Citation Program in Applied Geostatistics

Introduction And Exercises

UNIVERSITY OF ALBERTA

Centre for Computational Geostatistics (CCG)
University of Alberta, Edmonton, Alberta, CANADA

April and August, 2023
Presented by Maptek - 100% remote

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University of Alberta

Citation Program in Applied Geostatistics (CPAG)

The principles of geostatistics will be covered in lectures, hands-on exercises and a project. Each participant will gain an appreciation for the variety of geostatistical techniques and tools available to address problems of heterogeneity modeling and uncertainty quantification. A minimum average grade of 80% is required for successful completion of the Citation Program in Applied Geostatistics (CPAG). Participation in more than 80% of the lectures is also required. The exercises are due one week after each session. The solutions are submitted electronically. Each participant must submit their own exercise solution, but *participants are encouraged to work together*. A small independent project is required. Instructions will be provided during the course. Participants should work on their project in any spare time. A brief report/presentation must be submitted by 5 PM on Friday October 6th.

All required software tools in GSLIB-like format with python/pygeostat/jupyter notebook examples are provided for the exercises; however, any software may be used for the exercises and project.

Clayton V. Deutsch (cdeutsch@ualberta.ca) will instruct the class. Contact the instructor with any questions about the course material or exercises. Contact Maptek with other logistical questions. The following schedule will be tentatively followed. Lectures are in the morning and the afternoon is left for exercises.

8:00 - 9:30	Lecture
9:45 - 10:45	Lecture
11:00 - 12:00	Lecture
13:00 - 16:30	Exercises and Project

	Day	Lectures	Subjects
Week 1 April 17 - 21, 2023	M	101, 102	Introduction and basic mathematics
	T	114, 116	Coordinates, running GSLIB and basic scripting
	W	103, 104, 105	Stationarity, probability and statistics
	T	106	Declustering and debiasing
	F	111, 112, 113	Basic simulation, correlation and PCA
Week 2 April 24 - 28, 2023	M	201, 202	Multivariate distributions and variogram calculation
	T	203, 204	Variogram interpretation and modeling
	W	211, 212	Special topics and volume variance relations
	T	211, 301	More variograms and introduction to estimation
	F	301, 302	Simple Kriging
Week 3 August 14 - 18, 2023	M		
	T	311, 312	More on kriging including setup
	W	401, 402	Multivariate Gaussian distribution for uncertainty
	T	403, 404	Gaussian simulation
	F	411	Checking and review of estimation/simulation
Week 4 August 21 - 25, 2023	M	501, 502	Multivariate and cokriging
	T	503, 504	More cokriging and stepwise conditional trans.
	W	601, 602, 604	Indicators for rock type modeling
	T	605, 612	More categorical variable modeling
	F	701, 702, 703	Post processing