

November 18, 2015

### **Unit 28**

Minerals vs. Rocks, Crystalline structure, chemical composition, properties such as hardness/color, etc., Mineral types such as silicates (which can include quartz, feldspar) and carbonate minerals. Classification of rock types, igneous rocks, sedimentary rocks, metamorphic rocks, magma, lava, intrusive igneous rocks, extrusive igneous rocks, granite vs. basalt. Intrusive batholiths and stocks, etc. Jointing and exfoliation in igneous rocks.

### **Unit 29**

Sedimentary rocks, lithification, compaction and cementation, clastic vs. nonclastic sedimentary rocks. Conglomerates, sandstones, and shales as examples of clastic sedimentary rocks. Limestone as an example that could be clastic, but usually is nonclastic. Strata, stratigraphy, importance of unconformities. Metamorphic rocks, foliation. Metamorphic rock types such as quartzite, marble, slate, gneiss. The Rock Cycle. The geologic time scale.

### **Unit 30**

Plates of the lithosphere. Alfred Wegener, Pangaea, continental drift, plate tectonics, seafloor spreading, rifting, lithospheric plates, movement of the plates, things that can happen at plate boundaries such as subduction, earthquake map of the world, divergent vs. convergent plate boundaries, ocean-ocean plate convergence & island arcs, continent-continent plate convergence, ocean-continent plate convergence – example of Cascadia. Transform plate boundaries.

### **Unit 31**

Mechanism of plate motion, isostasy, the linkage between plate tectonics, isostasy, mountain building, and erosion. Ice sheets and isostatic rebound, dams and crustal equilibrium. Evolution of the continents with shields at the centers, and younger terranes added on.

### **Unit 32**

Volcanism and its landforms. Distribution of volcanic activity, Pacific Ring of Fire, Hotspots, Spreading centers and subduction zones, active, dormant, and extinct volcanoes. Properties of magma, viscosity and gases, pyroclastics, flood basalts. Landforms such as calderas, composite volcanoes [lahars, pyroclastic flows], cinder cones, shield volcanoes [Aa vs. pahoehoe], basalt plateaus and plains, hot spots. Volcanoes and human history: Krakatau [1883], Tambora [1815, year without a summer], Santorini [~1645 BC] and the Minoans. Modern society and volcanic hazards.