

Hydrogeology (WATR 383/583) Fall 2020

Format: For Fall semester 2020, this course will be offered in a hybrid in-person and online format. Course content will be available in asynchronous online format via Canvas. For weekly face-to-face (F2F) meetings, the class will be divided into two cohorts to meet physical distancing requirements, each cohort will have 50-minutes of F2F lab time on Thursdays in TNR 252. If you cannot attend F2F lab time for any reason, Thursday labs will also be held synchronously on Zoom via the same Zoom link used for virtual office hours (<https://uwsp.zoom.us/j/9706313302>).

Cohort 1 will meet from 11:00-11:50 AM Thursdays in TNR 252.

Cohort 2 will meet from 12:00-12:50 PM on Thursdays in TNR 252.

No F2F classes will be held after Thanksgiving break – we will transition completely to an asynchronous online format.

Instructor: Dr. Jennifer Dierauer Brand
Email: jbrand@uwsp.edu
Office: TNR 224C (corner office inside the Groundwater Center)

Office Hours: Virtual office hours via Zoom on Tuesdays and Thursdays from 10:00-10:50 AM:

<https://uwsp.zoom.us/j/9706313302>

Course Description:

This is an introductory course in applied hydrogeology. The objective of this course is to introduce the basic concepts and principles governing the flow of water in the subsurface environment, and to use these concepts to develop an understanding of aquifers and their physical properties. The emphasis of this class will be on relating these basic concepts to actual field conditions. At the completion of this course, students will be able to:

1. Calculate water budgets for groundwater basins
2. Use the concept of hydraulic head to determine groundwater flow direction
3. Understand the properties of porous media, the variation within the natural environment, and how these properties control groundwater movement
4. Understand how groundwater interacts with surface water
5. Use knowledge of common groundwater contaminants to determine source

Face Coverings:

At all UW-Stevens Point campus locations, the wearing of face coverings is mandatory in all buildings, including classrooms, laboratories, studios, and other instructional spaces. Any student with a condition that impacts their use of a face covering should contact the Disability and Assistive Technology Center to discuss accommodations in classes. Please note that unless everyone is wearing a face covering, in-person classes cannot take place. This is university policy and not up to the discretion of individual instructors. Failure to adhere to this requirement could result in formal withdrawal from the course.

Other Guidance:

- Please monitor your own health each day using this screening tool. If you are not feeling well or believe you have been exposed to COVID-19, do not come to class; email your instructor and contact Student Health Service (715-346-4646). As with any type of absence, students are expected to communicate their need to be absent and complete the course requirements as outlined in the syllabus.
- Maintain a minimum of 6 feet of physical distance from others whenever possible.
- Do not congregate in groups before or after class; stagger your arrival and departure from the classroom, lab, or meeting room.
- Wash your hands or use appropriate hand sanitizer regularly and avoid touching your face.
- Please maintain these same healthy practices outside the classroom.

Required Course Materials: None. The book assigned in the bookstore is recommended but not required. A dated, but classic, text on groundwater is available for free online:

- “Groundwater” by R.A. Freeze and J.A. Cherry
- <http://hydrogeologistswithoutborders.org/wordpress/1979-english/>

Grading:

Grading is based on lab assignments, weekly quizzes, and unit tests. There are 8 lab assignments, including 5 problem sets / mapping activities, and 3 short write-ups (3-5 pages) with 5 minute presentations that will be submitted to Canvas and peer graded. The write-up and presentation assignments will be allocated two weeks and are worth 80 points each.

Any late submissions be reduced by 5% for each day past the due date. Due dates are listed on Canvas for every quiz, assignment, and test. The weekly quizzes are due 1 week from

	Total Points	Percent of Grade
Lab Assignments (8)	400 pts (varies)	40%
Weekly Quizzes (15)	300 pts (20 each)	30%
Unit Tests (3)	300 pts (100 each)	30%

Grades are rounded to the nearest whole percent. For example, an 89.51% = A-, while an 89.49% = B+.

