

GENERAL ADVICE

- I have this evil habit of writing test questions that draw on material from several different parts of the course. Don't try to learn this stuff as a set of isolated factoids. That does you know good unless you can perceive how they all fit together.
- I am going to emphasize the "Big Ideas" here—these would be plate tectonics and geologic time. These touch a large number of other areas of earth science; they're the "glue" that holds everything in this course together.
- I really emphasize the process of science. Make sure you know what a hypothesis is and how it's tested; make sure you understand the nature of evidence. One of the greatest scientists of all time once said, "How odd it is that anyone would not see that all observation must be for or against some view, if it is to be of any service."
- The overall format will be the same as the midterm exam.
- The exam *is* cumulative. So take a look at the previous study guide, and at your previous exam.

STRATIGRAPHY / HISTORICAL GEOLOGY

- know names and dates of the five basic geologic time periods (Hadean, Archaean, Proterozoic, Paleozoic, Mesozoic, Cenozoic)
- details of biological evolution will not be on the exam—you need not memorize details about *Ichthyostega* and vertebrate evolution on land and such—but have a general idea about what life forms were prominent in each major time period, and what the fossil record can and can't tell us about them.
- this isn't a course in biological evolution, but I do, however, want you to leave this course with some sort of understanding about how evidence from the fossil record is used, and how it all fits in with other lines of evidence about the history of life
- know how all this stuff relates back to the stratigraphy and paleontology we studied before the first exam
- know basics of what petroleum and natural gas are, what they're used for, how they form, and where (geologically) they're found (e.g. basic trap types)

HYDROLOGY

- know how rivers erode
- know how rivers affect the land that they pass through, both by erosion and by deposition
- know major landforms created by rivers (levees, oxbows, deltas, etc. etc.)
- know basics of groundwater (aquifers, subsidence, karst, etc.)

OCEANS

- know basics of ocean basin structure (and how it ties in with plate tectonics, because *everything* ties in with plate tectonics).
- understand Coriolis force and how it affects winds and surface currents
- know basics of circulation: surface gyres, upwelling, and thermohaline circulation
- know basics of waves, how waves and wave-generated currents act on shorelines and affect coasts and beaches
- understand cause of tides (we covered this briefly and a bit out of sequence, but it is in fact in there. . .)

WEATHER

- know layers of atmosphere and features of each one
- know basics of how heat is transmitted through atmosphere: radiation, convection, conduction
- understand atmospheric moisture, humidity, causes of cloud formation, cloud types
- know high-pressure and low-pressure systems, how air flows around each and why, what weather patterns they bring and why, and why they generate fronts
- know, at least in outline, some major factors that have influenced global climate over long intervals of geological time, possible causes of global warming (we may not have time to go through all of these).