

## ESM 202 Biogeochemical Principles

Arturo A. Keller

Bren Hall 3420

[keller@bren.ucsb.edu](mailto:keller@bren.ucsb.edu)

OH: open door policy/email appt.

Textbook: Biogeochemistry, an analysis of global change (Schlesinger, 1997: 2<sup>nd</sup> ed.)

### LECTURES

09 Jan	Introduction: overview, concepts and relevance
11 Jan	Understanding water quality
16 Jan	Understanding water quality – redox
18 Jan	Nitrogen & Phosphorus cycles – sources, processes and effects
23 Jan	Eutrophication
24 Jan	Sulfur cycle – sources, processes and effects
30 Jan	Trace elements – sources, processes and effects
01 Feb	Acid Mine Drainage
06 Feb	Air pollution: urban smog, stratospheric ozone
08 Feb	Industrial Ecology, Life-Cycle Assessment & Biogeochemistry
13 Feb	Analyzing environmental samples
15 Feb	MIDTERM
20 Feb	Carbon cycle – drivers of emissions
22 Feb	Carbon cycle – ocean processes
27 Feb	Terrestrial carbon dynamics
01 Mar	Catchment biogeochemistry – acidic deposition
06 Mar	Catchment biogeochemistry – effects of fire and deforestation
08 Mar	Assessing the effects of chemicals
13 Mar	Modeling biogeochemistry for policy decisions
15 Mar	Synthesis and interactions
21 Mar	FINAL EXAM (8 to 11 am)

# ESM 202 Biogeochemical Principles

## DISCUSSIONS

Week of

08 Jan	Overview of discussion section mechanics, sign-up for topics
15 Jan	Water quality
22 Jan	Eutrophication
29 Jan	N & P biogeochemistry
05 Feb	S and trace elements biogeochemistry
12 Feb	Midterm Review
19 Feb	Carbon Cycle & Climate Change
26 Feb	Assessment of effects of chemicals on ecosystems
05 Feb	Integration of policy and science
12 Mar	Review for final

## GRADING

Presentation and participation in discussions 10%, assignments 50%, midterm 15% and final 25%.