings

These readings are available in the Course Documents section of the Blackboard Site or elsewhere online.
(Note, this bibliography does NOT include readings from the Kormondy and Brown text.)

Akpan, Uwem (2008) *Say You're One of Them*. Hachette Book Group. New York. (While the entire book is appropriate for this course, the reading assignment only covers the book's last chapter: "My Parent's Bedroom").

Brown, P.J. and M. Konner. 1987. An anthropological perspective on obesity. *Annals of the New York Academy of Sciences*. Vol. 499. Pp. 29-46.

CBC News Online. 2004. Indepth: Hate Crimes – What is a hate crime?
<http://www.cbc.ca/news/background/hatecrimes/> Accessed 23 December 2008.

Cummings, Michael R. 2006. Mutation: the source of genetic variation. In *Human Heredity: Principles and Issues*. Seventh Edition. Thompson Publishing. USA. Pp. 244-264..

Dugger and McNeil 2006. On the brink: Polio – A fragile immunity – Rumor, fear, and fatigue hinder final push to end polio. *New York Times* (20 March 2006)

Ehrlich, Paul R. and Richard W. Holm 1964. A biological view of race. In *The Concept of Race* Ashley Montagu, editor. Collier Books, London: pp. 154-179.

Fausto-Sterling, Anne. 1993. The five sexes. *The Sciences*. March/April 1993.

Groopman, Jerome 1998. Decoding Destiny. *New Yorker*. February 9, 1998. Pp. 42-47.

Infinite Mind (<http://theinfinitemind.com/mindprgm.htm> scroll down the page to the shows described here)

"Educating Dick and Jane" (2008) (required)

We'll look at the latest science about how boys and girls learn, the similarities and differences. Host Dr. Fred Goodwin is joined by Louann Brizendine MD, Director of the Women's Mood and Hormone Clinic of the University of California at San Francisco, and author of the book "The Female Brain," who details how the less than 1% difference in genetic coding influences stark differences between how boys and girls learn. Plus, a special report on single sex schools. How well do they work? And "news you can use" for parents from leading child psychiatrist Stanley Greenspan about tailoring the learning environment to the strengths of the child.

"Women and Mental Illness" (2007) (optional)

Women are more likely to have clinical depression, anxiety, and eating disorders. And their roles - particularly as mothers – can further compound their mental health problems. This program explores both the biological and social forces shaping women's experience of mental illness. Guests include Charlotte Willis, a mother and participant in the Thresholds Mothers Program, Rush Medical College professor of psychiatry Nada Stotland, documentary maker and women's studies professor, Allie Light, and Harvard University psychiatrist Lee Cohen.

SSRC. 2005. Is Race Real? (<http://raceandgenomics.ssrc.org/>)

Assigned readings include:

Leroi, Armand Marie 2005. A Family Tree in Every Gene. *New York Times*. Published March 14. p. A23. (<http://raceandgenomics.ssrc.org/Leroi/>)

- **and 1** of the following 4 papers (you choose)

▪ Goodman, Alan. 2005. Two Questions About Race.

▪ Graves, Joseph L. 2005. What We Know and What We Don't Know: Human Genetic Variation and the Social Construction of Race

▪ Kaufman, Jay S. 2005. Anatomy of a Medical Myth

▪ Lewontin, R. C. 2005. Confusions About Human Races

Jones, Steve. 1993. Caliban's Revenge. In *The Language of Genes*. Anchor Books, NY. Pp. 182-196.

Kolata, G 1998. Scientists probe the genetic mysteries of a pair of deadly plagues. *New York Times*

Lewis, Ricki. 2006. Complex Traits. In *Human Genetics*. McGraw-Hill..

- Lewis, Ricki. 2006. Matters of Sex. In *Human Genetics*. McGraw-Hill. .
- Lewis, Ricki. 2006. Extensions and exceptions to Mendel's laws. In *Human Genetics*. McGraw-Hill.
- Lewis, Ricki. 2006. Mendel's laws. In *Human Genetics*. McGraw-Hill. (*This is an optional reading, for review of inheritance of simple (Mendelian) traits, if necessary*).
- Lewontin, Richard. 1982. Mental Traits. In. *Human Diversity*. WH Freeman, New York. Chapter 7.
- Loomis, WF. 1970. Rickets. *Scientific American* Vol. 223. June. Pp. 77-91.
- Marks, Jonathan 1994. Black, White, Other. *Natural History*. Pp. 32-35.
- Molnar, Stephen 1998. *Human Variation*. Prentice-Hall, New Jersey. Pp. 34-71. *This paper is not in the reading packet, but is on reserve in MacKimmie Library and in the Archaeology Library (ES 810) (This is an optional reading, for genetics review, if necessary.)*
- Rennie, John. 1994. Grading the gene tests. *Scientific American*. Pp. 88-97.
- Sagan, Carl 1995. *The Demon-Haunted World: Science as a Candle in the Dark* Science as a Candle in the Dark, Random House / Ballantine Books (section on Scientists' Tools for Skeptical Thinking – available on class blackboard site).
- Sample Informed Consent Form for the Huntington's Disease Direct Genetic Test, from <http://www.hdfoundation.org/testread/hdsatest.htm>, 6 January 2001
- Sapolsky, Robert M. 1997. The Trouble with Testosterone. In: *The Trouble With Testosterone and Other Essays on the Biology of the Human Predicament*. Simon & Schuster, NY. Pp. 147-159.
- Special Pathogens Branch. 2002. Ebola hemorrhagic fever information packet. Centers for Disease Control and Prevention. Atlanta, GA.
- Wiesel, Elie. 1960. *Night*. Bantam Books. New York. (pages 1-)