Course Syllabus

CoSM Class Syllabus / Policy
2020 / Fall Semester
GEOL 4176.600

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Office Hours: This is an online course and office hours will be offered electronically. In office hours are Monday and Wednesday 8AM to 11AM.

This course is entirely online, please refer to the detailed calendar found as a webpage in this module.

Text and Materials:

• *Contaminant Hydrogeology (Third Edition)*, Fetter, Boving and Kreamer, 2018 (required - if you do not want a hard copy, an electronic version may be found online)

Course Description: Hydrogeology (GEOL 4176) - Three semester hours, three hours lecture per week. Course investigates the relationship between movement of water through a porous medium and movement of inorganic and organic compounds. Special emphasis is given to developing methods by which contaminant movement can be predicted.

Program Learning Outcomes: There are no specific program learning outcomes for this major addressed in this course. It is a general education core curriculum course and / or a service course.

General Education Core Curriculum Objectives/Outcomes: There
are no specific program learning outcomes for this major addressed in this course. It is a general education core curriculum course and / or a service course.

**Student Learning Outcomes:** After successful completion of this course students will be able to:

- Understand the processes that control introduction and migration of contaminants through the subsurface.

- Understand and differentiate between the processes driving contaminant transport in the vadose and phreatic zones.

- Investigate and understand the reaction rates for inorganic and organic contaminants in groundwater systems.

- Understand current technical methods utilized for groundwater remediation.

- Develop an understanding of the behavior of contaminant flow in multi-permeability systems.

**Course Requirements:** Contaminant Hydrology (GEOL 4176) is designed to provide an overview of contaminant transport through groundwater systems and interface between surface environs. Geology students entering the workplace need to have an understanding of the contaminant hydrology because rapidly growing populations are placing a significant environmental impact on water resources. Course grade will be based on online discussion of scientific manuscripts, module quizzes, special projects (two modules) and a contaminant hydrogeology principles exam. Student learning i will be evaluated through module quizzes and an exam.

**Time:** Remember, you are expected to spend the same amount of time on online courses that you would spend for in the classroom for face-to-face courses. That is, expect to spend three hours per week on the lecture portion. In addition, success in this course will also require additional time spent in the material and studying; reports indicate that two to three additional hours (per credit hour) be spent— independent of whether the class is online or face-to-face. Many of you are choosing to take an online course because of your work schedule, family responsibilities, and scheduling conflicts, so your time is precious. Be aware of the time commitment required by this course and work responsibly.

**Course Topics to be covered:**

*
• Contaminant Hydrogeology Fundamentals
• Aquifer Fundamentals
• Mass Transport in Saturated Media
• Advection-Dispersion Modeling
• Transformation and Retardation
• Mass Transport in Unsaturated Media
• Multi-Phase Flow
• Contaminant Types
• Contaminant Isolation Methods
• Contaminant Monitoring and Containment
• Contaminant Remediation

*See the Course Calendar webpage for the dates associated with each topic.

Access to Content: I will provide access to the content on the weekend prior to when it is listed on the Course Calendar (d2l/common/dialogs/quickLink/quickLink.d2l?ou=308419&type=content&rcode=sfa-2137482). By no means are you required to begin the content over the weekend, but some of you have very tight schedules and could benefit from an early start. The contaminant hydrogeology principles exam will be available 24 hours as listed on the Course Calendar. You will be able to receive your score on exams or quizzes immediately, provided there are no answers that need to be individually graded such as fill-in-the-blank or short answer questions. In these cases, time will be needed to review the assessments and make sure questions were asked and graded fairly. Answers to quiz and exam questions will be available once every classmate has submitted their assessment, but that day is usually on Monday after assessments are taken. Quizzes, unit, and module content will be available until 11:00 p.m. the day listed on the Course Calendar, but module content cannot be viewed the day of the exam. So, plan appropriately! This course will also contain three, one-week projects where you will synthesize and characterize different karst scenarios. During these module weeks, no additional content material or quizzes
will be assessed.

