Anth 4133/6133: Maternal and Child Health Spring 2020
3 credits

Meets Tuesdays & Thursdays 2:00–3:20 PM in AEB 340

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Web: Canvas portal

Prerequisites This is an advanced course about human evolution. There are no prerequisite courses. Enrollment in Anth 6133 requires graduate standing.

Readings

There is no textbook to buy. You will be assigned electronic versions of articles that I post or link to on Canvas.

Requirements

Anth 4133 Grades will be based on three midterm exams and a research project. Each exam is worth 200 points (each is 20 percent of course grade). The research project consists of several components totaling 400 points (40 percent of course grade).

Assume the following percentages for grades: >93 A, 90-93 A-, 87-89 B+, 83-86 B, 80-82 B-, 77-79 C+, 73-76 C, 70-72 C-, 67-69 D+, 63-66 D, 60-62 D-, and <60 Fail. I may add a curve at the end of the semester.

Each midterm will cover material from each third of the course. For the research project you will complete an online plagiarism tutorial, prepare an outline for grading, peer review outline(s), write an original research report, and provide a written response to the originality report you receive from Turnitin about your research report.[1] Research reports should be written in an academic style and include formal citations to peer-reviewed academic sources. They can be on any topic of interest to a student as long as the topic is somehow connected to human evolution. Please refer to the research paper handout for the specific requirements about this assignment.

Anth 6133 Requirements are the same as for Anth 4133 students except that Anth 6133 students are expected to prepare a more elaborate report than undergraduate students and their exams will be graded on a separate scale. The research project is normally a component of the student’s thesis and, if appropriate, presented to the class.

[1] There are no strict length requirements, but most students will need to write 10 to 15 pages (double-spaced) of prose to do a good job. There are about 300 words on a double-spaced page, so 10 to 15 pages of prose is roughly 3000 to 4500 words.
Dates for Spring 2020 Term

- Research paper requirements discussed Tuesday, January 21.
- First Midterm (during class)—Thursday, February 6.
- Plagiarism tutorial—electronic submission due Thursday, March 5.
- Second Midterm (during class)—Thursday, March 19.
- Outline—electronic submission due Thursday, March 26 (late submission not possible).
- Peer review(s) of outline—electronic submission due Thursday, April 2 (late submission not possible).
- Research paper—electronic submission due Tuesday, April 21.
- Response to your Turnitin originality report—electronic submission due Wednesday, April 22.
- Third Midterm (during final exam period)—Friday, April 24 from 1–3 pm.

Late work  You are required to take the exams as scheduled unless you make alternative arrangements with me ahead of time. Contact me no later than the class following the missed exam to reschedule a make-up. Students who miss the exam without a documented and compelling excuse will be penalized 20 percentage points on the exam. It is not feasible to accept late outlines and peer reviews—these must be completed by the due date. Research papers submitted after the due date will lose 20 percentage points. To receive credit for the plagiarism tutorial assignment, students must complete it before submitting their research projects; late submissions will be penalized 20 percentage points. Students are responsible for making sure that they have successfully uploaded electronic assignments to Canvas by the due dates.

Plagiarism software  You will submit your papers electronically to Canvas, which will use Turnitin software to analyze your work for text matches to published sources to help prevent plagiarism. Plagiarism is improper use of someone else’s ideas or words, such as using a phrase or passage from a book as if you wrote it; incorporating passages from the work of someone else and then changing a few words also constitutes plagiarism as is inserting copied phrases into your writing. We will use Turnitin as a learning tool. Students who submit their papers ahead of the due date will have an opportunity to correct any problems it identifies before I grade them.

Makeup work  Students may propose projects (or ask me for suggestions) to earn up to 50 extra points (1/3 letter grade maximum increase). I must approve your project. In the past students have read popular science books about evolution or wrote a short research report about something relevant to the course. The make-up work will help students who missed a few points on an exam or land in between grades at the end of the semester. Most students can improve their grades more by using the time to study for the exams or work on their papers.
I will also award 5 extra credit points to the first student to report a substantive error in course materials (such as lecture notes).

**Teaching and learning methods**  Class is structured around lectures and discussion of course topics. Students should bring questions about course content, including readings, to class for discussion.

**Course Description**  This class is a course in human evolution. We try to figure out how nature designed humans to reproduce and care for children by looking at our biology. If you strip away culture, what does the biology predict? If you tinker with the design, what are the consequences?

The course includes an overview of infant and early child mortality rates and its causes. In particular we consider the influences of infectious disease, technology and human variation on health.

An emphasis of the course is hypothesis testing based on scientific methods. How do you know what you know? There are always (at least) two explanations for anything, and students may be surprised to find that some generally accepted beliefs are not evidence-based.

**Course Objectives**  At the end of the course students will be able to a) apply anthropological research methods to answer a question or solve a problem; b) evaluate and synthesize scientific hypotheses about human variation using empirical data; and c) explain aspects of human variation using evolutionary theory. In particular, students will be able to

- identify the basic pattern of human reproduction and its natural variation in diverse human groups;
- use an understanding of human variation and the human past as a tool for investigating questions about fertility and morbidity;
- use evidence-based research and hypothesis testing to assess the reliability of information;
- interpret graphical representations of data.

