

## GEOL 15 Final Study Guide Fall 2013

(Mid Term I review lecture: lecture 13) **33%**

(Mid Term II review lecture: lecture 22) **33%**

(Lectures 25-29; Activities 10-11) **33%**

### Course Learning Outcomes

1. Apply the scientific method and scientific reasoning to critically evaluate geologic phenomena.
2. Communicate the basic elements of plate tectonic theory and apply these concepts in describing how earthquakes, or other geologic hazards, impact both humanity and the natural environment.
3. Apply physical science principles to describe how energy is transmitted through geologic systems.

### Content and Study Questions

Tsunami! What can cause a tsunami? What are the differences between a local and a distant (tele-) tsunami? What is the geological evidence for tsunamis? What geological evidence is also found associated with tsunami deposits (e.g. along the Cascadia subduction zone)? What is the best way to avoid becoming a casualty during a tsunami? What are some factors that control the size of a tsunami wave height? About how fast can a tsunami travel across the ocean? What plate boundaries might we associate with tsunami? What are some historic earthquakes that generated tsunami?

Volcano! Where do we find volcanoes? Why are volcanoes found in these places? Recount the evidence for an eruption of Mt. Vesuvius in Italy (when did it happen, when was the evidence originally discovered, when was this evidence investigated in detail, what happened to people during the eruption, etc.). What are some volcanoes associated with the Cascadia subduction zone? Which two Cascade volcanoes have erupted in the last century? Which Cascade volcanoes erupt more frequently than others? What are some hazards associated with volcanic eruptions? What controls the type of volcanic eruption, the shape of volcano, and the way that lava flows? Name some volcanic types (eg. fissure, shield, dome, cinder, strato-, and caldera)

and the type of magma associated with each (see the list of volcanic rocks). Name some volcanic hazards? What are some volcanic rocks in order of Silica content (basalt, andesite, dacite, and rhyolite)?

Floods! What are the main types of floods? What is the most common type of flood? What are some factors that contribute to floods? What is a drainage basin/watershed? What is a floodplain? What is a river channel? What is a levee (why do people construct them)? What is river discharge? What is a hydrograph? What is "lag time" and how does this vary depending upon one's location? How can we measure discharge (directly or indirectly)? What do people do to "manage" rivers? How can this affect discharge? What can be done to reduce the negative effects of "managing" rivers? Why are urban hydrographs more "flashy?"