

Ge 194 b. Current Issues in Understanding the Reservoirs of Water on Mars.

6 (3-0-3); *second term. Prerequisites: Instructor's permission.* Over the past decade spacecraft missions have made major discoveries regarding subsurface ice, hydrated minerals, ancient and modern-day liquid water, and obliquity-driven climate change on Mars. The time is ripe to update basic models of water on Mars, promulgated in the late 1980s and 1990s, for understanding the sources (accretion vs. late veneer), sinks (loss to space, loss to a crustal reservoir), and cycling (groundwater-fed lakes, mid-latitude glaciations, catastrophic outflows) of water and other volatiles. In this seminar, we will seek to understand the history of water on Mars quantitatively through examination of evidence for the size of the reservoirs and their fluxes through time. In addition to furthering understanding of current issues in Mars science, we will work to construct a working box model, constrained by predictions of isotopic ratios, that allows exploration of scenarios for water on Mars through time. The course will be based upon selected, wide-ranging readings from the literature. Each student will take a role in preparing a discussion subtopic for each class, will be responsible for writing a brief synthesis of the discussion for 1-2 classes, and as a final project will lead construction of a component of the model. Instructors: Ehlmann.