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GEOL 573.01: Groundwater Modeling

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GEOLOGY 573

**GROUNDWATER MODELING
FALL 2003**

INSTRUCTOR: William Woessner (Phone - 243-5698)

BOOKS: Anderson and Woessner, APPLIED GW MODELING - On Electronic Reserve
(Wang and Anderson, INTRO TO GW MODELING - Optional)

PREREQUISITES: Geology 480, Computer Language

COURSE GOALS AND OBJECTIVES: Prepare students to evaluate and quantitatively
analyze hydrogeologic problems.

TIME: Proposed for Tuesdays, 4:10-6:40 p.m.

<u>CLASS MEETS</u>	<u>TOPIC</u>	<u>READING</u>	
		<u>A+W</u>	
September 2		Intro to Modeling	
	Problem 1, Chapter 1	1	
September 4	Richelle Allen-King Darcy Lecture - 12:10 and 2:00 p.m.		
	<table border="1"><tr><td>IMPORTANCE OF UNDERSTANDING THE HYDROGEOLOGY</td></tr></table>	IMPORTANCE OF UNDERSTANDING THE HYDROGEOLOGY	
IMPORTANCE OF UNDERSTANDING THE HYDROGEOLOGY			
September 9	Conceptual Models Problem, Chapter 2	2	
September 16	No Class – Homework Assignment	2	
	<table border="1"><tr><td>NUMERICAL METHODS</td></tr></table>	NUMERICAL METHODS	
NUMERICAL METHODS			
September 22	LAST DAY TO DROP/ADD BY CYBERBEAR		
September 23	Intro to Modeling and Numerical Methods Finite Differences, Chapter 3	3	
September 25-26	River Center Conference		
September 30	Finite Differences and Finite Elements	3	

October 2-3	AWRA Meeting – Butte	
October 7	Finite Element - Solving Techniques	
October 13	LAST DAY TO DROP/ADD (NO \$\$\$ BACK)	
October 14	Solving Techniques	
TRANSLATING HYDROGEOLOGIC CONCEPTS TO THE NUMERICAL MODEL		
October 21	Intro to <u>FLOWPATH</u> - Steady State Boundary Conditions Problem, Chapter 4	4 4
October 28	Boundary Conditions, Grids Source and Sink Terms Problem, Chapter 5	4, 5
November 4	NO CLASS	
November 11	Intro to MODFLOW Problem, Chapter 6	
November 18	Intro to MODFLOW Transient Simulations Problem, Chapter 7	7
November 25	Model Calibration Problem, Chapter 8	8
November 27	HOLIDAY	
December 2	Other Models, Sensitivity Analysis	
December 9	Work on Finishing Assignment – NO CLASS	

FINAL EXAM: Wednesday, December 17, 3:20-5:20 p.m.

COURSE ASSESSMENT: Quality of completed assigned problems and class participation.

*Additional reading will be assigned. Wang and Anderson is a good reference.

GROUNDWATER MODELING ASSIGNMENTS AND GRADING

All assignments are to be run on computers other than those found in the Hydro Computer Lab. **Please do not tie up my Hydro Lab Computers for homework!** All programs supplied have some kind of licensing restrictions. Use of a code does not grant ownership. Do not copy or distribute codes used as part of this course.

Assignments will be made as appropriate including selections from the following list of problems:

Three to four short problems associated with Chapters 1 and 2.

1. Anderson and Woessner - As assigned from textbook chapters. Typically one or two problems/chapters. Three to five hours per week should be allocated on the average. The learning curve is steep for the MODFLOW model. Last problem requires 10-20+ hours.

GRADING: 90% on completion of problems, 10% on class participation and discussion.