

GEOL 474/674 – Hydrogeology, Section 1001, Fall 2018

M-W 5:30– 6:45 PM, CBC C230

- Faculty:** Dr. Michael Nicholl
227 LFG
895-4616
Email: Michael.nicholl@unlv.edu
- Office Hours:** Wednesday 3:00 - 4:00 PM, Thursday 3:00 - 4:00 PM, and by appointment
- Course Format:** Lecture twice a week, outside exercises by arrangement
- Textbook:** Applied Hydrogeology by Fetter, 2nd, 3rd, or 4th Edition is recommended
- Books on Reserve:** Applied Hydrogeology by Fetter, 3rd edition
Ground-water Hydrology and Hydraulics by McWhorter and Sunada
Groundwater and Wells by Driscoll
Groundwater Hydrology by Todd
Physical and Chemical Hydrogeology by Domenico and Schwartz
Groundwater by Freeze and Cherry
- Prerequisites:** MATH 127, PHYS 151

Learning Outcomes: After successfully completing this course, students will be able to: 1) explain where groundwater fits within, and interacts with the hydrologic cycle; 2) employ the hydrologic equation to estimate unknown components of the groundwater cycle; 3) describe steady-state groundwater flow through use of Darcy's Law; 3) quantify the principal factors that control saturated groundwater flow (e.g., porosity, hydraulic conductivity, hydraulic head); 4) interpret transient aquifer tests; 5) explain the advection-dispersion equation in conceptual terms; and 6) understand the purpose of groundwater modeling.

Grading policy: Final grades will be assigned in manner consistent with the following schedule. The instructor may also elect to curve the **final** grades in the students favor.

| <u>Grade</u> | <u>Semester average</u> |
|--------------|-------------------------|
| A- to A | 90 to 100 |
| B- to B+ | 80 to 89 |
| C- to C+ | 70 to 79 |
| D- to D+ | 60 to 69 |
| F | Below 60 |

Final Grades will be computed as follows:

| | |
|--------------------------------|-----|
| Three lecture exams (20% each) | 60% |
| Assignments | 40% |

Notes:

1. Required reading means that you are responsible for knowing the assigned material. Your instructor may test you on that material even if it has not been covered in lecture.
2. No extra credit will be given.
3. No make-up exams, make-up quizzes, or make-up exercises will be given. So plan to attend class.
4. Students registered for graduate credit will be expected to complete a more extensive set of assignments than those registered for undergraduate credit. The exams for GEOL 674 may also differ from those administered for GEOL 474.

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TENTATIVE CLASS SCHEDULE

| Week of: | Planned activities | Reading assignment Fetter, 3 rd ed. |
|-------------------------------------|--|---|
| 8/27/18 | Hydrologic Equation, Precipitation | Chapter 1,2 |
| 9/3/18 | Labor Day, Evaporation, Transpiration | Chapter 2 |
| 9/10/18 | Stream flow, Infiltration, Discharge | Chapter 3 |
| 9/17/18 | Infiltration, Darcy's Experiment | Chapter 4 |
| 9/24/18 | Darcy's Experiment, Aquifer Properties | Chapter 4 |
| 10/1/18 | Geology and Groundwater Flow, 1st Exam | |
| First Exam, Wednesday October 5th | | |
| 10/8/18 | Hydraulic Head | Chapter 5 |
| 10/15/18 | Hydraulic Head | Chapter 5 |
| 10/22/18 | Groundwater Mechanics | Chapter 5 |
| 10/29/18 | Groundwater Mechanics, Regional Flow | Chapter 8 |
| 11/5/18 | Flow to Wells, 2nd Exam | |
| Second Exam, Wednesday November 9th | | |
| 11/12/18 | Veterans Day, Flow to Wells | Chapter 7 |
| 11/19/18 | Flow to Wells | Chapter 7 |
| 11/26/18 | Groundwater Modeling | Chapter 14 |
| 12/3/18 | Groundwater Contamination | Chapter 11 |
| Final Exam, TBD | | |

Changes to Syllabus: The above lecture schedule is tentative; adjustments to the schedule of topics and reading assignments may be made in accordance with the rate of progress in the classroom. The instructor also reserves the right to change a lecture topic to reflect world events. Students will be provided with an updated syllabus if significant changes are necessary.

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UNLV Academic Policies

Students taking this course are required to be familiar with the UNLV academic policies at the URL shown below.

Please see this link for select, useful information for students:

https://www.unlv.edu/sites/default/files/page_files/27/SyllabiContent-MinimumCriteria-2018-2019.pdf

Course-Specific Policies

- 1. Participation** - If you are confused about any of the material presented, please ask questions in class for clarification and further explanation. You will not be alone in your confusion. There are many ways to present this material, and I will attempt to find one that works for you. If you do not feel comfortable asking questions in class, please contact your lab instructor or myself.
- 2. Attendance** - It is important that you attend class daily because we cover a lot of material, and I will regularly provide guidance regarding reading assignments and exams. You are responsible for all material covered in lecture no matter what causes your absence. If you miss a lecture, get the notes from a classmate. Topics covered may vary from the schedule somewhat, but the exam dates will remain fixed.
- 3. Missed work** - Exams, quizzes, assignments, and labs missed due to absence will receive a grade of zero unless you provide notification of an exception for a religious holiday or university-sponsored extracurricular activity as specified in the University Catalog. In the case of an excused absence, the nature and format of the make-up exam will be at the instructors' discretion.
- 4. Learning Environment** - The classroom is intended to be a place of learning. As such, and as specified in the UNLV Undergraduate Catalog, no pagers, cell phones, or other potentially disruptive devices are allowed in either lecture or laboratory. Student usage of laptop computers, recording equipment, or similar devices is only allowed with explicit permission of the instructor, and is restricted to taking notes for this course. Disruptive behavior including, but not limited to those described above, chatting, sleeping, watching video, playing games or texting may result in an administrative withdrawal from the course.
- 5. Administrative Drops/Classroom Conduct** - You are required to be familiar with university policies and procedures in the current UNLV Undergraduate Catalog. Importantly, we follow the policies on Administrative Drops/Classroom Conduct as stated in the most recent UNLV Undergraduate Catalog. Any student that does not comply with these requirements, and conducts themselves in a manner that is disruptive and interferes with the right of other students to learn, or of the instructor to teach will be administratively dropped from the course.
- 6. Non-enrolled guests** - Students are not allowed to bring guests, including children to either lecture or laboratory.
- 7. Academic Misconduct** - This course operates under a "zero tolerance" policy. If any student who commits cheating or plagiarism will receive a grade of F for the class.