

1-2-2075 Terrestrial Biogeochemistry; 3 credits **Course requirements**

1. Readings from the text and primary literature
2. Attendance
3. Participation in class discussion
4. Term paper/Oral presentation
5. Final exam/work

Grading

1. Term paper/Oral presentation = 40%
2. Participation in class discussion = 10%
3. Final Exam/work = 50%

Topics

0. Overview
1. Origin of Elements
2. The Atmosphere
3. The Lithosphere
4. The Carbon Cycle of Terrestrial ecosystems
5. Biogeochemical Cycling on Land
6. The Global Carbon Cycle
7. The Global Cycles of Nitrogen and Phosphorus
8. Perspectives

Syllabus:

Objectives

The objective of this course is to introduce students to the concepts and ideas in terrestrial biogeochemistry. A major theme for this course is the effect of human activity on biogeochemical cycles, and environmental change.

The foundations for the course are lectures, readings from the text, readings from the scientific literature, and discussions.

We will learn from where, when, and how energy and elements arrived on planet Earth.

We will consider the basic metabolic pathways of early life on earth and their effect on the atmosphere and the lithosphere.

We will understand the basic mechanisms underlying the biogeochemical transformation of carbon, nitrogen, phosphorus and other rock-derived elements.

We will study the biogeochemistry of aquatic and wetland ecosystems, relevant for the topic of terrestrial biogeochemistry.

Textbook

WH Schlesinger & ES Bernhardt 2013

Biogeochemistry: An Analysis of Global Change. 3rd Edition. Academic Press, New York.

Additional reading will be distributed in a PDF format during the course.