STAT538, Brief Outline

Purpose: This is a (mostly) applied graduate course on inference & computation in statistical models with non-normal response variables.

Prerequisite Knowledge:

linear algebra (vectors, matrices, inverse, eigenvalues/decompositions, positive (semi)definiteness, symmetric matrices)
multivariable calculus (gradient, hessian, basic optimization)
undergraduate statistics (basic estimation and inference, linear regression, probability theory)

Resources:

Dobson & Barnett, "Introduction to Generalized Linear Models," 3rd ed, CRC Press.
McCullagh & Nelder, "Generalized Linear Models," 2nd ed, CRC Press.
McCulloch & Searle, "Generalized, Linear, and Mixed Models," Wiley.
Faraway, "Extending the Linear Model with R," CRC Press.

Possible Topics:

review and limits of linear/normal models
exponential families and GLMs
estimation / fitting
diagnostics / evaluation
inference
model selection
survival analysis
longitudinal data
log-linear models
large-scale data
Bayesian GLMs, inference
outliers, missing data
random/mixed effects