**Final Examination and Project Schedule:**

- Project 1 - Advection-Dispersion Project (Module 7): see Course Schedule
- Project 2 - Contaminant Remediation (Module 15): see Course Schedule
- Contaminant Hydrogeology Principles Exam (Module 10): see Course Schedule

*Please see the Course Calendar webpage for the opening and closing times associated with these exams.*

Exam and quizzes will be comprehensive and may include any or all of the following sections: 1) multiple choice questions; 2) true / false questions; 3) fill in the blank questions; 4) short answer questions; 5) figure illustration; 6) short essay questions. The contaminant hydrogeology principles exam will take place online and be delivered via Brightspace. The exam will cover questions from lecture modules, assigned reading activities and outside sources (videos, webpages) referred to in the content material. Essay questions are part of the test and I expect you to use complete sentences, correct grammar and spelling.

The exam/ quizzes are cumulative and timed, therefore you will not have adequate time to refer back to Unit/Module content for answers during the exam. Questions on the exam and quizzes are written by the instructor, and the assessment content has been presented in the online content. Brightspace randomly selects questions from a question bank, and they appear one question at a time. You may not return to any question and change your answer after leaving that page so be sure of your response (study ahead of time!) before answering. It is recommended that you save your responses as you complete each question because of unknown timing of computer or power failure. I cannot help you if questions have not been saved. Once the time allotment for the exam has expired, the exam will be ended and scored.

No outside work or extra credit will be assigned to help improve your grade, so be prepared for the quizzes and the final exam. It is imperative that you log on and participate in all course material, pay attention to the course calendar, and keep up with the due dates for quizzes, discussions, and exams. In other words – get your money’s
worth!

**Dependable internet connection:** Especially when taking quizzes or exams, always rely on a dependable internet connection. I do not recommend taking an assessment via your phone or any public wireless connection (McDonalds, Starbucks, etc.).

**Discussion Board:** The Discussion Board can be used as a place to exchange information between the instructor and classmates. There will be a general "Questions" post where students can ask questions regarding the course content. This is helpful to all, and I will respond to questions as quickly as possible. I always appreciate questions, and am happy to try to help. Please keep your discourse respectful to all, inappropriate comments will not be tolerated.

**Lecture Grading Policy:**

- Contaminant Principles Exam @ 100 points each = 100 points
- Two Contaminant Projects @ 50 points each = 100 points
- Eleven weekly quizzes @ 20 points each = 220 points
- Eleven discussion posts @ 10 points each = 110 points
- Total possible points = 530 points
- Lecture grade = your total points / 530, then multiply by 100

*Example: your lecture point total 460 / 530 = 0.87 \times 100 = 87*

**Grade Scale:** 90-100 + A, 80-89 + B, 70-79 + C, 60-69 + D, < 60 = F

**Academic Integrity (A-9.1):** Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

**Definition of Academic Dishonesty:** Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism are (1) submitting an assignment as if it were one's own work when, in
fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from an Internet source or another source; and (3) incorporating the words or ideas of an author into one's paper without giving the author due credit.

Please read the complete policy https://d2l.sfasu.edu/content/enforced/208967-27436.201820/4.1-student-academic-dishonesty.pdf?_d2lSessionVal=7z172tsZ0FpVPOqsAeqpB8hd4&ou=245546&_d2lSessionVal=0W7c8rhqgCeUOqTQoSQWhld6X&ou=308417).

**Withheld Grades Semester Grades Policy (A-54):** Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average.

The circumstances precipitating the request must have occurred after the last day in which a student could withdraw from a course. Students requesting a WH must be passing the course with a minimum projected grade of C.

**Students with Disabilities:** To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to the Office of Disability Services (http://www.sfasu.edu/disabilityservices/) website.

