Biogeochemistry (GLY 4244/5266)
Spring 2008

Lecture: Tuesday and Thursday in 13/221, 9:30-10:45 a.m.

Biogeochemistry is the study of the interactions between the abiotic and biotic realms of the terrestrial system. Important included concepts are global cycles of major elements (carbon, nitrogen), minor/trace elements (e.g., iron) and important compounds (e.g., water). The origin of the modern terrestrial system (biosphere, hydrosphere, lithosphere, and atmosphere) will be discussed. We will explore both the processes that isotopic fractionation as well as the effect of those processes on both the modern environment and the geologic record. Contemporary issues, including nutrient biogeochemistry, climate change, and other topics will be assessed via a review and discussion of current primary literature. The course includes both lectures and seminar discussions.

Professor	Office Hours
Dr. Matthew Schwartz	Monday: 12:00-1:00
Bldg 13/219	Tuesday and Thursday: 8:00-9:30
office phone: 474-3469	Wednesday and Friday: 9:00-10:00
e-mail: mschwartz@uwf.edu	and **by appointment**

Prerequisites: Physical Geology and lab (GLY 2010/L) *or* Physical Geography (GEO 1200);
An introductory Chemistry course (e.g., CHM 2046/L)
An introductory Biology course (e.g., BSC 1005/L, BOT 2010/L or ZOO 1010/L)

Assignments: All assignments are due in class, in the corresponding eLearning dropbox, or in the professor's e-mailbox by 9:30 a.m. on the due date. Late assignments will be penalized at a rate of 1 grade per day, beginning at 9:31 on the due date (e.g., the maximum attainable grade for a paper either submitted via e-mail at 9:45 a.m. or brought into class late on the due date will be a B, rather than an A). **All written assignments will be subject to a plagiarism review via the Turnitin software package**.

Attendance Policy: Lectures will begin promptly at the scheduled meeting time. Students are expected to attend all scheduled class meetings, as lectures will provide important information that cannot be gained from other sources. The responsibility rests solely on the student to obtain any and all material presented during a missed period.

eLearning material: Course material (including course notes, supplemental readings, and web links) may be supplied online via the eLearning service (http://elearning.uwf.edu).

Student Evaluation: A course grade will be assigned based on student performance in laboratories, exams, homework, and presentations (written and oral) as follows:

Course Component (GLY4244)	
Seminar discussions (participation and presentation)	20%
First exam	25%
Second exam	25%
Final exam (**1 May, 8:00-10:30**)	30%

Course Component (GLY 5266)	
Seminar discussions (participation and presentation)	20%
Problem sets	15%
First exam	20%
Second exam	20%
Final exam (**1 May, 8:00-10:30**)	25%

Grading Scale (*per UWF Catalog 2005-6*)		
A	4.0	94-100%
A-	3.7	90-93%
B+	3.3	87-89%
B	3.0	83-86%
B-	2.7	80-82%
C+	2.3	77-79%
C	2.0	73-76%
C-	1.7	70-72%
D+	1.3	67-69%
D	1.0	60-66%
F	0.0	0-59%

Textbooks (required): *Biogeochemistry: an Analysis of Global Change*, second edition (William H. Schlesinger); ISBN 0-12-625155-X. The text is available in the UWF campus bookstore and from various online distributors. Used copies are acceptable and ***encouraged***.

Modern Biogeochemistry (Vladimir N. Bashkin in cooperation with Robert W. Howarth); this text is available for no charge through **ebrary**, an online database via the UWF Library (http://site.ebrary.com.ezproxy.lib.uwf.edu/lib/westflorida/).

Required supplemental readings from other sources will be assigned during the term and will be made available through the course eLearning page, if possible..

ADMINISTRATIVE INFORMATION

Academic conduct: Expectations for academic conduct and classroom behavior are described on pages 46-7 in the UWF Student Life handbook available online at http://www.uwf.edu/uwfmain/stuHandbk/

Plagiarism Policy: Plagiarism is a serious offense and will not be tolerated under any circumstances. The course plagiarism policy will follow UWF and College of Arts and Sciences policies as described in http://uwf.edu/cas/aasr/Plagiarism.pdf. All written assignments will be subject to a plagiarism review via the Turnitin software package.

