The exam will be 100 questions, multiple-choice and T/F. You will need a ParSCORE form F-1712 (full page, pink form, available at the bookstore: BRING ONE and some #2 PENCILS to the EXAM). ALL material is from lectures. Use your notes, web lecture notes and powerpoints to prepare. Do not worry about the book, as that is supplementary information for this part of the course. Questions will address all material covered since Exam #2 – Atmospheric processes, climate change, weather, floods, landslides, human induced events. Basic areas listed below:

1. What is the composition of the Earth's atmosphere; major and minor? Why are trace gases important? Be able to know about energy balances and processes such as absorption, reflection, albedo.
2. What wavelength radiation energy enters the atmosphere from the Sun, from the Earth? How does the Greenhouse Effect work? Know the spectral content and selective absorption of energy.
3. Why is the Ozone in the Stratosphere important? What is happening to it? What human activities are being undertaken to influence this?
4. What are the major components of the Earth's atmospheric circulation system? What drives it? What are Hadley cells, Coriolis force, Jet Stream? Where are upwelling, downwellings, clouds concentrated? How does evaporation and precipitation vary with latitude?
5. What is climate? What is weather?
6. How do we study paleoclimate? What are climate proxies? How do ocean sediments tell about past climates? You had better know about Oxygen isotopes! Has global climate changed through time? Was it ever a lot warmer than now?
7. What causes ice ages, and did they take place in the Cretaceous?
8. Is Global Warming clearly the result of human activity? Is increase in carbon dioxide in the atmosphere clearly the result of human activity? Why is prediction of climate change a hard problem?
9. What drives winds? How is sand and dust distributed in the air?
10. What are the major features of the Water Cycle? Can you sketch the general system? Where does the water reside? If you melt the world's current glaciers, how much will sea level go up?
11. What causes floods? What are important attributes of the storm and of the landscape that affect flooding? How can humans affect the system?
12. How do we estimate 100 year floods?
13. What produced the Washington Scablands?
14. What happened to cause Lake Bonneville to drop to Lake Provo?
15. Can the history of the Black Sea account for Noah's Flood myth? How?
16. What human activities have resulted in human catastrophes? Discuss the Dust Bowl, oil spills, and other events.
17. How has nuclear plant citing affected California?

Key to scoring well on multiple-choice exams: Pace yourself; go through quickly to answer easy questions. Read questions carefully. Use logic to eliminate unlikely answers. Mark your ParSCORE clearly, and do NOT bend it. To save time, you can fill in the bubbles (#2 PENCIL!) YOUR LAST/FIRST NAME and your 7-digit STUDENT ID NUMBER on the PARSCORE form. Do not fill in phone number. There will be 3 versions of the test; when you receive the test, note the version and fill in the corresponding bubble under TEST FORM on the ParSCORE.
EXAMPLE QUESTIONS FROM PREVIOUS YEAR EXAM

EARTH CATASTROPHES QUIZ #3 - This is the third of 3 exams, each providing 25% of total points in the class. ALL ANSWERS ARE TO BE ENTERED ON THE SCANTRON SHEET (#2 pencil!). MAKE SURE YOU FILL IN YOUR NAME, AND ALL 7 DIGITS OF YOUR STUDENT ID ON THE SCANTRON SHEET. TOTAL NUMBER OF POINTS IS 100. 1 POINTS FOR EACH QUESTION ANSWERED CORRECTLY. Read the questions carefully, as some are a bit tricky. When you are done, give the TA BOTH this exam and your scantron and they will check to make sure you have indicated the correct exam. GOOD LUCK.

Test Form _____A_____

1. Which of the following makes the least contribution to atmospheric motion?
   a) solar heating  b) gravity  c) tidal energy  d) coriolis effect

2. Which of these terms would be associated with a climate event?
   a) dust storm  b) flash flood  c) El Nino  d) tornado

3. Which of these terms would be associated with a weather event?
   a) Southern Oscillation  b) global warming  c) ice age  d) hurricane

4. Which of the following is considered a trace gas (occurring at much less than 1%) in the atmosphere?
   a) carbon dioxide  b) argon  c) nitrogen  d) oxygen

5. A critical factor controlling weather patterns is that there is more solar radiation striking the Earth per square foot at high latitudes than at low latitudes.
   a) true  b) false

6. The Earth's surface temperature average is about 15°C; this temperature is maintained largely by heat flow from Earth's interior.
   a) true  b) false

7. Light reflects more from white surfaces, so they tend to have a higher albedo.
   a) true  b) false

8. The dark side of the moon is visible because it is faintly lit by sunlight reflected from the Earth.
   a) true  b) false