

**Professor:** Dr. Scott Miller ([scottrimiller@ufl.edu](mailto:scottrimiller@ufl.edu))

**Teaching Assistant:** Mr. Brian Kelly ([bkelly2014@ufl.edu](mailto:bkelly2014@ufl.edu))

**Virtual Office Hours: 2 hours for TA, 2 hours for Professor, preferably 1 hour each day of the week.**

**Times TBD.** During virtual office hours, you can ask questions by email or use Zoom. You can schedule a Zoom meeting in the “Zoom Conferences” tab under the Navigation Menu in our Canvas course or via email. You can also arrange times outside office hours with either the TA or Prof.

### Course Goals and Outcomes

- To understand basic concepts of groundwater flow and the relationship between groundwater flow and subsurface geology.
- To apply these concepts to solve groundwater problems.

### Textbooks

- FREE [Groundwater \(1<sup>st</sup> Edition, 1979\)](#) by R.A. Freeze and J.A. Cherry (.pdf version), **OR**,
- FOR PURCHASE [Groundwater Science \(2<sup>nd</sup> Edition, 2012\)](#) by Charles R. Fitts. The creator of this course recommended the Fitts book (which will have a 3<sup>rd</sup> Edition coming out in April 2023). Although Dr. Miller believes that the free textbook is sufficient, the Fitts book is available for rent for the semester for as low as \$25 on Amazon (last checked on 1/2/23).

### Class Format

The class consists of eleven modules (including an Introduction). Each module contains:

- A background **reading assignment** and one to two < 15-minute **video lectures** to introduce the concepts, terms, and skills. The reading assignment is generally from the text but sometimes includes outside reading.
- A **pre-quiz** (5 pts). The pre-quiz is untimed. Scores and partial feedback are available immediately after submission. Questions are multiple-choice, multiple-answer, and calculation “fill in the blank” questions.
- An 8-point **assignment** that includes analysis and interpretation. Unless otherwise specified, you are allowed to discuss assignment questions with other students but must produce your own answers. The assignments are 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 and all analyses must have been completed by you.
- **Online discussions**, where students consider examples, practice skills, and build understanding through asking questions. For each module, participation in the class discussions is 3 pts.
- A 15-point **module quiz**. The format is similar to the pre-quiz and many of the questions cover similar content areas. Scores and partial feedback are available after the deadline.

During the semester, there are also:

- Two **reports** to apply the skills that you’ve learned. The reports also provide experience in technical writing. The reports are evaluated using Turnitin to determine the originality of your work. Turnitin is an online service to prevent/identify student plagiarism.

- Two 60-minute **exams**. Exams are a combination of multiple choice and calculations. During the exam, you can 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. Exams are proctored via Honorlock.

### DEADLINE AND LATE POLICIES

Requirements for class attendance, 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>

- All deadlines are at 11:59 pm Eastern U.S. time. Please be aware that Canvas submits your quiz (or marks assignments late) at, 11:59:00, not 11:59:59.
- **Ask questions, request extensions, or report any problems before 5 pm on the day of deadlines.**
- For conflicts with deadlines (e.g., athletic, religious, academic, family, or work) please contact Prof. Miller in advance (no later than 5 pm the day of the deadline) to make arrangements for an alternate deadline.
- Keep in mind that submissions are available >1 week prior to deadlines (see “**Course Topics and Schedule**” below). It is better to stay ahead of deadlines rather than falling behind.
- Typically for long-lasting illnesses or other issues that affect more than one deadline, students contact the [Dean of Students Office](#), who verify and then inform all the student’s professors.
- It’s not possible to extend a discussion for an individual student (and doesn’t make sense for a student to “discuss” on their own). For major conflicts, a discussion can be “excused” (e.g., not count for/against a student’s grade).

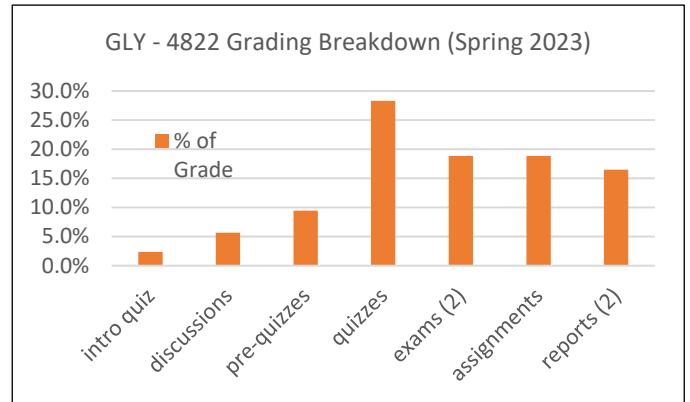
### Late Submissions (without an extension) and Dropped Scores

- **Assignments** can be submitted up to 2 days after the deadline. No extra credit is graded on late assignments and 1 pt is deducted. *You are responsible for viewing all files after submission to make sure that it is the correct file and that it uploaded without error.*
- **Reports** can be submitted up to 2 days late, but no extra credit is graded and 2 pts are deducted. *You are responsible for viewing all files after submission to make sure that it is the correct file and that it uploaded without error.*
- Instead of allowing late **quizzes, pre-quizzes** and **discussions**, the lowest 2 grades are dropped.

