Instructor: Kyle Wu

Prerequisite:

ACMA 320. Cannot repeat for credit if taken as STAT 490 or ACMA 490 previously.

Textbook:

Introduction to the Mathematics of Demography, 3rd ed. By R. Brown, pub: ACTEX

Calendar Description:

Data: Sources and Errors. Measures of mortality and fertility: Crude rates, Age-specific mortality rates, Adjusted measures of mortality. Construction of Life Tables from census data: 1989-91 U.S. Life Table, 1990-92 Canadian Life Table. Stationary Population Theory: survivorship group, Lexis diagram. Stable Population Theory: Sharpe-Lotka theorem, growth rate, quasi-stable populations. Population Projections: logistic curve, component method. Uses of Census Data: Funding Social Security. **Quantitative**

Outline:

1. **DATA: SOURCES AND ERRORS.**
   - Definition of demography.
   - Collection of demographic statistics.
   - Censuses.
   - Sources of errors and their corrections.
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5. STABLE POPULATION THEORY.

- Definitions.
- The Sharpe-Lotka theorem.
- The characteristic equation (or renewal equation).
- The growth rate.
- Applications.
- Quasi-stable populations.

6. POPULATION PROJECTIONS.

- Inter-censal and immediate post-censal estimates.
    - Linear interpolation; Polynomial interpolation; Geometric modeling.
- The logistic curve.
- The component method.

7. USES OF CENSUS DATA.

- Examples.
- Funding Social Security.

Grading Scheme:

Assignments & Term Project: 20%
Midterm: 40%
Final: 40%

Students should be aware that they have certain rights to confidentiality concerning the return of course papers and the posting of marks. Please pay careful attention to the options discussed in class at the beginning of the semester. Students are reminded that Academic Honesty is a cornerstone of the acquisition of knowledge. Scholarly integrity is required of all members of the University. Please consult the General Guidelines of the calendar for more details.

Revised November 2009