Geological Sciences 458: Volcanology
Syllabus

Fall Semester 2004
3 credits.

MWF 10:10-11:00 2156 Snee

Text: H. Sigurdsson et al. (eds.) *Encyclopedia of Volcanoes*
Other readings from the literature will be assigned

Instructors:  Prof. R. W. Kay  2122A Snee, 5-3461
             Prof. W. M. White  4112 Snee, 5-7466

Week 1 (Aug 27-Sept 1). Introduction/ History of Volcanology (Kay)

Week 2 (Sept 3-8). Composition and structure of silicate melts; volatiles; physical properties. Melt segregation and transport (White and Kay)
  Reading Assignment: *Composition of Magmas* pp. 115-132; *Migration of Melt* pp. 69-88; *Volatile in Magmas* pp. 149-170; *Physical Properties of Magmas* pp. 171-190.

Week 3 (Sept 10-15). Eruptive Mechanisms and Effusive volcanism I (Kay; White)

Week 4 (Sept 17-22). Explosive Eruptions I (White)
  Reading Assignment: *Magmatic Fragmentation* pp. 421-430; *Hawaiian and Strobolian Eruptions* pp 447-461; *Vulcanian Eruptions* pp. 463-475.

Mon Week 5 (Sept 24-Sept 29). Explosive volcanism II (White)
  Reading Assignment: *Plinean and Subplinian Eruptions* pp. 477-494; *Volcanic Plumes* pp 527-544

Week 6 (Oct 1-6). Pyroclastic Falls and Flow Deposits, Surges; Lahars (White)
  Reading Assignment: *Pyroclastic Transport and Deposition* pp 545-554; *Pyroclastic Fall Deposits* pp. 555-574; *Lahars* pp. 601-616, *Pyroclastic Surges and Blasts* pp. 571-580; *Ignimbrites and Block and Ash Flows* pp. 581-599; *Debris Avalanches* pp. 617-626.

PRELIM EXAM (October 8 tentative)

FALL BREAK OCT 11-12
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Week 7 (Oct 13-15). Calderas & Subvolcanic Structures (Kay)
Reading Assignment: Calderas pp. 643-662.

Week 8 (Oct 18-Oct 22). Subvolcanic Structures and Processes (Kay)
Reading Assignment: TBA

Week 9 (Oct 25-29). Case Histories I: Iceland, Japan, Mid-ocean ridges (Kay)
Reading Assignment: TBA

Week 10 (Nov 1-5). Case Histories II: Mt. St. Helens (White)
Reading Assignment: TBA

Week 11 (Nov 11-15). Case Histories III: Hawaii (White)
Reading Assignment: TBA

Week 12 (Nov 15-19). Volcanic Hazards (White)

Week 13 (Nov 22-24). Hazard Assessment and Management (White)
Reading Assignment: The Hazard from Lahars and Jökulhaups, pp. 973-996; Synthesis of Volcano Monitoring pp. 1165-1184; Volcanic Hazards and Risk Management 1215-1228

THANKSGIVING Break Nov 25-26

Week 14 (Nov 29 – Dec 3). Extraterrestrial Volcanism (Kay)
Reading Assignment:

Final Exam: Wednesday, Dec. 15 3:00-5:30 PM.