SYLLABUS

GEOL-4444.001 Hydrogeology Fall 2012

INSTRUCTOR
Dr. Dorina Murgulet
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LECTURES
TR 11:00-12:15 PM; BH-223

LABS
M 7:00-8:50 PM.; CS-214

OFFICE HOURS
TBA and/or by appointment

Prerequisites
Prerequisite course required are:
GEOL1403, MATH2413, and PHYS1401 or PHYS2425.
An understanding of algebra, the basic principles of chemistry and physics are highly recommended.

Course Description
An introductory hydrogeology course that investigates surface water flow, groundwater flow, hydrologic cycle, water resources, groundwater contamination, and environmental topics of interest related to water resources.

Objectives of the Course
The primary objectives of GEOL-4444.001 are to provide the student with the fundamental knowledge and tools necessary to understand and examine the following basic components:
- Fundamentals of groundwater and surface water flow;
- Well hydraulics and evaluation of groundwater as a resource;
- Chemical properties of groundwater and groundwater contamination;
- Groundwater and the environment;
- Groundwater modeling.
This course will examine techniques associated with field hydrogeology, and laboratory methods in hydrogeology.

Textbooks
Required
Supplementary text and handouts will be provided as necessary.
Supplies Needed
1) Scientific Calculator
2) A USB-thumb-flash drive
3) Pencil, eraser and ruler (calculation problems must be done in pencil).

Course Grading

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Three Midterm Exams</td>
<td>15% (each)</td>
</tr>
<tr>
<td>Assignments (homework &amp; laboratories)</td>
<td>20%</td>
</tr>
<tr>
<td>Paper</td>
<td>10%</td>
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<tr>
<td>Project</td>
<td>10%</td>
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<tr>
<td>Final Exam</td>
<td>15%</td>
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</tbody>
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Grading Scale
A: 90-100%; B: 80-89.9%; C: 70-79.9%; D: 60-69.9%; F: 0-59.9%

Attendance Policy
- Lecture attendance is not required but it is strongly advised. Poor attendance will result in missed lecture material and may reflect in less than desired class performance and/or unsuccessful class completion. It is the students’ responsibility to acquire class notes from peers if class is missed.
- Lab attendance is mandatory. One excused absence (with documentation) will be allowed but will result in the removal of that grade from the average. Unexcused absences result in a zero. It is the students’ responsibility to acquire the missed material from their peers.

Exams
Each student is expected to take all exams at the designated time and place. Students who miss an exam will receive a grade of zero for that exam. Make-up exams will be given only on presentation of approved medical excuse, or by pre-excused permission of the instructor. No exceptions! The format of make-up exams may differ from that of the regular exam. All exams are closed book; however, the use of a calculator is permitted. Students who want to appeal a grade should do it in writing, at latest one day after the exam was returned. Please note the date of the final exam. No final exam will be given at an earlier date. Disability accommodations must be documented and approved by the Office of Disability Services.

Assignments
Homework will be assigned throughout the semester. Students are encouraged to work in groups; however, each student is expected to submit their own individual work. If need be, reference materials are reserved in the university’s library. All homework (problem sets) must be completed by the due date and in a professional manner. Care should be taken to assure that a neat, organized, understandable, and concise product is the result of your work. Late work will not be accepted.

Paper
- Write a 5-6 page (typed) paper on any topic related to groundwater or surface water. (Details will be provided in class)

Project
- Students will conduct a hydrogeologic investigation of a field site using information provided in class. Students will be required to turn in a formally organized written report synthesizing the results of their investigation. (Details will be provided in class).
Notice to Students with Disabilities and Veterans
Texas A&M University-Corpus Christi complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. If you suspect that you may have a disability (physical impairment, learning disability, psychiatric disability, etc.), please contact the Services for Students with Disabilities Office, located in Driftwood 101, at 825-5816. If you need disability accommodations in this class, please see me as soon as possible.

