

**Math 414: Statistical Methods in Epidemiology** (4-0-4)  
March 7, 2018

**Catalog Description:** Examines the methods used in epidemiologic research, including the design of epidemiologic studies and the collecting and analysis of epidemiological data.  
Prerequisite: MATH 361 or instructor's consent.

**Course Objectives:** After completing this course, students will be able to:

1. Demonstrate knowledge of history and evolution of epidemiology.
2. Calculate and interpret statistical measures for health.
3. Recognize and correct for bias, confounding, moderators, mediators, and covariates.
4. Practice methods of data collection, visualization, and reporting in epidemiology .
5. Create a proposal for studying a health outcome.

### **Learning Outcomes and Performance Criteria**

1. Demonstrate knowledge of history and evolution of epidemiology.  
Core Criteria:

- (d) Apply stratified analysis to detect effect modifiers.
  - (e) Apply regression methods to detect and test for mediators, moderators, and confounders.
  - (f) Draw a causal diagram.
4. Practice methods of data collection, visualization, and reporting in epidemiology .
- Core Criteria:
- (a) Calculate sample size for a cross-sectional or cohort study.
  - (b) Produce and interpret epicurves.
  - (c) Produce and interpret Kaplan-Meier plots.
5. Create a proposal for studying a health outcome.
- Core Criteria:
- (a) Produce a method section for a proposal.
  - (b) Create an appropriate data-collection form.
- Additional Criteria:
- (a) Produce a literature review for the proposed study with proper references.