

## ESM 202 Environmental Biogeochemistry

T/Th 9:30 – 10:45 am (BH 1414)

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OH: R 2 – 5 pm/open door/ appt.

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Textbook: Biogeochemistry – Schlesinger and Bernhardt 2013

### LECTURES

Jan 9	Introduction: overview, concepts and relevance (JM)
Jan 11	Understanding water quality - chemical aspects (JM)
Jan 16	Eutrophication and phosphorus (JM)
Jan 18	Watersheds and atmospheric deposition (JM)
Jan 23	Understanding water quality – microbiological aspects (PH)
Jan 25	Nitrogen cycle (PH)
Jan 30	Oxygen biogeochemistry (JM)
Fed 1	Carbon cycle (JM)
Feb 6	Carbon cycle – ocean processes (JM)
Feb 8	Carbon dynamics in inland waters (JM)
Feb 13	Terrestrial carbon dynamics (JM)
Feb 15	Midterm
Feb 20	Industrial ecology (Geyer)
Feb 22	Air quality (Keller)
Feb 27	Sulfur cycle – sources and effects (PH)
Mar 1	Acid mine drainage (PH)
Mar 6	Trace elements – sources, processes and effects (PH)
Mar 8	Emerging pollutants (PH)
Mar 13	Restoration approaches (JM)
Mar 15	Synthesis and interactions (JM & PH)

Mar 20 FINAL EXAM (8 to 11 am)

### **DISCUSSIONS**

T 1:30-2:20 and 2:30-3:20

W 12:30-1:20 and 2:30 -3:20

<b>Week</b>	<b>Topics</b>
1	Water quality
2	Eutrophication; P biogeochemistry
3	Microbiology; N biogeochemistry
4	Oxygen; Carbon cycle
5	Carbon cycle
6	Midterm review
7	Life cycle analysis; Air quality
8	Sulfur cycle; Acid mine drainage
9	Metals; Emerging pollutants
10	Restoration; Review for final

### **GRADING**

- Assignments 3 x 15% each, 1 x 10%
- Midterm 20%
- Final 25%

### **Reading Materials**

Chapters and pages in Biogeochemistry – Schlesinger and Bernhardt 2013

<b>Week</b>	<b>Readings</b>
1	Chapter 1; Chapter 4, pages 93-108
2	Chapter 7 and 8; Chapter 12, pages 462- 465
3	Chapter 9, pages 368-382; Chapter 12
4	Chapter 11
5	Chapters 5 and 6; Chapter 9, pages 352-368
6	TBD
7	Chapter 3
8	Chapter 9, pages 390-391; Chapter 13, pages 469-481
9	Chapter 13, pages 482-485
10	Chapter 14; Review for final

Additional materials will be posted to the course website in Gauchospace.