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Fall 9-1-2000

GEOL 350.01: Computation and Computer techniques in Geology

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Computation and Computer Techniques in Geology
Geol 350, fall semester 2000, 2 credits
Instructor: Steve Sheriff

Homework due one week after assignment
Grading: pass/fail based on problem sets, final exam, and attendance

Introduction

This class meets in the Physics and Geology computer teaching lab, SC 11. During class meetings each student gets a computer to work on and you have access to the lab, after hours, for homework related to this class. Currently there are fourteen Pentium class computers in the room.

Objective

My basic goals are to explore several computer programs commonly used in geology and to use problems from a number of sub-disciplines in geology and geophysics to illustrate the advantage of those programs. By the end of the semester you should have a familiarity with how software works and how to handle a number of different data formats, programs and problem solving techniques.

Syllabus, by the week and subject to change as the semester progresses

Introduction to computers (hardware, operating system, software, peripherals, GeoRef, CARL, web resources) and the facilities in the lab. Spreadsheets and data manipulation, graphing

Spreadsheets and programming, simulation

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Spreadsheets, fitting models, and applied problems

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Surfer$^{<C>}$ (donated by Golden Graphics), gridding, and contouring

Surfer$^{<C>}$ gridding and contouring continued

Surfer$^{<C>}$ DEMs (digital elevation models) and presentation graphics

Surfer$^{<C>}$ DEMs (digital elevation models) and presentation graphics

Grapher$^{<C>}$ (donated by Golden Graphics), line graphs and statistics

MathCad$^{<C>}$ introduction, linear regression, error analysis

MathCad$^{<C>}$ nonlinear regression, model fitting

Grading – based on problem sets, assignments, participation, and final exam. You must turn in all assignments to pass the course.

Prerequisites – Geology major and two semesters of calculus or my permission.