GEOLOGY 414/614 – Hydrogeology

Time: MWF, 10:00—10:50 am, Fall Semester 2001
Instructor: B. Saini-Eidukat, office 129 Stevens Hall, tel 701-231-8785
email: bse@geosci.nodak.edu
Office hours: Wednesday, 2:30 – 4:30 p.m.
Text: "Applied Hydrogeology" by C. W. Fetter, 4th ed.
Web Site: navigate from the Geosciences Dept web site: www.ndsu.nodak.edu/geosci/

Tentative Lecture and Exam Schedule

W	Aug 29	Introduction; Evapotranspiration, Precipitation, Runoff	(Chap. 1,2)
F	30	Water Balance; Hydrologic Budgets	(2.12 and 11.3)
M	Sept 3	Labor Day Holiday	
W	5	Soil Moisture and Infiltration	(2.8)
F	7	Aquifer Material Properties ; Darcy Flow	(3.1 - 3.5; 4.6)
M	10	Non-Darcian Flow; Aquifer Properties	(3.6 - 3.9)
W	12	Aquifer Parameters	(3.10 - 3.12)
F	14	Principles of Groundwater Flow	(4.1 - 4.6)
M	17	Term Project Assignment	
W	19	Term Project	
F	21	Ground Water Flow Equations; Head	(4.7 - 4.9)
M	24	Exam 1	
W	26	Flow Nets; Flow Lines	(4.10 - 4.12)
F	28	Steady Flow	(4.7.1; 4.13-4.14)
M	Oct. 1	Regional Flow Systems	(7.1 – 7.5)
W	3	Regional Flow Systems	(7.1 – 7.5)
F	5	Ground Water - Surface Water Interaction	(7.7)
M	8	Ground Water - Surface Water Interaction	(7.7)
W	10	Geology of Ground Water	(8.1 - 8.3.1)
F	12	Geology of Ground Water	(8.1 - 8.3.1)
M	15	Well Hydraulics	(5.1 - 5.3)
W	17	Well Hydraulics	(5.1 - 5.3)
F	19	Exam 2	
M	22		
W	24	Aquifer Performance Tests	(5.4 - 5.9)
F	26	Aquifer Performance Tests	(5.4 - 5.9)
M	29	Ground Water Flow Models	(13.1 – 13.7)
W	31	Ground Water Flow Models	(13.1 – 13.7)
F	Nov 2	Ground Water Flow Models	(13.1 – 13.7)
M	5	Guest Speaker	
W	7	Hydrologic Field Investigation	(12)
F	9	Exam 3	
M	12	Veteran's Day Holiday – No Class	
W	14	Drilling	(10.4)
F	16	Term Projects	
M	19	Mass Transport in Porous Media	(10.6)
W	21	Mass Transport in Porous Media	(10.6)
F	23	Thanksgiving Holiday – No Class	

M	26	Outside speaker	
W	28	Wellhead Protection Zones	(10.4; 10.10)
F	30	Wellhead Protection Zones	(10.4; 10.10)
M	Dec 3	Local Case Studies	
W	5	Management of Water	(11)
F	7	Management of Water	(11)
M	10	student presentations	
W	12	student presentations	
F	14	student presentations	
Th	20 Dec.	Final Exam 10:00 – 12:00 a.m.	

Grading:
Three exams: 45 %
Homework: 20%
Term Project: 20%
Short Oral Presentations
Written Reports (for graduate students)
Final Exam (cumulative): 15%

NOTE: DURING THE FALL 2001 SEMESTER THE CLASS DECIDED TO DROP THE FINAL, AND HAVE 3 EXAMS ONLY.

THIS MEANT THE GRADES WERE DISTRIBUTED IN THE FOLLOWING MANNER:
Grading:
Three exams: 50 %
Homework: 25%
Term Project: 25%
Short Oral Presentations
Written Reports (for graduate students)

The final letter grade will be assigned based on the following table, unless the class average deviates significantly from 75%. In the latter case, a "curve" will be applied.

A = 90-100; B = 80-89; C = 70 - 79; D = 60-69; F = <60

"Borderline" cases will be judged individually, based on grade improvement, demonstrated effort, class participation, etc. Students registered for the 600-level course are required to prepare a written report.

This course is concerned with relationships between geologic materials and water flow. We will study aquifer properties, testing methods, ground water flow, and flow modeling. It is assumed you are familiar with topics covered in Physical Geology (Geol. 120 and 121) and basic Calculus (Math 147 or 161). The course will be taught as a combination of lectures, in-class exercises, discussion, guest-speakers, and homework assignments. You will undertake a term project on a subject of your choice, and present the results to the class in a presentation. Graduate students will have the additional responsibility of preparing a written report.

Academic Responsibility: The policy applied is that of the Code of Academic Responsibility and Conduct, as outlined in the current "Code of Student Conduct" (Office for the Vice-President for Student Affairs).

Special Needs: Any students who require special accommodations for learning or who have special needs should share those concerns or requests with the instructor as soon as possible.

Intended Student Outcomes:

- To understand the concepts describing the flow of water through geologic materials.
- To be familiar with hydrogeologic calculation methods.
- To prepare a report on a hydrogeologic issue and to present the results to an audience.
- For graduate students, to prepare a written report on a hydrogeologic issue.