Please note that the following items and descriptions may change as the quarter progresses.

Instructor: Prof. Hans-Georg Müller
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Office hours: 4236 Math Sci Bldg (MSB), M 3-4, Tu 3-4, W 3-4 (subject to change), and by appointment.

Meeting Schedule: Class sessions are currently scheduled for MW 4:10-6:00 in 205 Wellman but may be moved later to a classroom in the Mathematical Sciences Building (MSB). The class includes Computing Laboratory and Discussion sessions that will take place in the larger computer lab next on the first floor of MSB. Lab sessions will be scheduled irregularly, mostly on Wednesdays. You are required to attend all of the weekly class sessions. First class is on Monday, Jan. 5, last class on Monday, March 16 (which will be a lab class). Due to UC holidays, there will be no class on Jan. 19 and on Feb. 16.

Objectives: This course is a part of the Biostatistics Graduate Core Sequence and is also recommended as an elective course for the Graduate Program in Statistics. It serves as a prerequisite for BST/STA 224, which is offered in Spring quarters. Generalized Linear Models and related methods for regression and classification have become a central tool throughout Statistics and Biostatistics. The course is a mixture of theory and applications and includes Statistical Laboratory sessions featuring various computing tools for the implementation of Generalized Linear Models and related methods.

Topics: Likelihood; Generalized Linear Models; Smoothing Methods; Binomial and Multinomial Regression; Regression Models for Counts; Estimating Equations; Dose-response Relations; Case-control and Cohort Studies; Classification; Additive Models; Functional Regression; Advanced Topics.

Prerequisites: A minimum prerequisite is STA 131C or equivalent and familiarity with maximum likelihood, linear models and the Central Limit Theorem. It is highly recommended that students have completed STA 232A or STA 206 before taking this class.
Computing: Introduction to implementing generalized linear models and applications, mostly with R, and additionally with SAS and occasionally Matlab, will be provided in the lab sessions. Hao Ji, haoji@ucdavis.edu, will be the laboratory/teaching assistant for this class. Hao will offer regular office hours Th 2-3pm and F 12-1pm and will be responsible for the computing aspects of the class.

Grading: Grades will be determined by homework (10%), in-class exam (40%) and project (50%). The in-class exam will tentatively take place in the class of February 25 and will cover the material that has been discussed until then. The project is an extended data analysis and will be due in class on March 11. The project will consist of two parts: (a) A poster that you produce and display in the class on March 11. It should highlight the key features of your data analysis; and (b) a written report about the problem and data analysis. Important: All class work that you hand in for grading must be based on your own independent work.

Reference texts:

There will be class notes, which will complement the main reference texts. The class will not follow any textbook closely, but the most relevant texts will be the first two books in the following list. You are not required to obtain a textbook for the class.


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