Course Description: This course is designed as an advanced introduction to the theory and applications of spatial statistics. Topics will include basic theory for continuous stochastic processes, spatial prediction and kriging, simulation, geostatistical methods, likelihood and Bayesian approaches, spectral methods and an overview of modern topics such as nonstationary models, hierarchical modeling, multivariate processes, methods for large datasets and connections to splines. Class material will be supplemented with data examples and hands on applications in R.

Prerequisites: Some knowledge of mathematical statistics and linear algebra

Recommended Texts:
- Statistics for Spatial Data, by Noel Cressie (1993)

Grade Determination: Grades will be determined based on homework (40%), two exams (20% each) and a final project (20%). Please note that there will be no make-up exams. Approximate grade lines will be

A- ≥ 90%  B- ≥ 80%  C- ≥ 70%  D ≥ 60%

Homework: Homework will be due on an approximately biweekly basis. You must show all work, correct solutions without adequate justification will receive no credit. Late homework will not be accepted.

Exams: There will be two midterm exams, both take home.

Final Project: There is no final exam for this class. The final will be based on a project. Undergraduates may work in groups, while graduate students are responsible for their own project. Details will be announced later in the semester.

Computing: Data analysis will be a fundamental component of both the homework and final project. While analyses can be performed in your language of choosing, you are strongly encouraged to use the statistical programming language R. R is freely available online, http://www.r-project.org/.

Special Accommodations: Any student eligible for and needing academic adjustments or accommodations because of a disability, religious beliefs, or athletic conflict should speak to me by February 1st.

Academic Honesty: Students are encouraged to work in groups and discuss problems with each other. However, all work turned in must be your own. Violation of the CU Honor Code will result in a course grade of F (see http://www.colorado.edu/academics/honorcode/).