

Department of Public Health Sciences and Epidemiology  
PH 747  
Statistical Methods in Epidemiological Research  
Fall 2006

Meeting Place: Biomed T211, TTH 1:00 – 2:15 PM

Instructor Information:

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Office Hours: Following class, or by appointment, or when available in Biomed D104G

Course Description: The course will review and build on materials you have covered in PH 655 and 656. We will examine some of these topics covered previously in greater detail (e.g., contingency table analysis), as well as introduce some theory behind some of these topics (e.g. maximum likelihood estimation) and introduce new topics (e.g. survival analysis). The course will require a broader understanding of statistical methods and how they inter-relate, rather than treating different statistical methods as completely separate topics. It will emphasize hands-on experience with ample homework assignments. Some basic computer application and statistical package application will be required as well.

Course Learning Objectives: Practice in addressing statistical problems and working with data is critical to being able to utilize statistical methods and tools you will learn in class. Thus the course emphasizes applied homework problems so that you can develop confidence in determining appropriate analysis for a variety of research problems and resulting data sets.

Required Text: Jewel, Statistics for Epidemiology 2004  
Recommended Text: McNeil, Epidemiological Research Methods 1996  
Selvin, Practical Biostatistical Methods 1995  
Specific chapters in many intermediate level statistics texts

Course Schedule: Likely topics and order to be covered (subject to change/enhancement):

1. Contingency table analysis
  - a. One-way, two-way tables
  - b. Chi-Square analysis
  - c. Log odds, odds ratio
  - d. Non-parametric analysis
  - e. Matched-pair
  - f. Mantel-Haenszel
2. Rates/Risks
  - a. Rate vs. Risk
  - b. Standardization methods, stratification
  - c. Variance calculations
3. Log-linear Models
4. Maximum Likelihood
5. Logistic Regression
6. Poisson Regression
7. Survival Analysis

Course Policies:

- Homework assignments must be received when due to receive full credit. Partial credit for late homework will be severely restricted
- Plagiarism will result in a failing ("F") grade for the assignment. Students should familiarize themselves with the university of Hawai'i Student Conduct Code. Public Health students have been expelled from the University for failing to adhere to these policies; thus please take these policies seriously.
- Extra credit questions will occasionally be supplied on homework assignments, but will only contribute minor points.

Description of Course Assignments: Approximately every week and a half a new homework assignment will be posted on the class website (above), usually due one week later.

Grading Scale for Class Assignments: An example

Grading Points	Percentage
Class participation	10%
Homework Assignments	40%
Mid-term Examination	20%
Final Examination	30%

Grading Scale: I will be using the "+ -" grading system

Specialization/MPH Competencies Addressed: Among the competencies addressed in this class are:

- AS6 – Identify research designs used in public health, including advantages and flaws of specific designs, and determine designs appropriate to specific needs.
- AS2 – Determine appropriate use of data and statistical methods
- AS4 – Evaluate the quality and comparability of data and identify gaps in data sources
- PHS4 – Use advanced computer skills as appropriate
- E4 - Apply appropriate statistical tests for parametric and nonparametric settings and identify advanced statistical methods for analyzing both nominal and continuous data, for both univariate and multivariate applications.