GLY 4822/5827 – Groundwater Geology

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GLY 4822 is a fully online course for those in the Geology Certificate Program or UF Online.

On campus sections and GLY 5827 will meet for exams and for optional Q&A sessions. Tentative exam times (Room 218 Williamson): Exam 1: Thursday Feb 13 at 4:45 -6:15 pm, Exam 2: Thursday April 9 at 4:45 -6:15 pm

GLY 4822 and GLY 5827 are co-listed and co-taught. The differences between the two courses are described below under grading.

Virtual office hours: Dr. Screaton Tues 1-2 pm, Thurs 2-3 pm

Overall Course Goals and Outcomes

By the end of this course:

- Students will understand the basic concepts of groundwater flow and the relationship between groundwater flow and subsurface geology.
- Students will be able to apply these concepts to solve groundwater problems.

Textbook

Ground Water by Freeze and Cherry, available at this link.

Class Format

The class consists of 10 modules. Each module will contain:

- A background reading assignment and one to two < 15-minute video lectures to introduce the concepts, terms, and skills. The reading assignment will generally be from the text but will sometimes include outside reading.
- A 5-point pre-quiz after the reading and videos. The pre-quiz is untimed and scores/feedback are available immediately after submission. Questions are multiple-choice, multiple-answer, and calculations. Multiple choice or multiple answer quiz questions are randomly drawn from pools of questions of similar topic and difficulty.
- During online discussions, students will consider examples, practice skills, and build understanding through asking questions. For each module, participation in the class discussions will be 3 pts.
- The module quiz is time-limited (60 minutes) and 15 points. The format is similar to the pre-quiz and many of the questions will cover similar content areas. Scores and correct answers are available after the deadline.
- An 8-point assignment will include analysis and interpretation. Unless otherwise specified, you are allowed to discuss assignment questions with other students but must produce your own answers. The assignments will be evaluated using Turnitin to determine the originality of your work. Turnitin is an online service to help prevent and identify student plagiarism. **All answers must be your own, all shown work must be yours, and all figures must be created by you.**

During the semester, there will also be:

- Two **reports** in which you will apply the skills that you've learned. The reports will also provide experience in technical writing. The reports will be evaluated using Turnitin to determine the originality of your work. Turnitin is an online service to help prevent and identify student plagiarism.
- Two review modules, each with a discussion and quiz.
- Two 90-minute **exams**. Exams will be a combination of multiple choice, calculations and short essays. During the exam, you will be allowed to use a calculator (but not one on your phone) and scratch paper. You can have a one-sided 8 ½ x 11 sheet with any notes you need. Fully online students will use ProctorU and sign up for the exams during a two-day time window.
- A final quiz (20 points) is untimed, online, and open book.
- GLY 5827 only: a short (3-5 minute) presentation for the class. The topic should be decided with the professor before Exam 1 and the presentation completed by April 2.

Grading

GLY 4822: 510 total points	**GLY 5827: 545 total points**
• Introductory Quiz and Discussion 10 pts • Pre-Quizzes 40 pts (best 8@5 pts) • Discussions 30 pts (best 10@3 pts) • Quizzes 150 pts (best 10@15 pts) • Proctored Exam 1: 50 pts • Proctored Exam 2: 60 pts • Final Quiz 20 pts • Assignments 80 pts (10 @8 pts) • Reports 70 pts (2@35 pts)	• Introductory Quiz and Discussion 10 pts • Pre-Quizzes 40 pts (best 8@5 pts) • Discussions 30 pts (best 10@3 pts) • Quizzes 150 pts (best 10@15 pts) • Proctored Exam 1: 60 pts • Proctored Exam 2: 70 pts • Final Quiz 20 pts • Assignments 80 pts (10@8 pts) • Presentation (15 pts) • Reports 70 pts (2@35 pts)

A: ≥93.4%; A- 90.0-93.3%; B+ 86.7 – 89.9%, B: 83.4 – 86.6 %, B-: 80.0 – 83.3 %, C+ 76.7 – 79.9 %; C: 73.4 – 76.6%, C-: 70.0 – 73.3%, D+: 66.7 – 69.9%, D: 63.4 – 66.6%, D- 60.0 – 63.3%, E 59.9% and below**.** *(Information on how UF calculates GPA based on letter grades can be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx)*

These grade criteria are firm. At the end of the semester, the points you earn determine your grade. Approximately 15-20 extra credit points will be available to all GLY 4822 students and 5-10 extra credit points for all GLY 5827 students at various times during the semester. Please take advantage of these opportunities for extra points. **I do not negotiate the final grade or offer special extra credit opportunities to individual students.**

Differences between GLY 4822 and GLY 5827: 1) For the assignments and the two reports, additional analyses are required at the graduate level. Interpretation and written communication will be assessed with higher expectations at the graduate level. **2)** Graduate students will be responsible for a class presentation. **3)** The exams are each 10 points shorter for the undergraduate course.