**Topics**

Below is a list of topics. I will post the associated readings on Canvas and assign them as we go. We will spend one to two weeks on each section.

1. Course introduction. Human reproduction, cats vs dogs. In these lectures I outline some variations among mammals related to health. Anatomical variation includes teat number and shape of the uterus indicative of litter sizes and the structure of the placenta and the ability of newborns to cling to mother. Physiological variation includes frequency and hormonal control of reproductive cycles and innate ability of newborns to fight infectious disease. Humans typically produce helpless singletons that cry a lot, nurse frequently and survive well.
2. The human past and health today. Birth defects are the number one cause of infant mortality in the United States. We will look at some examples of biological variation within and between populations associated with differences in birth and death rates among women and their infants. The best example is sickle cell anemia, a genetic disease historically associated with the parasitic disease falciparum malaria. Another example is hemolytic disease of the newborn, a disease that results from a genetic mismatch between the blood type of mother and her fetus. Hemolytic disease is a byproduct of a placenta that provides passive immunity to newborns in our species. We may also consider other variation such as Duffy, BRCA1, and cystic fibrosis in a broader context of infant and maternal health.

3. Variation in skin tone: the vitamin D and folate connection. Low levels of Vitamin D and folate are associated with higher risk of pregnancy complications and their levels are modulated by skin tone in relation to sunlight intensity. Dark skin at low latitudes with lots of sunshine protects folate stores in red blood cells; light skin at higher latitudes promotes natural production of Vitamin D. We discuss some consequences of mismatch between skin tone and environment to health, such as inflammation, rickets, neural tube defects and preeclampsia.

4. Getting and staying pregnant. We discuss hormonal control of the menstrual cycle, rates of pregnancy and fetal loss and several hypotheses for why menstruation and fetal hCG evolved.

5. Maternal complications of pregnancy. Pre-eclampsia (precursor to deadly seizure disorder) and gestational diabetes (development of excessively elevated blood sugar levels during pregnancy) occur at surprisingly high frequencies and significantly reduce the survivorship of infants and their mothers. Nearly all women experience nausea or vomiting during pregnancy. We consider the theory of maternal-fetal conflict of pregnancy and the “war in the womb” as possible causes.

6. Development of the infant immune system: the roles of childbirth and breastmilk. Gut microbes of babies born vaginally differ from those born surgically, and gut microbes of babies fed breastmilk differ from those fed breastmilk substitutes. We discuss theories about why childbirth is difficult and consider the “Old Friends” hypothesis as possible explanations for morbidity differences among children.

7. Breastfeeding and infant care. Evolution of bipedalism changed the way humans care for infants. We investigate biological indicators of weaning age, durations of lactational amenorrhea and patterns of infant care to understand natural birth spacing as well of some of the causes of SIDS and infant cry.

8. Possible additional topics (time permitting): Maternal-fetal conflict, genomic imprinting and birth defects; Gestation time and infant survival; Why children won’t eat their vegetables.
ADA Statement: The Americans with Disabilities Act. The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in this class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union Building, (801) 581-5020. CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in an alternative format with prior notification to the Center for Disability Services.

Addressing Sexual Misconduct: Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a Civil Rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran’s status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS).

Wellness Statement: Personal concerns such as stress, anxiety, relationship difficulties, depression, cross-cultural differences, etc., can interfere with a student’s ability to succeed and thrive at the University of Utah. For helpful resources contact the Center for Student Wellness (www.wellness.utah.edu; 801-581-7776).

Student Code: (Policy 6-400) All students are expected to maintain professional behavior in the classroom setting, according to the Student Code (regulations.utah.edu/academics/6-400.php). Students have specific rights in the classroom as detailed in S. II of the Code. The Code also specifies standards of behavior (S. III) and academic conduct (S. V). “Students must adhere to generally accepted standards of academic honesty, including but not limited to refraining from cheating, plagiarizing, research misconduct, misrepresenting one's work, and/or inappropriately collaborating” (S. VB). According to Faculty Rules and Regulations, it is the faculty responsibility to enforce responsible classroom behaviors. Students have the right to appeal such action to the Student Behavior Committee.

Incomplete Policy: An "I" will only be given for work not completed because of circumstances beyond the student’s control, providing the student is passing the course and needs to complete 20% or less of the work. Valid reasons for an "I" grade include: (a) An illness (documented by a medical statement) that precludes the ability of the student to perform; (b) an accident or situation that prevents the student from physically being present (documentation may be required); (c) Extreme emotional or other mental circumstances that are severe enough to interfere with a student's normal academic performance. If you do receive an "I", do not register for the course again. You must complete the required work in the time agreed by you and the instructor. If the work is not completed within one year, the grade will change to an "E". Faculty will not accept additional work to change the grade after that one-year period. If a student has a problem with the course, please deal with it immediately. It is the student’s responsibility to contact instructors and submit necessary forms.

Note: The syllabus is not a binding legal contract. It may be modified by the instructor when the student is given reasonable notice of the modification.