

ESM 235: Watershed Analysis

[4 units]

Scott Jasechko

Winter 2019

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Office Hours: By appointment

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Class Hours: Tues., Thurs. 8:00am – 9:15am

Lab Hours: Thurs. 3:30 – 5:20 pm

Class Room: Bren Hall 1424

Lab Room: Bren Hall 3035

Overview: Hydrologic and geomorphic basis of environmental management problems concerning land surfaces and channels in small drainage basins, particularly the effects of land use and engineered alteration to stream channels. Emphasis placed in the integrated application of both theory and field methods to analyze existing conditions, evaluate the potential effectiveness of alternative solutions, and understand the limitations imposed by intrinsic watershed conditions and other human constraints. Implications for in-stream biota and water quality are acknowledged but not emphasized in this course.

Grading: Lab Assignments (80%); Final Project (20%)

Course Text and Relevant Readings: No course textbook; readings posted to Gauchospace

Topics (tentative):

- **Weeks 1-3** – Course Introduction, Watershed Definitions, Hydrological Processes, Precipitation Analysis, Water Balance, Rainfall-Runoff, Streamflow, Hydrographs
- **Weeks 4-6** – Flood Frequency, Snow Hydrology, Groundwater/Surface-Water Connections, Groundwater Systems,
- **Weeks 6-9** – Developing a Watershed Model, Erosion, Mass Wasting, Urban Waters, Hillslope Erosion, Effects of Fire
- **Week 10** – Final Projects