**BIOSTATISTICS (GRADUATE GROUP)**

**Graduate Studies**

**Group Office**

4118 Mathematical Sciences Building; Biostatistics Graduate Group (https://biostat.ucdavis.edu/)

**Advising Resources.** Graduate Advisors (https://biostatistics.sf.ucdavis.edu/grad/graduate-advisers/)

**Faculty**

Danielle Harvey, Ph.D. (Public Health Sciences), Chairperson of the Group Faculty Directory (https://biostatistics.ucdavis.edu/people/)

**About**

The Graduate Group in Biostatistics offers M.S. and Ph.D. programs in Biostatistics.

- Biostatistics, Master of Science (https://catalog.ucdavis.edu/departments-programs-degrees/biostatistics/biostatistics-ms/)
- Biostatistics, Doctor of Philosophy (https://catalog.ucdavis.edu/departments-programs-degrees/biostatistics/biostatistics-phd/)

**Biostatistics (BST)**

**BST 222 — Biostatistics: Survival Analysis (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 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.