Instructor: Wood
GLG 110

Exam 1 Study Guide

Overview of Class – Environmental awareness – Chapter 1

- ⇒ Environmental concepts: population growth, sustainability, earth as a system, hazardous processes, scientific method
- ⇒ James Hutton: Father of geology – earth is a super-organism
- ⇒ James Lovelock - Gaia Hypothesis – all parts of earth are interconnected
- ⇒ Earth is made of four subsystems: lithosphere, atmosphere, hydrosphere, biosphere

Plate Tectonics – Chapter 2

- ⇒ Earth's Interior
- ⇒ Earth is broken into lithospheric plates – we live on North American Plate
- ⇒ Plate Boundaries: diverging, converging (ocean/ocean, ocean/continent, continent/continent), transform
- ⇒ Alfred Wegener Continental Drift Hypothesis; Pangaea super continent 200 million years ago
- ⇒ Evidence for continental drift hypothesis: fit of continents, fossil distribution, glacial distribution
- ⇒ Evidence for Plate Tectonics: Mapping ocean floor, earthquake and volcano distribution, paleomagnetism of earth, age of ocean floor, hot spots

Minerals and Rocks – Chapter 3

- ⇒ Parts of an atom: protons, neutrons, electrons
- ⇒ Elements, atomic number, atomic mass number, isotopes, ions,
- ⇒ Bonding: covalent, ionic, metallic, Van der Waals
- ⇒ What is a mineral? – naturally occurring, inorganic, solid, crystalline, definite chemical composition, definite physical properties
- ⇒ Mineral groups and use: Silicates, Carbonates, Sulfates, Phosphates, Oxides, Sulfides, Halides, Native Elements
- ⇒ Physical properties of minerals: crystal form, hardness, color, streak, etc.
- ⇒ Rocks: aggregates of minerals including glass and organics
- ⇒ 3 rock types: Igneous, Sedimentary, Metamorphic
- ⇒ Rock Cycle

Earthquakes – Chapter 6

- ⇒ The relation between plate boundaries and the occurrence of earthquakes (where most earthquakes occur)
- ⇒ Types of faults (normal, reverse, strike-slip); epicenter, focus
- ⇒ Seismic waves: characteristics and motion of each type (P, S, & Surface)
- ⇒ 3 seismic stations required to locate an earthquake
- ⇒ Intensity – Mercalli Scale – measure of damage caused. What does it depend on?
- ⇒ Magnitude – Richter Scale – measure of energy released
- ⇒ Hazards associated with earthquakes: ground shaking, liquefaction, fires, subsidence & uplift, landslides & avalanches, tsunamis
- ⇒ Earthquake Hazards assessment – shake maps
- ⇒ How we might anticipate and plan for earthquakes: structural and land use protection
- ⇒ Prediction (when) vs. Forecast (where)
- ⇒ Earthquake studies: tilt of rocks, micro-earthquakes, groundwater, radio waves, etc.
- ⇒ Man-made earthquakes: dams, deep waste disposal, nuclear explosions
- ⇒ Earthquakes in Arizona

Pay special attention to tables, boxes, diagrams. Some questions may come from videos and homework. Schedule is subject to change. Most topics are listed here, but it may not be a complete list of what you will be tested on.