Special technology utilized by students: medium (personal computer, spreadsheet programs, calculator, maps, and similar).

Student Learning Outcomes: After successfully completing this course, students will be able to:

1. Explain the interactions between the living (biotic) and non-living (abiotic) components of the Earth system
2. Describe biogeochemical cycling in atmosphere, lithosphere, and hydrosphere
3. Assess environmental issues in terms of their biogeochemical origins and impacts
4. reconstruct biological and biogeochemical systems by interpreting physical data (i.e., sediment distribution and water column chemistry)
5. Quantify biogeochemical fluxes and residence times (GLY 5266 only)
6. Compare and contrast biogeochemical processes in natural systems with those affected by human activities (GLY 5266 only)

Students with Special Needs: The University's policies for students with special needs is described in the UWF Disabled Student Services publication available at http://uwf.edu/sdrc/dss_pub.pdf

Tentative Course Schedule: Please note that the following schedule is ***tentative***; the instructor may add or delete material to meet the course objectives and student interest. All changes to this tentative plan will be recorded in an updated and amended syllabus that will be supplied to all students in class, via e-mail, or on the course website.

Date	Day	Topic	Readings*
8 January	T	Course introduction; Defining biogeochemistry?	1-2 (WS)
10 January	R	Evolution of elements and terrestrial spheres (biosphere, atmosphere, lithosphere, hydrosphere)	1-2 (WS); 2.2 (VNB)
15 January	T	Global biogeochemical cycles, an introduction	2.5 (VNB); 5 (WS)
17 January	R	Isotope biogeochemistry; isotopic fractionation	TBA
22 January	T	Global Carbon Cycle	11 (WS); 2.2 (VNB)
24 January	R	Global Carbon Cycle (cont.); implications	5 (WS)
29 January	T	Global Nitrogen Cycle	12 (WS); 3 (VNB)
31 January	R	Global Nitrogen Cycle (cont.); implications	8.1 (VNB)
5 February	T	Global Phosphorus Cycle	4 (VNB)
7 February	R	Global biogeochemical cycles of silicon, calcium, and other macroelements	3.6, 3.7 (VNB)
12 February	T	Trace element biogeochemistry	4, 8.2, 8.3 (VNB)
14 February	R	**Exam 1**	
19 February	T	Atmospheric biogeochemistry	3 (WS)
21 February	R	Terrestrial and soil biogeochemistry	5, 6 (WS), 7.1 (VNB)
26 February	T	Aquatic biogeochemistry: freshwater	7 (WS)
28 February	R	Biogeochemistry of estuarine and coastal systems	8 (WS)
4 March	T	TBA (ASLO meeting)	
6 March	R	TBA (ASLO meeting)	

Date	Day	Topic	Chapter
11 March	T	Aquatic biogeochemistry: marine waters	9 (WS)
13 March	R	Topics in Biogeochemistry (Seminar)	TBA
18 March	T	*Spring Vacation (no class)*	
20 March	R	*Spring Vacation (no class)*	
25 March	T	Eutrophication of aquatic systems	L&O 51(1/2)
27 March	R	Topics in Biogeochemistry (Seminar)	TBA
1 April	T	Origin (and evolution) of the atmosphere	3 (WS); 2.3.2 (VNB)
3 April	R	Topics in Biogeochemistry (Seminar)	TBA
8 April	T	Biogeochemistry of fossil fuels	2.6 (VNB)
10 April	R	Topics in Biogeochemistry (Seminar); **Exam 2 (take home)**	TBA
15 April	T	Global Water Cycle	10 (WS)
17 April	R	Topics in Biogeochemistry (Seminar)	TBA
22 April	T	*Dead week:* Regional biogeochemistry	6 (VNB)
24 April	R	*Dead week:* Biogeochemical mapping	7 (VNB)
1 May	R	**Final Exam (8:00-10:30)**	all

***** - additional readings will be assigned for most, if not all, topics. These readings will be from primary literature, online compendia, and other resources.

(WS) - *Biogeochemistry - an Analysis of Global Change* (William H. Schlesinger)

(VNB) - *Modern Biogeochemistry* (Vladimir N. Bashkin)