Anth 4334/6334: Population Issues in Anthropology Fall 2018
3 credits (QBQI)

Instructor: Renee Pennington
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Hours: M, W after class till 11:15 and by appt.
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Anth 4334 and Anth 6334 meet together MWF 9:40 AM–10:30 AM in GC 5680.

Prerequisites
Anth 4334: Math 1030 or higher.
Anth 6334: Graduate standing.

Course description
This class is about the history and dynamics of the human population. Topics include changes in numbers of people and their age distributions; land use, residence patterns and density; epidemiology of pre- and post-industrial cultures; history of the human diet; the Industrial Revolution and its social and evolutionary consequences.

Course objectives and learning outcomes
By the end of the class students will be able to

• apply anthropological research methods to answer a question or solve a problem, and
• explain aspects of human variation using evolutionary and social theory.

Over the course of a typical semester, students will learn to

• identify basic energy and nutritional requirements of children and adults and compute macronutrient contents of foods critical to the human diet;
• identify relationships between population dynamics of the past and human variation in the present.
• tabulate expectation of life;
• predict threshold population size for spread of certain diseases; and
• infer birth rates, historical events and family organization from graphical representations of population;

Teaching and learning methods
Includes lecture, homework exercises and exams. Students should bring questions about course content, readings and homework to class for discussion.
Due dates and grading

**Anth 4334 students**  First Midterm is Friday, October 5, 2018, during class; Second Midterm is Wednesday, December 5, 2018, during class. Each midterm is worth 160 points (16 percent of course grade, 32 percent total).

I plan to assign four graded homework, each worth 120 points (12 percent of course grade), and a final homework worth 200 points (20 percent of course grade). Approximate due dates are Sept. 14, Sept. 28, Nov. 2, Nov. 16, and Dec. 12, 2018.

Paper copies of homework can be submitted in class (preferred) or uploaded to Canvas (these must be legible to avoid late penalty). Late homework are penalized 20 percentage points.

Students are required to take the exams on the scheduled days. Students without a documented and compelling excuse for a missed exam will lose 20 percentage points.

The Homework generally involve computations about population and two or three pages of prose in which you explain your computations and their significance to a particular population issue in anthropology. The final homework may include a small research component. You should approach each as you would a take home exam or a professional report for an employer.

The exams will be short answer (definitions and concepts) and multiple choice; they may include some computations that you learned from the homework.

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 curve the grades at the end of the semester.

**Anth 6334 students**  In addition to Anth 4334 requirements, graduate students enrolled in Anth 6334 complete a project. The project is normally a component of a student’s thesis. Graduate students may enroll in an additional hour of independent study.

Time commitment

A general rule of thumb is that students will need to spend about two hours outside of class for every credit hour in class. Therefore, in addition to the time spent in class, students should plan to spend about six hours per week outside of class on readings, homework and exam preparation for this course.

Required course materials

Students can do the homework using a scientific hand calculator (such as the Texas Instruments TI-30XA) and graphing paper, but use of either a spreadsheet like Excel or a scripting language like Python to do some of the calculations and graphs will be a lot easier. Students may use calculators on exams (but no phones).

There is no textbook to buy. All readings are either on e-Reserve at Marriott Library or retrievable from other internet sites.
List of topics and readings

Below is a list of topics I cover in the course and readings that go with them; each topic corresponds to a homework assignments. Some of the readings are “how-to” sources that you will consult for information while others are items that you will want to read more carefully. I will guide you as I assign them.

We will spend two to three weeks on each topic. Since I prefer to follow the interests and strengths of students in the class rather than a strict schedule, I may end up shifting things around a bit and adjust the readings. Some lectures will be supplemented with extensive class notes.

1. Population expansion and the human diet. This section focuses on the earliest, dramatic expansion of population size associated with vast changes in the human diet. Following the advent of plant and animal domestication (which began roughly 10,000 years ago), farmers apparently displaced hunter-gathers throughout Europe. Of particular interest is the success of dairying cultures possessing lactase persistence alleles driving the sweep. Topics include human nutritional requirements, energy balance, Atwater factors, energy content of exemplar foods and food preferences.

Readings:


(f) Additional TBA

2. The exponential and logistic models of population growth. Some insights about quality of life under varying ecologies come from models of population growth. For example, the exponential model of constant population growth rates leads rapidly to explosive population sizes while population sizes are limited by carrying capacity under the logistic model.


(b) Pennington, Renee. (2017). Some notes on population growth. (Detailed class notes.)


(d) Additional readings TBA

3. The Industrial Revolution and health. The run-up to it in Europe was characterized by social changes and genetic changes associated with profound differences in the reproductive success of social groups. Topics include overpopulation in the countryside, the “age of seduction” in cities, and horrific urban mortality.
4. Disease and population size. We discuss reproductive strategies of pathogens and their transmission and dynamics in humans. Basic threshold (Kermack-McKendrick) models of disease transmission predict that macroparasites (e.g. helminthes, plasmodia) were the primary sources of disease in the past and that the transition to farming communities with larger population led to more virulent microparasitic (e.g. measles, influenza, tuberculosis, polio, small pox) infections.


(c) Additional TBA.

5. The stable population model: What a population pyramid reveals about history.

Readings:


(c) Roehner, B. M. (undated). How to use population pyramids to explore the past. Retrieve from http://www.lpthe.jussieu.fr/~roehner/pyrachl.pdf

(d) Additional TBA.
Boiler Plate Items

A note about the University of Utah

“As the only institution in the state classified in the highest research category (R1), at the University of Utah you will have access to state-of-the-art research facilities and be able to be part of the knowledge creation process. You will have the opportunity to do research of your own with faculty who are leading experts in their field, engaging in programs that match your research interests. Further, you will interact with and often take classes with graduate students that provide an advanced understanding of the knowledge in your field.”

Faculty and student responsibilities

Please respect everyone’s right and expectation to learn in the classroom. This means all of us should engage in respectful discussion with each other during class time and avoid behaviors that distract others. You are responsible for making sure I receive assignments before the deadline and that you can access readings and other course materials well before you need them.

The University expects regular attendance at all class meetings. If you must miss a class, be sure to find out what you missed; you should get lecture notes from another student in the class and check the class website for reading assignments, lecture notes and homework.

University and department policies

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 (http://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 (http://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.
Tentative list of homework problems and expected due days

Time permitting, there will be five homework assignments. Below is a brief description of each and its expected due date. Please note that I may need to modify the assignments and the due dates.

1. Compute energy values of foods and nutritional requirements for families; relate variation in subsistence systems to human gene variation, nutritional disease and land use. (Due approx. Sept. 14, 2018.)

2. Compute statistics about population growth using logistic and exponential models of population growth; apply concepts of doubling time and carrying capacity to sustainability. (Due approx. Sept. 28, 2018.)

3. Compute expectation of life from survival rates of historical Europeans; describe the consequences of profound differences in reproductive success to population composition. (Due approx. Nov. 2, 2018.)

4. Given a set of disease parameters, such as transmission rates, population size and recovery/death rates, predict the spread of infectious disease in a community; relate principles of disease transmission dynamics to variation in gene defenses against pathogens. (Due approx. Nov. 16, 2018.)

5. Analyze a population pyramid using stable population models and investigate hypotheses about the demographic, historical and social events that shaped them. You will draw on concepts taught throughout the course. It may involve a small research component. (Due Dec. 12, 2018.)