

Paleolimnology

Special Topics

GLY 6932 Sect 39H4/4930 Sect 9999

University of Florida, Department of Geological Sciences

Williamson Hall 218

Times: Monday Period 5

Thursday: Tuesday Periods 5-6

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Office Hours: Wednesday 11:00 AM-1:00 PM and by appointment

Course Objectives: This course provides students with a basic understanding of the multidisciplinary uses of lake and wetland sediment cores for understanding earth system processes. Paleolimnology is an interdisciplinary science that incorporates principles of geology, pedology, hydrology, climatology, chemistry, physics, and biology. Its temporal component provides an historical perspective on natural and anthropogenic changes in watersheds and lakes, including climate change, erosion and deposition, deforestation, lake acidification, and eutrophication. Students will come away with an appreciation for how lake and wetland sediments archive information about past climate and environmental conditions.

Overview of topics to be covered in this course:

- 1) What is paleolimnology?
 - a) questions that can be addressed (paleoclimate/paleoenvironment)
 - b) applied and theoretical issues
 - c) the watershed concept
 - d) autochthonous versus allochthonous materials

- 2) Designing paleolimnological investigations
 - a) picking core sites
 - b) coring devices
 - c) sample handling in the field and lab
 - d) subsampling

- 3) Sediment chronology (depth-age relationships)
 - a) ^{210}Pb dating
 - b) ^{14}C dating
 - c) ^{137}Cs marker

- d) pollen zones
 - e) volcanic ash
 - f) other stratigraphic markers (natural and anthropogenic)
 - g) sedimentation rates
- 4) Physical characteristics
- a) density
 - b) laminations (varves)
 - c) lithology
 - d) erosion/transport/deposition
- 5) Biogeochemistry
- a) nutrients
 - b) metals
 - c) biogenic silica
 - d) pigments
- 6) Diagenesis
- 7) Stable isotopes
- a) carbon, nitrogen, oxygen
 - b) applications to eutrophication, climate, hydrology studies
- 8) Microfossils
- a) pollen, spores
 - b) diatoms
 - c) animal microfossils
 - d) pH, productivity, climate inferences
- 9) Pollutants (toxics/radioisotopes)
- 10) Case studies
- a) trophic state changes (cultural eutrophication)
 - b) climate change
 - c) anthropogenic impacts on vegetation
 - d) lake acidification
 - e) heavy metals (Pb, Hg)
- 11) Lake management and restoration

Grading and evaluation of students

Assignments and grading. There are no exams in the course and there is no textbook. A list of resources (books, meeting proceedings, relevant journals, etc., will be distributed during the

first week. Powerpoint presentations will be distributed to students prior to lectures, and reprints of relevant articles on each topic will be made available to students. Grades will be based on attendance and classroom participation in discussions. Each student will prepare a short (10-15 pages, double-spaced) final paper on a topic of their choice, to be handed in at the end of the semester. Students will also give a short (15-20 minute) powerpoint presentation on the topic during one of the final class periods, or during the designated final exam period.

Academic accommodations for students with disabilities

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. Students can copy and paste the following link to obtain information about accommodations (<https://disability.ufl.edu/get-started/>). It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course evaluation process

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 Honesty Policy

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Conduct Code specifies a number of behaviors that are in violation of this code and the possible sanctions. Go here to read the Conduct Code (<https://sccr.dso.ufl.edu/process/student-conduct-code/>). If you have any questions or concerns, please consult with the instructor or TAs in this class.

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as

evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

Campus Resources

Health and Wellness

U Matter, We Care: If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit the We Care website (<https://umatter.ufl.edu>) to refer or report a concern and a team member will reach out to the student in distress.

Counseling and Wellness Center: Visit the Counseling and Wellness Center website (<https://counseling.ufl.edu>) or call 352-392-1575 for information on crisis services as well as non-crisis services.

Student Health Care Center: Call 352-392-1161 for 24/7 information to help you find the care you need, or visit the Student Health Care Center website (<https://shcc.ufl.edu>).

University Police Department: Visit UF Police Department website (<https://police.ufl.edu>) or call 352-392-1111 (or 9-1-1 for emergencies).

UF Health Shands Emergency Room / Trauma Center: For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; Visit the UF

Health Emergency Room and Trauma Center website (<https://ufhealth.org/emergency-room-trauma-center>).

Academic Resources

E-learning technical support: Contact the UF Computing Help Desk at <https://helpdesk.ufl.edu>, 352-392-4357 or via e-mail at helpdesk@ufl.edu.

Career Connections Center: Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services, <https://career.ufl.edu>.

Library Support: Various ways to receive assistance with respect to using the libraries or finding resources (<https://uflib.ufl.edu/find/ask/>).

Teaching Center: Broward Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring (<https://teachingcenter.ufl.edu>).

Writing Studio: 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers (<https://writing.ufl.edu/writing-studio/>).

Student Complaints On-Campus: Visit the Student Honor Code and Student Conduct Code webpage for more information (<https://sccr.dso.ufl.edu/policies/student-honor-%20code-student-conduct-code/>).

On-Line Students Complaints: View the Distance Learning Student Complaint Process (<https://distance.ufl.edu/getting-help/student-complaint-process/>).