100-92% = A	89-88% = B+	79-78% = C+	69-68% = D+	59-0% = F
91-90% = A-	87-82% = B	77-72% = C	67-62% = D	
	81-80% = B-	71-70% = C-	61-60% = D	

Tentative schedule

Unit 1: Porous media and groundwater flow

Week	Lecture topics	Lab activity / Assignment
1: Sep 2-4	Course outline, skills review Week 1 Course Introduction Quiz	Optional review material
2: Sep 8-11	Aquifers and water budgets Week 2 Quiz	#1 (40 pts): Problem solving and water budgets
3: Sep 14-18	Hydraulic head; recharge and discharge areas Week 3 Quiz	#2 (40 pts): Hydraulic gradients
4: Sep 21-25	Aquifer properties Week 4 Quiz	#3 (40 pts): Confined vs unconfined aquifer storage
5: Sep 28-Oct 2	Hydrostratigraphy, anisotropy and heterogeneity Week 5 Quiz	#4 (80 pts): Unit 1 Presentation: Regional aquifer system
6: Oct 5-9	Flow nets; local and regional flow systems, Week 6 Quiz (Unit 1 test opens after completion)	#4 continued

Unit 2: Well hydraulics and field methods

Week	Lecture topics	Lab activity / Assignment
7: Oct 12-16	Well construction, Theis equation Week 7 Quiz	No lab activity – complete peer grading of Assignment #4 and complete Unit 1 test
8: Oct 19-23	Image Well Theory & Superposition Week 8 Quiz	#5 (40 pts): Theis equation problem set
9: Oct 26-30	Groundwater as a resource – management problems (connect it week – fisheries, forestry, wildlife) Week 9 Quiz	#6 (80 pts): Unit 2 Presentation: Scientific journal article
10: Nov 2-6	Slug tests and permeameters Week 10 Quiz	#6 continued
11: Nov 9-13	Specific Capacity & Pumping tests Week 11 Quiz (Unit 2 test opens after completion)	No lab activity –complete peer grading of Assignment #6 and Unit 2 test

Unit 3: Groundwater-surface water interaction and groundwater contamination

Week	Topic	Lab activity / Assignment
12: Nov 16-20	Vadose zone; lake and stream interactions Week 12 Quiz	#7 (40 pts): Groundwater contour mapping
13: Nov 23-25	Groundwater and climate Week 13 Quiz	None (Thanksgiving Vacation)
14: Nov 30-Dec 4	Contaminant sources; contaminant transport Week 14 Quiz	#8 (80 pts): Unit 3 Presentation: Superfund Case Study
15: Dec 7-11	Break-through curves; treatment methods Week 15 Quiz (Unit 3 test opens after completion)	#8 continued
16: Dec 14-18	Final Exam Week – Unit 3 test due by Thursday at 1 pm	Complete peer-grading of Assignment #8

Care Team

The University of Wisconsin-Stevens Point is committed to the safety and success of all students. The Office of the Dean of Students supports the campus community by reaching out and providing resources in areas where a student may be struggling or experiencing barriers to their success. Faculty and staff are asked to be proactive, supportive, and involved in facilitating the success of our students through early detection, reporting, and intervention. As your instructor, I may contact the Office of the Dean of Students if I sense you need additional support which, individually, I may not be able to provide. You may also share a concern if you or another member of our campus community needs support, is distressed, or exhibits concerning behavior that is interfering with the academic or personal success or the safety of others, by reporting here: <https://www.uwsp.edu/dos/Pages/Anonymous-Report.aspx>.

Title IX

UW-Stevens Point is committed to fostering a safe, productive learning environment. Title IX and institutional policy prohibit discrimination based on sex, which includes harassment, domestic and dating violence, sexual assault, and stalking. If you choose to disclose information about having survived sexual violence, including harassment, rape, sexual assault, dating violence, domestic violence, or stalking, and specify that this violence occurred while a student at UWSP, federal and state laws mandate that I, as your instructor, notify the Title IX Coordinator/Office of the Dean of Students.

Please see the information on the Dean of Students webpage for information on making confidential reports of misconduct or interpersonal violence, as well as campus and community resources available to students.

