

Summer 2009
CE679 Regression and Stochastic Methods

Professor Nikolay Strigul
e-mail: nstrigul@stevens.edu

Lectures: Kidde, 228. Monday, 06:45-08:45PM

CE679 is an introduction to the practical statistical methods for students majoring in sciences and engineering using R and OpenBugs. Statistical reasoning plays a critical role in the modern sciences, as much of real-life problems naturally involve a large amount of uncertainty and randomness. This course will teach students to use statistical methods on particular real-life examples (taken mostly from environmental sciences) using R and OpenBugs. Particular topics include: Bayesian approach, causal inference, linear and multiple linear regression, non-linear regression models, dose-response models, analysis of variances, optimal experimental design.

Students will need to install two free programs R (<http://www.r-project.org/>) and OpenBugs (<http://mathstat.helsinki.fi/openbugs/>). It is also convenient to operate R using code editors, such as Tinn-R for Windows (<http://sourceforge.net/projects/tinn-r>) and RKWard for Linux (<http://rkward.sourceforge.net/>).

Textbooks:

John Maindonald and John Braun, 2006. Data Analysis and Graphics Using R: An Example-based Approach. Cambridge University Press, 2nd edition, ISBN 052186116.

Andrew Gelman and Jennifer Hill, 2006. Data Analysis Using Regression and Multilevel/Hierarchical Models. Cambridge University Press, ISBN 0521867061.

Benjamin M. Bolker, 2008. Ecological Models and Data in R. Princeton University Press, ISBN 0691125228.

