MATH 339/539
Biostatistics II (3 units)

Course Outline

Topics	# of Weeks
Probability and Random Variables (Chapters 3-5) Basic Concepts, Properties of Probability, Methods of Enumeration, Conditional Probability, Independent Events, Bayes' Theorem, Probability Distributions and Poisson Distribution	1.3
Estimation and Hypotheses Testing (Chapters 6-8) Maximum Likelihood Estimators, Central Limit Theorem, Confidence Intervals, Hypothesis Testing, Bayesian Inference	2.3
Hypothesis Testing: Categorical Data (Chapter 10) Two-Sample Test for Binomial Proportions, Fisher's Exact Test, Two-Sample Test for Binomial Proportions for Matched-Pair Data (McNemar's Test), Estimation of Sample Size and Power for Comparing Two Binomial Proportions, Chi-Square Goodness-of-Fit Test, Kappa Statistic	2.0
Multisample Inference (Chapter 12) Introduction to the One-Way Analysis of Variance (fixed and random effect models), Multiple Comparisons in One-Way ANOVA, Two-Way Analysis of Variance, The Kruskal-Wallis Test, The Intraclass Correlation Coefficient	2.7
Regression and Correlation Methods (Chapter 11) General Concepts of Method of Least Squares, Inferences About Multiple Regression, Rank Correlation	2.0
Nonparametric Methods (Chapter 9) Sign Test, Wilcoxon Signed-Rank Test, Wilcoxon Rank-Sum Test	1.3
Design and Analysis Techniques for Epidemiologic Studies (Chapter 13) Introduction. Study Design, Confounding and Standardization, Methods of Inference for Stratified Categoric Data--The Mantel-Haenszel Test, Power and Sample-Size Estimations for Stratified Categorical Data, Multiple Logistic Regression, The Cross-Over Design. Missing Data	1.4
Tests	1.0

Textbooks: <u>Fundamentals of Biostatistics (with CD-ROM) 6th Edition</u> by Bernard Rosner, and <u>Minitab Lab Workbook 15th Edtion</u> by Howard Kaplon

Adopted: Fall 2006