BIOSTATISTICS (BST)

Graduate Studies

BST 222 — Biostatistics: Survival Analysis (4 units)
Course Description: Incomplete data; life tables; nonparametric methods; parametric methods; accelerated failure time models; proportional hazards models; partial likelihood; advanced topics.
Prerequisite(s): STA 131C.
Learning Activities: Lecture 3 hour(s), Discussion/Laboratory 1 hour(s).
Cross Listing: STA 222.
Grade Mode: Letter.

BST 223 — Biostatistics: Generalized Linear Models (4 units)
Course Description: Likelihood and linear regression; generalized linear model; Binomial regression; case-control studies; dose-response and bioassay; Poisson regression; Gamma regression; quasi-likelihood models; estimating equations; multivariate GLMs.
Prerequisite(s): STA 131C.
Learning Activities: Lecture 3 hour(s), Discussion/Laboratory 1 hour(s).
Cross Listing: STA 223.
Grade Mode: Letter.

BST 224 — Analysis of Longitudinal Data (4 units)
Course Description: Standard and advanced methodology, theory, algorithms, and applications relevant for analysis of repeated measurements and longitudinal data in biostatistical and statistical settings.
Prerequisite(s): (BST 222 or STA 222); (BST 223 or STA 223); STA 232B; or consent of instructor.
Learning Activities: Lecture 3 hour(s), Discussion/Laboratory 1 hour(s).
Cross Listing: STA 224.
Grade Mode: Letter.

BST 225 — Clinical Trials (4 units)
Course Description: Basic statistical principles of clinical designs, including bias, randomization, blocking, and masking. Practical applications of widely-used designs, including dose-finding, comparative and cluster randomization designs. Advanced statistical procedures for analysis of data collected in clinical trials.
Prerequisite(s): BST 223 or STA 223; or consent of instructor.
Learning Activities: Lecture 3 hour(s), Discussion/Laboratory 1 hour(s).
Cross Listing: STA 225.
Grade Mode: Letter.

BST 226 — Statistical Methods for Bioinformatics (4 units)
Course Description: Standard and advanced statistical methodology, theory, algorithms, and applications relevant to the analysis of -omics data.
Prerequisite(s): BST 131C or consent of instructor; data analysis experience recommended.
Learning Activities: Lecture 3 hour(s), Discussion/Laboratory 1 hour(s).
Cross Listing: STA 226.
Grade Mode: Letter.

BST 227 — Machine Learning in Genomics (4 units)
Course Description: Emerging problems in molecular biology and current machine learning-based solutions to those problem. How deep learning, kernel methods, graphical models, feature selection, non-parametric models and other techniques can be applied to application areas such as gene editing, gene network inference and analysis, chromatin state inference, cancer genomics and single cell genomics.
Prerequisite(s): STA 208 or ECS 171; or consent of instructor.
Learning Activities: Lecture/Discussion 3 hour(s), Project.
Grade Mode: Letter.

BST 252 — Advanced Topics in Biostatistics (4 units)
Course Description: Biostatistical methods and models selected from the following: genetics, bioinformatics and genomics;longitudinal or functional data; clinical trials and experimental design; analysis of environmental data; dose-response, nutrition and toxicology; survival analysis; observational studies and epidemiology; computer-intensive or Bayesian methods in biostatistics.
Prerequisite(s): BST 222; BST 223.
Learning Activities: Lecture 3 hour(s), Discussion/Laboratory 1 hour(s).
Repeat Credit: May be repeated when topic differs with consent of advisor.
Cross Listing: STA 252.
Grade Mode: Letter.

BST 290 — Seminar in Biostatistics (1 unit)
Course Description: Seminar on advanced topics in the field of biostatistics. Presented by members of the Biostatistics Graduate Group and other guest speakers.
Learning Activities: Seminar 1 hour(s).
Enrollment Restriction(s): Restricted to graduate standing.
Repeat Credit: May be repeated 12 time(s).
Grade Mode: Satisfactory/Unsatisfactory only.

BST 298 — Directed Group Study (1-5 units)
Course Description: Special topics in Biostatistics appropriate for group study at the graduate level.
Learning Activities: Variable 3-15 hour(s).
Repeat Credit: May be repeated.
Grade Mode: Letter.

BST 299 — Special Study for Biostat Graduate Students (1-12 units)
Course Description: Special topics in Biostatistics appropriate for directed individual study on advanced topics not otherwise covered in the Biostatistics curriculum.
Learning Activities: Variable 3-36 hour(s).
Repeat Credit: May be repeated.
Grade Mode: Satisfactory/Unsatisfactory only.

BST 299D — Dissertation Research (1-12 units)
Course Description: Research in Biostatistics under the supervision of major professor.
Prerequisite(s): Consent of instructor; advancement to Candidacy for Ph.D.
Learning Activities: Variable 3-36 hour(s).
Repeat Credit: May be repeated.
Grade Mode: Satisfactory/Unsatisfactory only.