

HUMAN VARIATION
ANT 225.01 – Fall 2007

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Office Hrs: MW 10a-4p

Goodnow 307
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COURSE DESCRIPTION:

In this course, we will examine the basics of genetics, human variation, and the interactions of genes and culture – all from an evolutionary perspective. The course is roughly divided into 4 “umbrella” topics: 1) background information, 2) the basics of genetics, 3) genes and culture, and 4) genes and behavior.

REQUIRED TEXTS AND EQUIPMENT:

- 1) Mielke, J., Konigsberg, L., & Relethford, J. 2006. *Human Biological Variation*. Oxford Univ Press, NY. **(HBV)**
- 2) Ridley, M. 2000. *Genome: The Autobiography of a Species in 23 Chapters*. Perennial, NY. **(G)**
- 3) Stone, L., Lurquin, P., & Cavalli-Sforza, L. 2007. *Genes, Culture, and Human Evolution: A Synthesis*. Blackwell Publishing, Malden, MA. **(GCHE)**
- 4) Blackboard Readings– Available on-line. **(BR)**
- 5) You’ll need a basic calculator of some sort.

COURSE REQUIREMENTS AND GRADING:

- 1) Exams – 4 @ 17.5% = 70% - There will be four in-class exams, each covering approximately ¼ of the course.
- 2) Problem Sets – 5 @ 2% = 10% - Five short and straight-forward problem-sets will be assigned during the first half of the semester that re-emphasize and review the genetic and mathematical concepts of the readings. They will be due as indicated on the syllabus as **hard copies** and will not be accepted late. **Note that the two that have 8a due times may be submitted as email attachments.** They will be graded as √-, √, √+ which equate roughly to a C, B, or an A.
- 3) Cat Lab Project – 1 @ 10% = 10% - There will be one longer “lab” project early in the semester that will require some data collection and a write-up.
- 4) Attendance and Participation – 10% - These are mandatory and I keep track of both. If you are not planning on attending and participating in every class, you are wasting your time and mine.
- 5) Grading Scale: F≤ 69.4; D=69.5-73.4; C=73.5-76.4; C+=76.5-79.4; B-=79.5-82.4; B=82.5-86.4; B+=86.5-89.4; A-=89.5-93.4; A=93.5-100

ACADEMIC HONESTY:

No collaboration is allowed on **any** of the work – problem sets, lab, or exams.

WEEK/DATE	TOPIC(S)	ASSIGNMENT(S)
Wk 0 F – 31AUG	Preliminaries	Find a reputable news source on-line and see what aspects of human genetics are making current headlines. Bring your story to class.
OVERVIEWS		
Wk 1 & 2 M – 03SEP	Evolutionary Theory Overview	BR 1: Goldsmith & Zimmerman, Ch 2: <i>Charles Darwin ...</i> & Ch 5: <i>After Darwin ...</i>

W – 05SEP	Paleoanthropology Overview	GCHE 2
F – 07SEP	Classifying Diversity Overview	HBV 1
M – 10SEP	Cultural Evolution Overview	GCHE 1
BASIC GENETICS		
WK 2		
W- 12SEP	Genetics Foundations	GCHE 3
Th, 13SEP	Problem Set 1 Due, 8am	
F – 14SEP	Genetics Basics	HBV 2
WK 3		
M – 17SEP	More on Mutation and Nat. Selection; Problem Set 2 Due, in class	GCHE 5
W – 19SEP	Population Genetics	HBV 3
Th, 20SEP	Problem Set 3 Due, 8am	
SIMPLE TRAIT VARIATION		
WK 4 & 5		
F – 21SEP	Blood Groups	HBV 4 (Not Included on 1st Exam)
M – 24SEP	EXAM 1	N/A
W – 26SEP	Plasma Proteins	HBV 5
F – 28SEP	Hemoglobin Variants	HBV 6
M – 01OCT	HLA, Lactase, Etc.	HBV 7
COMPLEX TRAIT VARIATION		
WK 5		
W – 03OCT	DNA Markers	HBV 8
F – 05OCT	Quantitative Variation; Cat Lab Due, 5pm	HBV 9
WK 6		
M – 08OCT	More on Drift and Migration; Problem Set 4 Due, in class	GCHE 6
W – 10OCT	Anthropometric Variation	HBV 10
F – 12OCT	Pigmentation; Problem Set 5 Due, in class	HBV 11

WK 7 M – 15OCT	EXAM 2	N/A
GENES AND POPULATIONS		
WK 7 W – 17OCT	Genes & Pre-History	GCHE 4
F – 19OCT	More Genes and Pre-History	GCHE 9
WK 8 M – 29OCT	Genes and Population Structure Bonus Problem Set 6 Due, in class	HBV 12
GENES AND CULTURE		
WK 8 W – 31OCT	Cultural Evolution	GCHE 7
F – 02NOV	CLASS CANCELLED	
WK 9 & 10 M – 05NOV	CLASS CANCELLED	
W – 07NOV	Genes and Language	GCHE 8
F – 09NOV	Prehistoric Expansions	GCHE 10
M – 12NOV	Peopling of Americas	GCHE 11
GENES AND BEHAVIOR		
WK 10 W – 14NOV	Genetics and Behavior	HBV 13
F – 16NOV	Genes and Kinship	GCHE 12
WK 11 M – 19NOV	Cultural Clines	GCHE 13
W – 21NOV	Genes, Culture, & Medicine	GCHE 14
WK 12 M – 26NOV	EXAM 3	N/A
HUMANS FROM A GENE PERSPECTIVE		
WK 12 W – 28NOV	Introduction & Chromosomes 1, 2, 3	G, pp 4-53
F – 30NOV	Chromosomes 4, 5, 6	G, pp 54-90
WK 13 M – 03DEC	Chromosomes 7, X/Y, 8	G, pp 91-135
W – 05DEC	Chromosomes 9, 10, 11	G, pp 136-172

F – 07DEC	Chromosomes 12, 13, 14	G, pp 173-205
WK 14 M – 10DEC	Chromosomes 15, 16, 17	G, pp 206-242
W – 12DEC	Chromosomes 18, 19, 20	G, pp 243-285
F – 14DEC	Chromosomes 21, 22; Wrap-up	G, pp 286-313
WK 15 T - 18DEC, 9a	EXAM 4	N/A

BLACKBOARD READING:

- 1) Goldsmith, T., Zimmerman, W. 2001. *Biology, Evolution, and Human Nature*. John Wiley & Sons, NY. CH 2: *Charles Darwin and the Origins of Evolutionary Theory*, pp. 21-51. CH 5: *After Darwin: Molecular Evolution, Selection, and Adaptation*, pp. 105-124.