

BIOL-UA 66/ENVST-UA 370 Biogeochemistry of Global Change

Instructor:

Mary Killilea

Course Description:

Biogeochemistry is the study of biological controls on the chemistry of the environment and geochemical regulation of ecological structure and function. This course will introduce the fundamental principles of biogeochemistry. Additionally, we will utilize the scientific literature from peer-reviewed journals to explore specific case studies on the global change of biogeochemistry (e.g., acid precipitation, nitrogen deposition, eutrophication of the oceans, etc.) from the field of biogeochemistry.

Pre-requisites:

Principles of Biology II (BIOL-UA 12) or
Environmental System Science (BIOL-UA 100)

Textbook and Required Materials:

Schlesinger, W.H. and E.S. Bernhardt (2013) Biogeochemistry: An analysis of global change, 3rd edition. Academic Press, New York, NY. 672 pp

Grading:

Exams	25% each
11 recitation assignments	20% total
Oral participation in recitation	5%

Topics:

Course Introduction and Introduction to Biogeochemistry
The Global Water and Carbon Cycle
Global Cycles of N and P
Sea level rise and ice sheets discussion
Origins (Self-study)
Human impacts of N cycle discussion
Lithosphere
The Atmosphere
Conservation Agriculture and Carbon
The Biosphere: The Carbon Cycle of Terrestrial Ecosystems
Wetlands
Face experiments discussion
Inland Waters
Methane discussion
Pharmaceuticals in wastewater discussion
Oceans
Dead zones discussion
Metals in urban agriculture discussion