

Human Biological Variation

Anthropology 4540/7540

(University of Missouri – Columbia, Fall 2007)



Course Description:

You will learn about the evolutionary, ecological, demographic, and cultural factors that contribute to biological variation within and between human populations. Specific topics to be discussed include Mendelian genetics, population genetics, morphological and biochemical variation, population structure and history, and human adaptation. The course satisfies the Arts and Science General Education requirement in Biological Sciences.

Instructor:

Dr. Daniel Wescott
Office: 213C Swallow Hall
Office Phone: 882-8748

Office Hours: 10:00 – 10:50 am MW
or by appointment
Email: WescottD@missouri.edu

Meeting Time / Place:

MWF 11:00 – 11:50 / Ellis Library Auditorium

Required Learning Materials:

Text: *Human Biological Variation* (2006) by Mielke, Kongsberg, and Relethford

Supplemental Readings: Any additional readings will be made available on electronic reserve. Go to the “Electronic Reserves at University of Missouri-Columbia” webpage (<http://eres.missouri.edu/>) and click on “Electronic Reserves and Course Materials.” Go to the course page by selecting the course name or instructor name. Once you locate the course page, you will need to enter the page password, which is “**variation.**”

Prerequisites:

Anthropology 2050/2051 or Biological Sciences 1010 and Math 1100/1120

On-line Information:

Course information (e.g., syllabus, contact information, announcements, grades, and other material) is available on *WebCT* (<https://courses.missouri.edu>). At the “Online Courses at Mizzou” webpage, click on “*WebCT*” and login using your Pawprint username and password. If you need help with *WebCT* contact the IAT services help desk (helpdesk@missouri.edu or 882-5000) or me. You should access *WebCT* **before each class** to look for updates and announcements.

Assessment:

Undergraduate Students (4540): Your grade is based on a total of 450 points. You will be assessed on your performance on two examinations (200 points), homework (200 points) and class participation (50 points). Plus-minus grading (i.e., 98-100% = A+, 93-97% = A, 90-92 % = A-, etc.) will be applied.

Graduate Students (7540): Your grade is based on a total of 650 points. You will be assessed on your performance on two examinations (200 points), homework (200 points), four case studies (200 points), and class participation (50 points). Final grades for graduate students will be based on a straight 90/80/70/60% scale.

Examinations: There will be a midterm exam and a final exam, each worth a maximum of 100 points. The examinations will consist of problem solving, short answer, and essay questions.

Homework: Homework problems and questions will give you a chance to increase your understanding of the concepts discussed in class. Instructions for the homework and due dates will be provided in class. All late homework will be penalized 10% per day.

Class Participation: These are not free points. I expect you to have read the chapters and articles assigned, actively participate in discussions, and occasionally summarize articles. If you are chronically shy and absolutely cannot speak out in class, see me privately and we will work something out. A corollary of participation is attendance; it is impossible to show me your knowledge and understanding if you do not come to class.

Case Studies (Graduate Students Only): You will work in pairs on four case studies (maximum of 50 points each) Your assignment is to develop and present a case study that will help you and the other students in the class learn about the topics being discussed. This will include preparing the case study in advance, assigning material, presenting the case study, and leading a discussion about its relevance to the topic.

Tips for Success:

Your goals as a student are to gain new knowledge and understanding of the subject material as well as an ability to apply that information. I have found that keeping an open mind, attending class regularly, being adequately prepared, asking questions, managing your time, and actively participating are essential for meeting these goals.

You should also take advantage of my office hours. Office hours are the time that I am available for you to walk in and ask me any questions about the course that will help your comprehension of the subject matter. Therefore, I strongly encourage you to come to my office if you are having trouble understanding a concept or have general questions about anthropology. You will probably find that coming to me during my office hours when you need help will improve your

understanding and, probably, your grade. If you have a conflict with my office hours, contact me after class or by email to schedule an alternative time to meet.

I believe that learning should be a community endeavor in which we learn from one another. Each of you has experiences and knowledge that may be valuable to the learning process of other students. Therefore, I expect you to contribute to your own learning and the learning of others by participating in class discussions. I also hope that you extend this resource by studying together, asking each other questions, and discussing the information we cover outside the classroom. There is a discussion board available on *WebCT* for you to post questions and discuss class material with other students.

Expectations:

I expect you to attend all class sections for the entire period. If you must be absent, it is your responsibility to obtain information you may have missed from another student. Furthermore, manage your time so that you do not have to come in to class late or leave early. You miss out on a lot of information and it disrupts me and the other students.

I expect you to be prepared for each class by completing assigned readings or other assigned work prior to class. It is important for you to keep up with your readings. In some cases the textbook will include more detail than will be presented in class, but you should use the textbook to fill gaps in your understanding of the lecture material.

I expect you to participate in class discussions. One of the most effective ways of learning is discussing the material with your fellow students. Your course participation score will be largely based on your participation in class discussions.