Dean of Students: <https://www.uwsp.edu/DOS/sexualassault/Pages/default.aspx>

Title IX page: <https://www.uwsp.edu/hr/Pages/Affirmative%20Action/Title-IX.aspx>

Disability and Accommodations

In accordance with federal law and UW System policies, UWSP strives to make all learning experiences as accessible as possible. If you need accommodations for a disability (including mental health, chronic or temporary medical conditions), please visit with the Disability and Assistive Technology Center to determine reasonable accommodations and notify faculty. After notification, please discuss your accommodations with me so that they may be implemented in a timely fashion.

DATC contact info: datctr@uwsp.edu; 715/346-3365; 609 Albertson Hall, 900 Reserve Street

FERPA

The Family Educational Rights and Privacy Act (FERPA) provides students with a right to protect, review, and correct their student records. Staff of the university with a clear educational need to know may also have to access to certain student records. Exceptions to the law include parental notification in cases of alcohol or drug use, and in case of a health or safety concern. FERPA also permits a school to disclose personally identifiable information from a student's education records, without consent, to another school in which the student seeks or intends to enroll.

Academic Integrity

Academic Integrity is an expectation of each UW-Stevens Point student. Campus community members are responsible for fostering and upholding an environment in which student learning is fair, just, and honest. Through your studies as a student, it is essential to exhibit the highest level of personal honesty and respect for the intellectual property of others. Academic misconduct is unacceptable. It compromises and disrespects the integrity of our university and those who study here. To maintain academic integrity, a student must only claim work which is the authentic work solely of their own, providing correct citations and credit to others as needed. Cheating, fabrication, plagiarism, unauthorized collaboration, and/or helping others commit these acts are examples of academic misconduct, which can result in disciplinary action. Failure to understand what constitutes academic misconduct does not exempt responsibility from engaging in it. For more information on UWS chapter 14 visit: <https://www.uwsp.edu/dos/Pages/Student-Conduct.aspx>

Reporting Incidents of Bias/Hate

It is my intent that students from all diverse backgrounds and perspectives be well-served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that the students bring to this class be viewed as a resource, strength and benefit. It is my intent to present materials and activities that are respectful of diversity: gender identity, sexuality, disability, age, socioeconomic status, ethnicity, race, nationality, religion, and culture. Your suggestions are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally, or for other students or student groups. If you have experienced a bias incident (an act of conduct, speech, or expression to which a bias motive is evident as a contributing factor regardless of whether the act is criminal) at UWSP, you have the right to report it: <https://www.uwsp.edu/dos/Pages/AnonymousReport.aspx>. You may also contact the Office of the Dean of Students directly at dos@uwsp.edu. Diversity and College Access is available for resources and support of all students: <https://www.uwsp.edu/dca>.

Clery Act

The US Department of Education requires universities to disclose and publish campus crime statistics, security information, and fire safety information annually. Statistics for the three previous calendar years and policy statements are released on or before October 1st in our Annual Security Report. Another requirement of the Clery Act is that the campus community must be given timely warnings of ongoing safety threats and immediate/emergency notifications. For more information about when and how these notices will be sent out, please see our Jeanne Clery Act page at <https://www.uwsp.edu/dos/clery>.

The **Drug Free Schools and Communities Act (DFSCA)** requires institutions of higher education to establish policies that address unlawful possession, use, or distribution of alcohol and illicit drugs. The DFSCA also requires the establishment of a drug and alcohol prevention program. The Center for Prevention lists information about alcohol and drugs, their effects, and the legal consequences if found in possession of these substances. Center for Prevention – DFSCA: <https://www.uwsp.edu/dos/aoda-ipv/Pages/dfsc.aspx>

Copyright infringement is the act of exercising, without permission or legal authority, one or more of the exclusive rights granted to the copyright owner under section 106 of the Copyright Act. Each year students violate these laws and campus policies, putting themselves at risk of federal prosecution. For more information about what to expect if you are caught, or to take preventive measures to keep your computing device clean, visit our copyright page at <http://libraryguides.uwsp.edu/copyright>.