BIOGEOCHEMISTRY OF WETLANDS & AQUATIC SYSTEMS

SWS6448

Term: Fall Semester

Instructor: Dr. P.W. Inglett
Office: 3171 McCarty Hall-A
Phone: 294-3170
Email*: pinglett@ufl.edu

**All correspondence to instructors and TAs concerning this course should use the messaging tool on the course website in Canvas.*

Office hours: Online during the weekly discussion session (Thursday 6:00-7:30pm) or anytime by appointment.

Course Description/Objectives: This course will provide students with the basic concepts of biogeochemical cycling of macro and trace elements including carbon, nitrogen, phosphorus, iron and sulfur. It will discuss the environmental and ecological significance of these biogeochemical processes in wetlands and aquatic systems as they relate to environmental elemental cycling, water quality, carbon sequestration, climate change, and sea level rise.

At the end of this course, students should be able to:

1. describe the concepts of biogeochemistry and the unique biogeochemical properties of wetland/aquatic systems
2. apply quantitative and qualitative approaches of studying biogeochemical cycles in wetlands and aquatic systems
3. summarize the biogeochemical processes operating in the major types of wetlands
4. relate the processes in the carbon, nitrogen, phosphorus, and sulfur cycles, to global issues such as productivity, pollution, and environmental change

Course Format: Web-based lecture and discussion.

Prerequisites: None. Students should have a basic graduate level understanding of chemistry and general biology/ecology.

Course Texts:

Required - Reddy, K.R., DeLaune, R.D. and Inglett, P.W., 2023. *Biogeochemistry of wetlands: science and applications*. CRC press. 713 pp.

Additional suggested readings-

Mitsch, William J., Gosselink, James G., Anderson, Christopher J., Fennessy, M. Siobhan. 2023. *Wetlands*. Wiley.

Kadlec, R. H. and S. Wallace. 2008. *Treatment Wetlands*. Taylor and Francis. 1016 pp.

Madigan, M.T. and Aiyer, J. and Buckley, D.H. and Sattley, W.M. and Stahl, D.A. 2021. *Brock Biology of Microorganisms*. Pearson Education.

Schlesinger, W.H., and E.S. Bernhardt. *Biogeochemistry: An Analysis of Global Change*, 3rd Ed. 2013. Academic Press.

Course Website: All lectures, assignments, and other course materials including exams will be accessible using Canvas via the UF e-Learning portal: https://elearning.ufl.edu/

Weekly Discussion: On Thursday 6:00-7:30pm of each week we will have a discussion session (Zoom meetings through course website) to discuss the course material, assigned readings, and to answer the weekly discussion questions. Discussion questions will be made available in each weekly module and should be completed by each student prior to the discussion session for that week. Attendance is required. Each student will be evaluated for participation based on their attendance, responses to the discussion questions (document submitted prior to each discussion session) and their involvement in the discussion. Attendance and involvement will be based on 1) visual presence with functioning web camera and 2) relative engagement, through relevant questions, comments, or answers.

Quizzes: Students will be required to complete quizzes after their review of materials for each week. Quizzes will be made available through the Canvas course management system during the week in which the material for that quiz is covered (see course outline for schedule of topics). Each quiz is timed with unlimited attempts, so students are encouraged to take the quizzes as a way of learning and testing their knowledge of the material.

Exams: Exams for this course will be a combination of quiz questions and one short essay. The questions will be similar (but not identical) to the quiz questions. Exams are time-limited, but they can be taken anytime during the window of the exam (exam week). Examinations will be administered online using the ***Honorlock*** service to ensure a secure testing environment (https://elearning.ufl.edu/instructor-help/teaching-and-learning-tools/canvas-learning-tools/learning-tools/honorlock.php). Students should allow sufficient time to setup the service in addition to the time required to complete the exam (exams close at midnight). Each student must have access to a suitable computer with a web cam, microphone, and speakers.