*Content by: Kevin W. Stafford, PhD - Department of Geology, SFASU*
## GOL 4176 Course Calendar (Fall 2020 - 8 Week Course)

**Note:** all times in course calendar are local time at Stephen F. Austin State University (US Central Time Zone)

<table>
<thead>
<tr>
<th>Start Date</th>
<th>Module</th>
<th>Assignments</th>
<th>Classroom Activities</th>
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</table>
| August 24, 2020 (Week 1) | **Module 1**  Getting Started / Course Information | Read Module 1 online content  
Print course syllabus and calendar  
Take Course Content Quiz  
Read chapter 1.1-1.7 in "Contaminant Hydrogeology (3rd ed)" textbook in preparation for Module 2 | Module 1 (Getting Started) content will remain available throughout course.  
Module 1 Discussion Board and Quiz close August 27, 2020 at 11:00 PM |
| August 27, 2020 (Week 2) | **Module 2**  Contaminant Hydrogeology Fundamentals | Read Module 2 online content  
Complete Module 2 recommended problem assignment (ungraded)  
Complete Module 2 Discussion Board  
Complete Module 2 Quiz  
Read chapter 1.8 in "Contaminant Hydrogeology (3rd ed)" textbook in preparation for Module 3 | Module 2 Content will remain available until September 24, 2020 at 11:00 PM  
Module 2 Discussion Board and Quiz close August 31, 2020 at 11:00 PM |
| August 31, 2020 (Week 2) | **Module 3**  Aquifer Fundamentals | Read Module 3 online content  
Complete Module 3 recommended problem assignment (ungraded)  
Complete Module 3 Discussion Board  
Complete Module 3 Quiz  
Read chapter 2.1-2.8 in "Contaminant Hydrogeology (3rd ed)" textbook in preparation for Module 4 | Module 3 Content will remain available until September 24, 2020 at 11:00 PM  
Module 3 Discussion Board and Quiz close September 03, 2020 at 11:00 PM |
| September 03, 2020 (Week 2) | **Module 4**  Mass Transport in Saturated Media | Read Module 4 online content  
Complete Module 4 recommended problem assignment (ungraded)  
Complete Module 4 Discussion Board  
Complete Module 4 Quiz  
Read chapter 2.9-2.16 in "Contaminant Hydrogeology (3rd ed)" textbook in preparation for Module 5 | Module 4 Content will remain available until September 24, 2020 at 11:00 PM  
Module 4 Discussion Board and Quiz close September 07, 2020 at 11:00 PM |
| September 07, 2020 (Week 3) | **Module 5**  Advection-Dispersion Modeling | Read Module 5 online content  
Complete Module 5 recommended problem assignment (ungraded)  
Complete Module 5 Discussion Board  
Complete Module 5 Quiz  
Read chapter 3 in "Contaminant Hydrogeology (3rd ed)" textbook in preparation for Module 6 | Module 5 Content will remain available until September 24, 2020 at 11:00 PM  
Module 5 Discussion Board and Quiz close September 10, 2020 at 11:00 PM |
| September 10, 2020 (Week 3) | **Module 6**  Transformation and Retardation | Read Module 6 online content  
Complete Module 6 recommended problem assignment (ungraded)  
Complete Module 6 Discussion Board  
Complete Module 6 Quiz  
No reading assignment required for preparation for Module 7 | Module 6 Content will remain available until September 24, 2020 at 11:00 PM  
Module 6 Discussion Board and Quiz close September 14, 2020 at 11:00 PM |
| September 14, 2020 (Week 4) | **Module 7**  Project #1 | Read Module 7 online content  
Complete Contaminant Project #1  
Complete Project Discussion Board  
Read chapter 4 in "Contaminant Hydrogeology (3rd ed)" textbook in preparation for Module 8 | Module 7 project submitted to Project #1 DropBox  
Module 7 Discussion Board closes September 17, 2020 at 11:00 PM |
| September 17, 2020 (Week 4) | **Module 8**  Mass Transport in Unsaturated Media | Read Module 8 online content  
Complete Module 8 recommended problem assignment (ungraded)  
Complete Module 8 Discussion Board  
Complete Module 8 Quiz  
Read chapter 5 in "Contaminant Hydrogeology (3rd ed)" textbook in preparation for Module 9 | Module 8 Content will remain available until September 24, 2020 at 11:00 PM  
Module 8 Discussion Board and Quiz close September 21, 2020 at 11:00 PM |
| September 21, 2020 (Week 5) | **Module 9**  Multi-Phase Flow | Read Module 9 online content  
Complete Module 9 recommended problem assignment (ungraded)  
Complete Module 9 Discussion Board  
Complete Module 9 Quiz  
No reading assignment: Prepare for Contaminant Hydrogeology Principles Exam | Module 9 Content will remain available until September 24, 2020 at 11:00 PM  
Module 9 Discussion Board and Quiz close September 24, 2020 at 11:00 PM |
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<tr>
<th>Date</th>
<th>Module</th>
<th>Content/Assignments</th>
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<tbody>
<tr>
<td>September 24, 2020</td>
<td><strong>Module 10</strong></td>
