Natural Systems 1 Fall 2003 Exam 1 Review Sheet

Be prepared to understand concepts. Be able to calculate sun angles using shadow lengths. Be able to calculate a mean, range, etc. Know what a t-test is and how a t-test is used (think population lab, but we may ask you to interpret a statistical result in an ecological context). Know how to interpret a p value.

- Be thoroughly familiar with all Lecture Material (Hays Cummins (2 lectures); Joseph Dorsey (1 lecture); Bill Green (1 lecture) and Chris Myers (2 lectures)
- Be sure you have read and comprehend all class readings
- Earth-Sun Relationships—Be able to use a calculator in order to calculate sun angles (altitude and zenith angle). Have a general understanding of earth-sun relationships, seasons, and the earth’s heat budget
- Population Lab—Understand how to sample, estimate, and compare populations.
- General Statistics—understand basic measures of central tendency, variation, and t-tests. Formulas will be provided for any complex calculations that might be required on the exam.
- Be able to speak to some of the natural process (geological, geophysical, biological) at work in Collins Run.

Example Questions from Reader Articles:

- Be able to speak to the two basic geologic principles, outlined in Measuring Time, that are key to understanding the RELATIVE age of rocks and fossils. What are some index fossils with which you are familiar?
- Describe the greenhouse effect and some types of greenhouse gases. Be able to compare past climatic conditions (Cretaceous→Pleistocene) with the present (Holocene). Based on records of temp. over the past 100 years, does the literature suggest mean global temps are increasing? Is CO2 following a similar path?
- How can geographic information systems (GIS) be used to answer research questions? Can you give a specific example?
- Chloropleth maps are final outputs of data processed in a GIS. What are some advantages/disadvantages of chloropleth maps outlined in the article?
- What are 6 major environmental issues in temperate forests? Be able to speak in detail to one of them.

Be able to give an outline of how research is conducted and presented (papers) in the sciences? What are the major sections found in articles you’ve read as well as your student generated labs? Generally, what is found in each section?