Paper/presentation: Each student will be assigned a specific wetland type and major process for which they will prepare a written summary and presentation. Students will individually collect references and materials to summarize the relevant scientific literature in the last 10 years on their assigned topic. Each student will submit their draft bibliography and written 2-3 page summary along with a draft version of the presentation. After the first submission, students will begin meeting with others in the same topic area to prepare a 25-minute synthesis presentation to be given at a weekly discussion meeting later in the semester. Each student will be graded on the quality of their bibliography/summary (50%), contribution to the presentation (20%) and quality of their group presentation (30%). Attendance at these discussion sessions will be based on 1) visual presence with functioning web camera and 2) provision of feedback for other group presentations.

Make-up Exams/Assignments: All assignments for this course will be assigned in advance, with ample time for completion. Students are not permitted to miss exams or class meetings except for approved and documented absences (hospitalization, death of family member, etc.) in accordance with the University policy on absences: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx. If an exam is missed for an approved reason, a make-up exam will be scheduled for the first week following the return of the student to class. Make-up exams may not be of the same format as that of the missed exam.

Grading System: Final letter grades will be assigned as follows using whole point values and based on the UF policy for grades and grade points effective May 11, 2009:

Grade determination categories based on points accumulated.

Total Points Accumulated	>611	611-592	591-564	563-544	543-524	523-496	495-476	475-456	455-428	427-408	407-388	<388
Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E
Grade Point	4	3.67	3.33	3	2.67	2.33	2	1.67	1.33	1	0.67	0

Point totals for each portion of the course are as follows:

Course Component	# Items	Total Points	~% of Grade
Quizzes	8	160	24
Discussions	11	220	32
Paper/presentation	1	100	15
Exams	2	200	29
Total		680	100

Course Schedule and Topics:

Semester Week*	Date (M/D)	Module	Topics Covered*	Book Chapter	Quiz due	Discussion session
1	8/28	1	Welcome/Biogeochem.-Wetlands	1, 3	1	1
2	9/04	2	Electrochemical Properties	4	2	2
3	9/11	3	Carbon pt.1	5		3
4	9/18	3	Carbon pt.2	5	3	4
5	9/25	4	Oxygen and Plant Adaptations	6, 7	4	5
6	10/3-5		**Exam 1 (Modules 1-4)**			
7	10/9	5	Nitrogen pt.1	8		6
8	10/16	5	Nitrogen pt.2	8	5	7
9	10/23	6	Phosphorus pt.1	9		8
10	10/30	6	Phosphorus pt.2	9	6	9
11	11/6	7	Iron and Manganese	10	7	10
12	11/13	8	Sulfur	11	8	11
13	11/21-23		**Exam 2 (Modules 5-8)**			
14	11/24-30		Thanksgiving Holidays			
15	12/4		**Project presentations**			12
16	12/11		**Project presentations**			13

* Dates for topics or exams are tentative, and subject to change. The 1st week is determined from the start of classes until the first Thursday discussion meeting.

Class Demeanor: Students are expected to compose themselves in an adult and professional manner and give complete consideration and respect for the professor and fellow students. This includes all class correspondence, interactions with other students in chat discussions, or online posts.

Technical Support: UF Computing Help Desk & Ticket Number: All technical issues require a UF Helpdesk Ticket Number. The UF Helpdesk is available 24 hours a day, 7 days a week. https://helpdesk.ufl.edu/ | 352-392-4357

Online Privacy: Our class sessions may be audio visually recorded for students in the class to review and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

Online Course Evaluation Process: Student assessment of instruction is an important part of efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at: https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at: https://gatorevals.aa.ufl.edu/public-results/.

Academic Policies and Resources: Academic policies for this course are consistent with university policies. See https://syllabus.ufl.edu/syllabus-policy/uf-syllabus-policy-links/

Campus Health and Wellness Resources: Visit https://one.uf.edu/whole-gator/topics for resources that are designed to help you thrive physically, mentally, and emotionally at UF. Please contact UMatterWeCare for additional and immediate support.

Software Use: All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

Privacy and Accessibility Policies:

- Instructure (Canvas)
  - Instructure Privacy Policy
  - Instructure Accessibility
- Zoom
  - Zoom Privacy Policy
  - Zoom Accessibility