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GEOL 480.01: Hydrogeology

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FALL 2000
 GEOLOGY 480 - 4 CREDITS
 HYDROGEOLOGY

Instructor: William W. Woessner (SC329)
 Text: Required - *Applied Hydrogeology*

Course goals and objectives: Prepare students in environmental geology and related fields to evaluate and quantitatively analyze hydrogeologic problems.

<u>CLASS DATE</u>			<u>CHAPTER</u>
September	5	Intro-Hydrologic Budget	1, 2, 12.5
September	7	Hydrologic Budget	2, 3
September	12	Properties of Earth Materials	
September	14	Properties of Earth Materials	4
September	19	Aquifer Properties	4
September	21	Aquifer Properties	
September	25	Last Day to Add/Drop by Dial Bear	
September	26	Fluid Potential	5
September	28	Fluid Potential	5
October	3	Equations of GW Flow - Problem Set I Due	
October	5	Equations of GW Flow	
October	10	Exam I	
October	12	Steady Rate Flow	5
October	16	Last Day to Drop Add (No \$\$\$ Back)	
October	17	Steady State Flow	5
October	19	Unsaturated Flow	6
October	24	Unsaturated Flow - Regional Flow Systems	8
October	26	Regional Flow Systems	8
October	31	Regional Flow Systems	9
November	2	Hydrogeologic Systems	9
November	7	Holiday	

November	9	Hydrogeologic Systems - Problem Set II Due	
November	10	Field Trip - 12:00 p.m. - 5:00 p.m.	
November	14	Exam II	
November	16	No Class - Work on Term Paper	
November	21	Flow to Wells - Term Paper Due	
November	23	Holiday	
November	28	Flow to Wells	7
November	30	No Class	
December	5	Flow to Wells	7
December	7	Water Quality	10, 11
December	12	Solute Transport	11
December	14	Ground Water Management - Problem Set III Due	12
FINAL EXAM:		Wednesday, December 20, 10:10-12:10 p.m.	

COURSE ASSESSMENT: Quality of problem sets. Exams and term paper.

GRADING:	3 Problem Sets	27%
	2 Exams	40%
	Term Paper	8%
	Final Exam	25%

TERM PAPER:

The term paper will be a research report on the Hydrogeology of the city or county in which you grew up or a topic assigned by the Professor. All reports will be assigned no later than September 30. All reports will be no longer than 10 pages of text (excluding figures) and will clearly describe the location, geology, and hydrogeology of the area. It will include information on the hydrostratigraphy, occurrence, movement, quantity, and quality of groundwater as well as its uses in the area. All papers will follow a format of the USGS Water Resources Investigations and include full cited references. Sources of information include professional journal articles, State Geological Survey and Water Survey reports, USGS Water Supply Papers, Professional Papers and Water Resources Investigations, and consulting reports.

All assignments given are expected to be turned in on time for grading in neat and edited form. Problem set assignments are due at the beginning of class on the day due with no exceptions. If you cannot make it to class, give the work to someone who can turn it in for you.

I will post office hours for questions, and you may see me any other time I am in my office if it is convenient.

Outside reading for this class is strongly suggested. The library contains a number of general hydrogeology textbooks which I feel will give additional depth to parts of the course I can only summarize. A list of readings is attached.

REFERENCES

Textbooks

1. Fetter, C.W., 1980, Applied Hydrogeology: Charles E. Merritt Publishing Company, Columbus, Ohio, 488 p.
2. Davis, S.N. and DeWiest, R.J.M., 1966, Hydrogeology: John Wiley & Sons, Inc., New York, 463 p.
3. DeWiest, R.J.M., 1965, Geohydrology: John Wiley & Sons, Inc., New York, 366 p.
4. Domeninico, P.A., 1972, Concepts and Models in Groundwater Hydrology: McGraw-Hill, New York, 405 p.
5. Freeze, R.A. and Cherry, J.A., 1979, Groundwater: Prentice-Hall, Inc., Englewood Cliffs, New York.
6. Johnson Division, 1972, Groundwater and Walls: Johnson Division, Universal Oil Products, Saint Paul, Minneapolis, 440 p.
7. Todd, D.K., 1967, Groundwater Hydrology: John Wiley & Sons, Inc., 336 p.
8. Walton, W.C., 1970, Groundwater Resources Evaluation: McGraw-Hill, New York, 664 p.

Articles and Other Publications

1. Meinzer, O.E., 1923, The occurrence of groundwater in the United States: U.S. Geol. Survey W.S.P. 489, 320 p.
2. Johnson, A.I., 1967, Specific Yield--compilation of specific yields for various materials: U.S. Geol. Survey W.S.P. 1662D, 74 p.
3. Wilson, L.G., 1980, Monitoring in the vadose zone: a review of technical elements and methods: EPA - 600/7 - 80 - 134- 168 p.