Course Topics and Tentative Schedule

Deadlines	Topic
January 9	Introduction • Syllabus quiz on class logistics • Introductory Dsicussion
January 14 and 16	Module 1 Basic Principles • Darcy's Law • basics of groundwater flow
January 21 and 23	Module 2 Hydraulic Conductivity and Hydraulic Head • hydraulic conductivity and how it is measured • What is hydraulic head? • Introduction to mapping hydraulic head
January 28 and 30	Module 3 Potentiometric surface maps and Groundwater/surface water exchange • potentiometric surface maps and groundwater flow directions • exchange of surface water and groundwater • stream measurements
Feb 4 and 6	Module 4 Geologic Information for Groundwater Studies • collecting and interpreting geologic information • Borehole geophysics for groundwater studies
Feb 11-20	Exam 1 (Online: Feb 12-13; In person: Feb 13); Report 1 (Feb 20)
Feb 25 and 27	Module 5 Geology of Groundwater; Florida's Hydrogeology • Geology and aquifer characteristics • Current state of knowledge about Florida's aquifers
March 10 and 12	Module 6 Storage and Groundwater Flow Equations • The storage parameter • groundwater flow equations
March 17 and 19	Module 7 Recharge and the Hydrologic Cycle • flow through the unsaturated zone • how recharge is quantified • regional groundwater flow
March 24 and 26	Module 8: Flow to Wells • prediction of drawdown due to pumping • aquifer tests to determine transmissivity and storativity
Mar 31 and Apr 2	Module 9: Mass Transport and Groundwater Contamination • advection and dispersion; non-aqueous phase liquids • sources and investigation of contamination
April 7, 9, and 16	Exam 2 (Online Apr 8-9; In person: Apr 9); Report 2 (Apr 16)
April 18 and 21	Module 10: Freshwater/Saltwater and Groundwater Modeling • groundwater at the coast • numerical modeling of groundwater flow
Apr 28	Final Quiz

Additional Information

Technology You'll need a dependable computer and internet connection to access the class content on Canvas. Students will need to either print out figures or be able to draw onscreen. Fully online students will need a microphone and webcam for ProctorU monitoring during exams. Excel will be needed for one to two assignments.

Academic Honor Code Students must follow the University of Florida Honor Code. On all work submitted for credit by students of 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*." Before submitting any work for this class, please read the policies about academic honesty at https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/

- **Specifics for this class:**
  - You are allowed to discuss practice quiz and assignment questions with other students and to ask the prof for help, but all work submitted must be your own.
  - Having anyone else complete any work for you, completing any work for another student, or receiving/providing answers is not allowed and is subject to being reported as an honor code violation.
  - Reports are to be completed without help from anyone except the professor.
  - Assignments and reports will be evaluated with Turnitin. Turnitin is an online service to help prevent and identify student plagiarism by comparing your submission to other material and student submissions. Substantial overlap with other submissions/material will be considered a potential honor code violation.
- **How to avoid problems:**
  - Don't copy and paste any text, whether from the web or from another student.
  - Don't provide any answer text to another student –even if it is verbal. Because I won't be able to tell who did the work and who copied, both students will face a potential honor code violation. Providing answers also does not help the other student learn.
  - Give credit where due. If you found another student's explanation or discussion post helpful, or use information from the internet, *summarize* rather than copy what they said and cite the source. For reports, citation format will be specified.

Course announcements and email: Announcements and Canvas Email ("Conversation Messages") will be used to contact you and to inform you of updates or corrections to course deadlines or content. Make sure that you either have Notification Preferences are set to "ASAP" for Announcements and for Conversation Messages, or that you check these frequently.

Deadlines

Pre-Quizzes, Quizzes, and Discussions

- All deadlines are at 11:59 pm. Please be aware that Canvas submits your quiz exactly at the deadline (e.g., 11:59:00, not 11:59:59).
- Late submissions are not accepted; instead, the lowest two pre-quizzes, quizzes, and discussions are dropped from your grade.

Assignments

- Assignments are due before 11:59. You're responsible for starting the assignment and asking questions well before the deadline. I will answer be available to answer questions up until 6 pm on the day of the deadline.
- You are responsible for viewing the file after submission to make sure that it is the correct file and that it uploaded without error.
- Late assignments and reports will be accepted for 1 day after the deadline. Assignments will have 1 point deducted and the report will have 2 points deducted. Please be aware that Canvas marks an assignment late if it is submitted at 11:59 pm. No extra credit is graded for late submissions.

Attendance and conflicts

- Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found in the online catalog at: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx
- For *pre-existing conflicts* (e.g., athletic, religious, academic), **you are responsible** for providing me with email or written notification and making arrangements with me (screaton@ufl.edu) for an alternate date as soon as you are aware of the conflict, **but no later than 1 week before a class, deadline, or exam.**
- For *sudden, unexpected major issues* **you are responsible** for providing me (screaton@ufl.edu) with email or written notification and making arrangements no later than 5 pm the day of the deadline for an assignment or quiz or at least 1 hour before a scheduled class or in-person exam. Documentation may be requested.
- Typically for long-lasting illnesses or other issues, students contact the Dean of Students Office, who verify and then inform all the student's professors.

How to Get Help

Groundwater Geology combines geology and quantitative methods. All students are challenged by some parts of the material. Be sure to allow yourself enough time prior to deadlines to ask questions and have them answered.

- **For problems with Canvas**: Call 352-392-4357 or via e-mail at helpdesk@ufl.edu.
- **To report course-specific errors:** If you find a broken link in an assignment, an error in quiz grading, or some other error, please email. I will correct any problems and will credit you 1 point if you are the first to report a problem by 5 pm before any deadline.
- **For content questions**: Check the Course Q&A and module discussion to check whether the question has already been answered. If not, contact me by email, post your question to the class, bring your questions to the class or office hours, or arrange a time to meet (in person or online). Emails received between 8 am and 5 pm on days when UF is in session will generally be answered within 2-3 hours. Emails received in the evening or on weekends will be answered the next weekday morning.
- **For questions specific to you:** An email to me is the best way to ask questions that are specific to you, such as about your grade or an upcoming conflict with a deadline.

Accommodations for Disabilities: Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, www.dso.ufl.edu/drc/) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Course Evaluations**:** 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/