GLY 301 - Fall 2010
Lab Final Review

Following are the topics that we covered in lab during the second half of the semester. I will make up exercises for the lab final very much like you completed in the labs. Of course the lab final will not include every possible exercise listed below.

Lab 7 - Introduction to Topographic Maps

Using the ratio scale on a map, be able to convert from map distance to real world distance, and vice-versa.
Know what contour interval and index contours mean.
Be able to recognize changing slopes of the land from the spacing of contour lines.
Be able to recognize the direction a stream flows using the "Rule of V's."
Be able to construct a topographic profile from a topographic map (e.g., p. 163-164).
Be able to calculate the vertical exaggeration of a topographic profile.
(VE = vertical ratio scale / horizontal ratio scale)
be able to convert a verbal scale (e.g., 1 in = 100 ft) to a ratio scale (e.g., 1:1200)
Know how to determine the gradient (slope) (change in elevation / map distance).

Lab 8 - Plate Tectonics

Be able to determine the age of ocean crust from magnetic anomalies with the aid of the magnetic polarity timescale.
Be able to determine the rate of seafloor spreading from the age of the crust and the distance from the midocean ridge that produced it (Rate = Distance / Time).
Know what occurs at a subduction zone and be able to recognize one from the association of deep ocean trench with thrust fault earthquakes, volcanic arc, and descending plane of deep-focus earthquakes (Benioff-Wadati Zone).
Know what the principal driving force is that is responsible for the motion of oceanic plates (gravity).

Lab 9 - Karst Landforms and Groundwater

Know what kind of rock (limestone) and why (dissolves) it is typically associated with karst features.
Be able to recognize common karst features (sinkholes, disappearing streams) on a topographic map of an area known to be underlain by limestone.
Be able to construct a contour map of the water table from water the levels in lakes and wells.
Know how to determine the direction of groundwater flow from lake levels or water table contour maps. Be able to draw proper flow lines on water table contour maps.
Be able to tell if a well will be a flowing artesian well or not by comparing topographic contours of surface elevation vs. contours of the water-pressure surface for a confined aquifer.
Recognize that heavy withdrawal of groundwater can lead to ground surface subsidence.

Lab 10 - Streams

Know how to calculate stream discharge and hydraulic radius and what they mean

Be able to recognize streams in youthful (steep-sided, V-shaped) and mature (gentle slopes, flood plain) stages of stream development.

Be able to recognize the direction a stream flows using the "Rule of V's."

Be able to recognize stream terraces on topographic maps and know how they form.

Be able to construct topographic profiles of stream valleys and interpret them in terms of youthful vs. mature valleys.

Understand how/why streams meander.

Be able to recognize oxbow lakes on maps and know how they formed.

Lab 11 - Shorelines

Be able to calculate wave celerity, wavelength and L/2 from the relationships

$C = 1.56\ (T)$ $C = 1.25\ (L)^{1/2}$ $L = 1.56\ T^2$ *(I would give you these equations)*

Know what a delta is and be able to recognize one on a map.

Be able to calculate the rates of delta progradation (seaward growth) and sand spit growth (rate = distance / time).

Understand littoral drift, how sand spits form and grow, and the effects of groins and jetties on the shoreline.

Using maps, be able to recognize the dominant direction of longshore transport and direction the waves generally come from based on the growth direction of sand spits and effects of groins and jetties on the beach.

Recognize, and be able to determine from topographic maps the threat to low-lying coastal communities posed by sea level rise and storm surges.