Grade Appeal Process
As stated in University Rule 13.02.99.C2, Student Grade Appeals, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Rule 13.02.99.C2, Student Grade Appeals, and University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules Web site at http://www.tamucc.edu/provost/university_rules/index.html. For assistance and/or guidance in the grade appeal process, students may contact the Office of Student Affairs.

Academic Advising
The College of Science and Technology requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. The College's Academic Advising Center is located in Faculty Center 178, and can be reached at 825-6094.

Academic Integrity
Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. The use of cell phones, pagers, CD players, headphones and similar electronic devices is not allowed in class. Keep these devices in your bags, not on the tables. You may be asked to refrain from using a laptop in class. * Cheating will not be tolerated! * Please be advised that the penalty for cheating is a failing grade and possible further disciplinary action by the university.

The university policy of scholastic dishonesty will be followed in the event of academic misconduct. Academic misconduct includes all acts of dishonesty in any academically related matter and any knowing or intentional help or attempt to help, or conspiracy to help, another student.
**COURSE OUTLINE (Tentative Class Schedule)**

**August**
- 23 [R] Introduction, Units, Dimensions, and Math Review  
  LAB: **no Lab**
- 30 [R] Hydrologic Cycle (cont.), Hydrologic Budget/Surface Water  
  LAB: **no Lab**

**September**
- 4 [T] Rivers: Rainfall versus runoff, Rating Curves  
- 6 [R] Properties of Aquifers, Definitions: Fluid Mechanics  
  LAB: TBA
- 11 [T] Properties of Aquifers, Groundwater Occurrence  
- 13 [R] Principles of Groundwater Flow  
  LAB: TBA
- 18 [T] Darcy’s Law and its Applications  
  LAB: TBA
- 20 [R] Darcy’s Law and its Applications  
- 25 [T] **TEST 1**
- 27 [R] Flow Nets/ Groundwater Flow to Wells  
  LAB: TBA

**October**
- 2 [T] Groundwater Flow to Wells  
- 4 [R] Groundwater Flow to Wells; Radial Flow  
  LAB: TBA
  LAB: TBA
- 16 [T] Regional Groundwater Flow Systems, Boundaries, Methods of Images  
- 18 [R] Groundwater Development, Water Level Fluctuations, Exploration Techniques  
  LAB: TBA
- 23 [T] **TEST 2**
- 25 [R] Groundwater Modeling  
  LAB: TBA
- 30 [T] Flows in Unsaturated Zones/ **Independent project is due**

**November**
- 1 [R] Flows in Unsaturated Zones  
  LAB: TBA
- 6 [T] Chemical Properties of Groundwater, Water Quality  
- 8 [R] Principles of Hydrogeochemistry  
  LAB: TBA
- 15 [R] Principles of Hydrogeochemistry/ Groundwater Contamination, Hydrocarbons  
  LAB: TBA
- 20 [T] **TEST 3**
- 22 [R] Thanksgiving Holiday/No class  
  LAB: No LAB
- 27 [T] Groundwater Contamination/Contaminant Transport Processes/ **Paper is due**
- 29 [R] Groundwater Contamination/Contaminant Transport Processes  
  LAB: Review

**December**
- 4 [T] Final Exam Review/ **Project is due**
- TBA **FINAL EXAM TBA (2.5 hour exam).**
*NOTE:  The tentative class schedule is subject to change as considered appropriate by instructor*

**LABS:** will meet every Thursday from 5:00-6:50 PM except when noted (see tentative class schedule).

- Labs are designed to support material presented in lecture. The lab will synthesize your basic knowledge of the principles of hydrogeology with what you learn in the lecture portion of the class in order to develop field techniques and problems solving skills, so that you can address a number of groundwater problems.

- Lab topics will be announced at least a week in advance. Materials covered during the lab sections will be part of tests and final exam.

- The laboratory section is a required part of GEOL-4444.001. Attendance at all laboratory meetings and submission of all laboratory work is required for successful completion of the class. Please arrive on time to all laboratory sessions. It is your responsibility to make sure that you read the laboratory and become familiar with the laboratory procedures and assignments before the laboratory sessions.

**READING:** Reading material will be assigned at the end of each lecture session.