<td>Review Modules 2-9 and recommended problem assignments in preparation for midterm exam</td>
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<td><strong>Contaminant Hydrogeology Principles Exam</strong></td>
<td>Module 2-9 close on September 24, 2020 at 11:00 PM and will not be available for the midterm exam</td>
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<td><strong>Principles Exam</strong></td>
<td>Principles Exam will open on September 25, 2020 at 11:00 AM</td>
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<td><strong>Module 11</strong></td>
<td>Read chapter 6 &amp; 7 in &quot;Contaminant Hydrogeology (3rd ed)&quot; textbook in preparation for Module 11</td>
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<td><strong>Contaminant Types</strong></td>
<td>Read Module 11 online content</td>
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<td>Complete Module 11 recommended problem assignment (ungraded)</td>
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<td>Complete Module 11 Discussion Board</td>
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<td>Module 11 Content will remain available throughout the remainder of the course</td>
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<td>Module 11 Discussion Board and Quiz close October 01, 2020 at 11:00 PM</td>
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<td>No reading assignment required for preparation for Module 12</td>
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<td>October 01, 2020</td>
<td><strong>Module 12</strong></td>
<td>Read Module 12 online content</td>
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<td><strong>Contaminant Isolation Methods</strong></td>
<td>Complete Module 12 recommended problem assignment (ungraded)</td>
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<td>Complete Module 12 Discussion Board</td>
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<td>Module 12 Content will remain available throughout the remainder of the course</td>
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<td>Module 12 Discussion Board and Quiz close October 05, 2020 at 11:00 PM</td>
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<td>Read chapter 8 in &quot;Contaminant Hydrogeology (3rd ed)&quot; textbook in preparation for Module 13</td>
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<td>October 05, 2020</td>
<td><strong>Module 13</strong></td>
<td>Read Module 13 online content</td>
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<td><strong>Contaminant Monitoring and Containment</strong></td>
<td>Complete Module 13 recommended problem assignment (ungraded)</td>
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<td>Complete Module 13 Discussion Board</td>
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<td>Module 13 Content will remain available throughout the remainder of the course</td>
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<td>Module 13 Discussion Board and Quiz close October 08, 2020 at 11:00 PM</td>
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<td>Read chapter 9 in &quot;Contaminant Hydrogeology (3rd ed)&quot; textbook in preparation for Module 14</td>
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<td>October 08, 2020</td>
<td><strong>Module 14</strong></td>
<td>Read Module 14 online content</td>
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<td><strong>Contaminant Remediation</strong></td>
<td>Complete Module 14 recommended problem assignment (ungraded)</td>
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<td>Complete Module 14 Discussion Board</td>
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<td>Module 14 Content will remain available throughout the remainder of the course</td>
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<td>Module 14 Discussion Board and Quiz close October 12, 2020 at 11:00 PM</td>
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<td>No reading assignment required for preparation for Module 15</td>
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<td>October 12, 2020</td>
<td><strong>Module 15</strong></td>
<td>Read Module 15 online content</td>
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<td><strong>Project #2</strong></td>
<td>Complete Contaminant Project #2</td>
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<td>Complete Project Discussion Board</td>
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<td>Module 15 project submitted to Project #2 DropBox</td>
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<td>Module 15 Discussion Board closes October 14, 2020 at 11:00 PM</td>
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<td>Completion of Course on December 05, 2020</td>
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