I expect you to show respect for your fellow students! Turn off all cell phones and pagers, keep irrelevant talking to a minimum, and do not start putting your books and notes away until the class is finished. If you must come to class late or leave early, please enter or exit the room quietly. I reserve the right to demand that you leave the classroom if you are disturbing other students.

Academic Honesty:

As a student of the University of Missouri, you have committed to academic honesty. In doing so, you have promised that you will not provide or receive any improper aid in your academic work. All work submitted to me for assessment must be your own work, except in cases where I specifically tell you that the work can be a group effort. If I suspect any form of academic dishonesty, I will report it to the Office of the Provost for investigation. Pending the outcome of their investigation, you will receive an incomplete for the assignment. If the review committee finds evidence of academic dishonesty, you will receive a failing grade for the course.

Frequently students are unaware of what constitutes academic dishonesty. Some examples that one might confront in this course are plagiarism from your fellow students, textbook, websites or other resources on an assignment. Allowing a fellow student to copy your work also constitutes academic dishonesty. In general, any effort to gain an advantage not given to all students is dishonest. If you have any doubt about plagiarism, collaboration, or what constitutes cheating, please consult me. You may also find information in the *Collected Rules and Regulations*, Section 200.010, Standard of Conduct and Section 200.020, Rules of Procedures in Student Conduct Matters. Information on how to access these sections is available on *WebCT*.

Disabilities:

The University of Missouri seeks to provide educational opportunities to all students. If you have medical information you need to share with me or need specific accommodations (e.g., examinations or course material in an alternative form or special arrangements in case the building must be evacuated) please notify me privately after class or in my office. Reasonable efforts will be made to accommodate any such needs.

To request specific academic accommodations, you will need to contact Disability Services in S5 Memorial Union (882-4696).

Verbal Communication:

If you have a concern regarding the instructor's or teaching assistant's verbal communication proficiency, please contact the Undergraduate Studies Director of the Anthropology Department (107 Swallow Hall).

Tentative Course Outline:

Topic	Reading¹
Study of Human Variation: History and Theory	Chapter 1, SR1
Genetic Basis of Human Variation	Chapter 2:22-40
Mendelian Genetics	Chapter 2:40-45
Hardy-Weinberg Model	Chapter 3:47-54
Departures from Hardy-Weinberg	Chapter 3:55-61
Forces of Evolution	Chapter 3:64-84
Variation in Simple Traits: Blood Groups	Chapters 4
Variation in Simple Traits: Proteins & Enzymes	Chapter 5
Variation in Simple Traits: Hemoglobin	Chapter 6
Variation in Simple Traits: Others	Chapter 7
Variation in Simple Traits: DNA Markers	Chapter 8
Variation in Complex Traits: Quantitative Variation	Chapter 9, SR2
Variation in Complex Traits: Anthropometric Variation	Chapter 10
Variation in Complex Traits: Pigmentation	Chapter 11
Variation in Complex Traits: Behavior	Chapter 13
Variation in Growth and Development	SR3, SR4
Adaptation to Disease	SR5, SR6, SR7
Population Growth, Fertility, and Aging	TBA
Population Structure and Population History	Chapter 12, SR8

¹SR = Supplemental Reading

Important Dates:

September 3rd: Labor Day – No Class

October 5th: Approximate date for Midterm Exam

November 19th -23rd: Thanksgiving Break – No Class

December 10th: Final Exam (8:00 – 10:00 am)

Supplemental Readings:

1. Huss-Ashmor, Rebecca. 2000. Theory in human biology: evolution, ecology, adaptability, and variation. In: Stinson, Sara et al., editors. *Human Biology an Evolutionary and Biocultural Perspective*. New York: Wiley-Liss, pp. 1-25.
2. Vitzthum, Virginia J. 2003. A number no greater than the sum of its parts: the use and abuse of heritability. *Human Biology* 75:538.
3. Stinson, Sara. 2000. Growth variation: biological and cultural Factors. In: Stinson, Sara et al., editors. *Human Biology an Evolutionary and Biocultural Perspective*. New York: Wiley-Liss, pp. 425-463.
4. Cameron N, Demerath EW. 2002. Critical periods in human growth and their relationship to diseases of aging. *Yearbook of Physical Anthropology* 45:159-184.
5. Sattenspiel, Lisa. 2000. Epidemiology of human disease. In: Stinson, Sara et al., editors. *Human Biology an Evolutionary and Biocultural Perspective*. New York: Wiley-Liss, pp. 225-272.
6. Jackson, Fatimah L.C. 2000. Human adaptation to infectious disease. In: Stinson, Sara et al., editors. *Human Biology an Evolutionary and Biocultural Perspective*. New York: Wiley-Liss, pp. 273-294.
7. Armstrong, Gregory L., Laura A. Conn, and Robert W. Pinner. 1999. Trends in infectious disease mortality in the United States during the 20th Century. *Journal of American Medical Association* 281:61-66.
8. Relethford JH. 2002. Apportionment of global human genetic diversity based on craniometrics and skin color. *American Journal of Physical Anthropology* 118:393-398.