# How to ace exams in Professor H.’s class

Question: Professor H., I hear your exams are impossible. What is the best way to prepare for your exams?

Answer: There are many different study methods, but here is the method that I think works best. Take each topic and write down as much information about it as you can remember. The writing part is important; research consistently shows that by physically writing things, you are more likely to commit them to memory. After you write down what you can remember, then go into your notes and the lecture slides to fill in the gaps that you missed. That will be the full review sheet that you should study from. At this point, you can type up your review sheet to study from.

## Other tips:

1. You only have 60 minutes to answer 50 questions. You will not have enough time to look up every question, so you do need to study a bit.
2. Don’t wait until the night before the exam, start early so you can create the review sheet to study from.
3. Don’t try to review all the slides in the lectures at once. Your short-term memory can only hold so much and there is too much information in the slides for you to remember at once. You will get overloaded and very little of the information will make it to long-term memory. So, take it slow, with frequent breaks.
4. Breathe.

# Exam 2 study guide

* Lecture 6 – Igneous Rocks
  + How rocks melt

**Magma/lava is completely or partially melted material: • Melt – Liquid portion • Solids – Minerals present in magma • Volatiles – Dissolved gasses in magma • Substances that easily evaporate**

**-Different rocks melt at different temperatures • Partial melting - minerals with lower melting points will be the first to start melting • Silica-rich minerals, like quartz and feldspars, begin melting at lower temperatures than Feand Mg-rich minerals**

**-Partial Melting - Minerals with the lowest melting points (more felsic) will be first to melt as you apply heat to a rock**

**How you get a rock to melt: • Increase temperature • Decrease pressure • Increase volatiles • Compounds/elements with low boiling points (water)**

**• Decompression melting - lowering the pressureon rock while maintaining a high temperature • Happens at divergent plate boundaries**

**• Flux melting - adding water to the rock lowers the melting point • Happens in subduction zones**

* + Bowen’s reaction series(Slide 47-52)
  + Igneous intrusions – dikes and sills

**Dikes are vertical sheet intrusions that cut through layers of rock**

**Sills are horizontal sheet intrusions in-between layers**

* Lecture 7 – Volcanoes
  + Types of volcanos and their tectonic settings(20)

**-Shield volcano • Erupts basaltic lavas • Gentle slopes of 2 to 10 degrees • Up to 120 km wide (75 mi) • Long-lived 10,000’s yrs, non-violent eruptions**

* **Types of lava/magma, viscosity, chemistry, and associated volcanoes**

**-Composite volcano • Alternating pyroclastic deposits and andesitic lava flows • Very steep slopes • ~10-15 km wide • Intermittent, highly explosive eruptions • Example: Mt. St. Helens**

**-Cinder Cone • Mainly basaltic pyroclastic material • Slopes of ~30 degrees • Only ~1 km wide • Short-lived, typically a single event • Example: Parícutin, Mexico**

**-90% of all lava erupted is basaltic (mafic) in composition • Most volcanic activity occurs under water along mid-ocean ridges (divergent plate boundaries) • Non-violent volcanism • 4 types of lava flows • pahoehoe “pah-hoy-hoy” • aa “ah-ah” • pillow • block**

* + Gas content
  + Types of volcanic hazards: **pyroclastic flow, Lahar (volcanic mudflow)  
    type other hazards**
  + U.S. volcanoes and their tectonic settings
  + *You may need to review the igneous rocks chapter; it is tightly linked to volcanoes*
* Lecture 8 – Weathering
  + Types of physical weathering and their details

**Frost wedging • Sheeting/exfoliation • Biologic activity • And others…**

* + Types of chemical weathering and their details

**Physical weathering – processes that physically break rocks into smaller pieces • No change in rock chemistry • Also called mechanical weathering • Chemical weathering – chemical transformation of a rock into new compounds**

**• Dissolution • Hydrolysis • Oxidation**

* + Weathering of silicates
  + Differential weathering
  + Soil development
  + Erosion
* Lecture 9 – Sedimentary Rocks
  + Lithification process
  + Types and classification of sedimentary rocks, how they form
  + Texture characteristics and what they mean (grain size, sorting, roundness)
* Lecture 10 – Sedimentary environments
  + Types of environments
  + Color in sedimentary rocks
  + Energy of environments and how it relates to sediment size
  + Sedimentary structures and what they mean (ripple marks, cross-bedding, etc.)
  + Common rocks in certain environments