

Math 586: Spatial variability and geostatistics

Fall 2011

Instructor: Dr. Oleg Makhnin

Office: Weir 223

Office Hours:

M 9 - 10:30 am TR 8:30-9:20 am, 2-3 pm F 2-3 pm
or by appointment

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Catalog description:

"Introduction to spatial and temporal variability. Stationary and intrinsic random fields, variograms and estimation. Kriging, co-kriging and simulation of random fields. Conditioning and conditional simulation. Indicator kriging and simulation. Applications from hydrology, mining, petroleum engineering and other fields."

Textbook: Kitanidis *Introduction to Geostatistics*, Cambridge, 1997

COURSE POLICY

Your course grade will be determined on the basis of combined scores from Homework, Labs, Midterm and a Final Project. In order to make up any assignment, a valid excuse should be documented. The instructor decides if an excuse is a valid one.

You are encouraged to seek help from the instructor.

Homework: All homework is due at the beginning of the lecture. One lowest score will be dropped.

Labs: will cover computation and data examples, primarily using Matlab.

Grading is based on the percentage of total points earned (the individual tests, homework etc. are not assigned a letter grade).

Distribution of points:

Homework 100 Labs 50 Midterm 100 Final project 100

Grading Scale (tentative): A: 90-100%; B: 80-89; C: 70-79; D: 60-69; F: 0-59

Course outline:

- review of probability/statistics
- methods for variability of independent observations (regression, ANOVA)
- random fields and variograms
- kriging (spatial prediction)
- stochastic simulation
- Bayesian methods (if time allows)