## Grading

### GLY 4822: 424 total points

- Introductory Quiz and Discussion 10 pts
- Discussions 24 pts (best 8@3 pts)
- Pre-Quizzes 40 pts (best 8@5 pts)
- Quizzes 120 pts (best 8@15 pts)
- Proctored Exam 1: 40 pts
- Proctored Exam 2: 40 pts
- Assignments 80 pts (10 @8 pts)
- Reports 70 pts (2@35 pts)



A:  $\geq 93.4\%$ ; 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 are available to all GLY 4822 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.**

Course Topics and Schedule	
Deadlines*	Topic
Jan 12	Introduction <ul style="list-style-type: none"> <li>Syllabus quiz on class logistics; Introductory Discussion</li> </ul>
Jan 17 & 19	Module 1 Basic Principles <ul style="list-style-type: none"> <li>Darcy's Law, basics of groundwater flow</li> </ul>
Jan 24 & 26	Module 2 Hydraulic Conductivity and Hydraulic Head <ul style="list-style-type: none"> <li>hydraulic conductivity and how it is measured</li> <li>What is hydraulic head?</li> <li>Introduction to mapping hydraulic head</li> </ul>
Jan 31 & Feb 2	Module 3 Potentiometric surface maps and Groundwater/surface water exchange <ul style="list-style-type: none"> <li>potentiometric surface maps and groundwater flow directions</li> <li>exchange of surface water and groundwater</li> <li>stream measurements</li> </ul>
Feb 7 & 9	Module 4 Geologic Information for Groundwater Studies <ul style="list-style-type: none"> <li>collecting and interpreting geologic information</li> <li>Borehole geophysics for groundwater studies</li> </ul>
Feb 14 & 16	Module 5 Geology of Groundwater; Florida's Hydrogeology <ul style="list-style-type: none"> <li>Geology and aquifer characteristics</li> <li>Current state of knowledge about Florida's aquifers</li> </ul>
Feb 21	Report 1 Initial Analyses due
Feb 28- Mar 2	Exam 1 (9 am Feb 28 to 11:59 pm on Mar 2)
Mar 9	Report 1 DUE
Mar 21 & 23	Module 6 Storage and Groundwater Flow Equations <ul style="list-style-type: none"> <li>The storage parameter</li> <li>groundwater flow equations</li> </ul>
Mar 28 & 30	Module 7 Recharge and the Hydrologic Cycle <ul style="list-style-type: none"> <li>flow through the unsaturated zone</li> <li>how recharge is quantified</li> <li>regional groundwater flow</li> </ul>
Apr 4 & 6	Module 8: Flow to Wells <ul style="list-style-type: none"> <li>prediction of drawdown due to pumping</li> <li>aquifer tests to determine transmissivity and storativity</li> </ul>
Apr 11 & 13	Module 9: Mass Transport and Groundwater Contamination <ul style="list-style-type: none"> <li>advection and dispersion; non-aqueous phase liquids, sources and investigation of contamination</li> </ul>
April 18 & 20	Module 10: Freshwater/Saltwater and Groundwater Modeling <ul style="list-style-type: none"> <li>groundwater at the coast</li> <li>numerical modeling of groundwater flow</li> </ul>
April 25	Report 2
April 29-May 5	Exam 2 (TENATIVELY from 9 am on Apr 25 to 11:59 pm on Apr 27)
*Pre-quizzes & Assignments are due on the 1 <sup>st</sup> due date (Tuesdays), while Discussions and Quizzes are due on the 2 <sup>nd</sup> due date (Thursdays). Modules become available on the Monday before the week they are due, meaning you have 8 days to complete Pre-quizzes & Assignments, and 10 days to complete Discussions & Quizzes.	

## Additional Information

**Technology** As this is an online, asynchronous course, you'll need a dependable computer and internet connection to access the class content on Canvas. Students need to either print out figures or be able to draw onscreen and need a microphone and webcam for Honorlock monitoring during exams. Excel or another spreadsheet software is 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://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-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 are 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 are 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") are 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.

## 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](mailto: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:** Visit the Course Q&A and module discussion to check whether the question has already been answered. If not, contact me by email or post your question to the class. Emails received between 8 am and 5 pm on days when UF is in session will generally be answered on the same day if not during office 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.

**Class Demeanor** Students are expected to treat other students, the TA, and the professor with consideration.

**Accommodations for Disabilities:** Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://disability.ufl.edu/>) 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/>