This course serves as students’ second semester in demographic methods. The course revisits some of the material covered in Sociology 674 (Elementary Demographic Techniques) but focuses on the derivation and continuous-time extension of previously introduced measures. The course also covers a series of additional demographic models. These emphasize (1) how populations change as a function of the interaction of multiple demographic processes and (2) how demographic phenomena can be modeled in the absence of perfect information about populations. Throughout the semester, we will consider how sociological knowledge can be advanced with the tools of formal demography.

The course relies on some basic calculus and matrix algebra but should be accessible to students without much background in either. Prerequisite: Sociology 674 or discussion with instructor.

Required Text: Preston, S., P. Heuveline, and M. Guillot. 2001. Demography: Measuring and Modeling Population Processes. London: Blackwell Publishers. Additional readings can be found on www.jstor.org, or in some cases will be made available online at the class Learn@UW webpage.

CDE: Students are encouraged to attend the weekly Center for Demography and Ecology Seminars, held Tuesdays: 12:20-1:45 in 4308 Sewell Social Sciences. http://www.ssc.wisc.edu/cde/demsem/home.htm. On occasion we will allocate a portion of Tuesday lectures to a discussion of methods used in the presentations.

Computing: All of the problem sets for this class can be done in Microsoft Excel. For students who are interested, SSC is holding an R basics class on February 28th and March 1st (sign up here: http://www.ssc.wisc.edu/sscc_jsp/training/index.jsp). For later assignments, students will have the option of using Excel or programming the assignments in R (or in another matrix programming software the student uses, e.g., Matlab, Mata) and submitting programs for extra credit.

Evaluation: Grades will be based on 12 problem sets (35%) and two exams (exam 1: 30%, exam 2: 35%). Problem sets will be posted to our class webpage Thursdays at 7pm. They should take between 2 and 4 hours and are due the following Thursday at the beginning of class.
Anticipated Course Schedule (we may spend longer amounts of time on topics as needed).

**January 24, 26:** Brief, Basic Revisit of Concepts in Calculus, Demographic Rates, Population Growth Rates

- Preston et al. Chapter 1

**January 31, February 2:** Age-Specific Rates and Probabilities, Standardization, Decomposition

- Preston et al. Chapter 2

**February 7, 9, 14, 16:** The Life Table, Single Decrement Processes, Variance Estimation

- Preston et al. Chapter 3

For Feb 16:

**February 21, 23:** Multiple Decrement Processes

**NOTE:** Alternative class format on the 21st (meet in groups instead of as a class)

- Preston et al. Chapter 4
February 28, March 1, 6: Fertility Measures, Demographic Translation
-Preston et al. Chapter 5

For March 6th:

March 8, 13, 15: The Stable Population Model, Exam Review

March 20: Exam 1 (material covered January 24 - March 6th)

March 22, 27: Age Distributions and Population Momentum

March 29: Age Patterns of Vital Events
-Preston et al. Chapter 9
April 3, 5: Basic Revisit of Matrix Algebra, Increment-Decrement Life Tables
-Preston et al. Chapter 12

April 10, 12: Cohort Component Projection, Multiregional Projection
-Preston et al. Chapter 6.

April 17, 19: Introduction to Variable-r
** Need to reschedule class on the 19th **
-Preston et al. Chapter 8

April 24: Data Quality
-Preston et al. Chapter 10
April 26, May 1, 3, 8: Indirect Estimation, Projecting Completed Fertility, Exam Review
NOTE: Class will not meet on May 3rd due to the PAA meetings: www.popassoc.org
-Preston et al. Chapter 11

May 10: Exam 2 (material covered March 8 - May 8)