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GEOL 573.01: Groundwater Modeling

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**GEOLOGY 573
GROUNDWATER MODELING
FALL 2000**

INSTRUCTOR: William Woessner (Phone - 243-5698)

BOOKS: Anderson and Woessner, APPLIED GW MODELING
(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: Tuesday, 4:10-5:40 p.m. Thursday class will be rescheduled as Dr. Woessner serves on the Executive Committee of the Faculty Senate on Thursdays from 3:00-6:00 p.m.

<u>Week of</u>	<u>TOPIC</u>	<u>READING</u>
		<u>A+W</u>
September 5	Intro to Modeling Problem 1	1, 10
	NUMERICAL METHODS	
September 12	Numerical Methods Finite Differences Problems 2 and 3	2
September 19	Finite Differences or Finite Elements	2
September 25	LAST DAY TO DROP/ADD BY DIAL BEAR	
September 26	Finite Element - Solving Techniques	
October 3	Solving Techniques	
	IMPORTANCE OF UNDERSTANDING THE HYDROGEOLOGY	
	Conceptual Models Problem, Chapter 3	

October 10

Conceptual Models

<p>TRANSLATING HYDROGEOLOGIC CONCEPTS TO THE NUMERICAL MODEL</p>
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October 16

LAST DAY TO DROP/ADD (NO \$\$\$ BACK)

October 17

Intro to <u>FLOWPATH</u> - Steady State	4
Boundary Conditions	4
Problem, Chapter 4	

October 24

Boundary Conditions	4
Source and Sink Terms	5
Problem, Chapter 5	

October 31

Profile Modeling	6
Intro to MODFLOW	*, 4
Problem, Chapter 6	

November 7

Holiday (Nov. 7)	
Intro to MODFLOW	
Transient Simulations	7
Problem, Chapter 7	

November 14

NO CLASS

November 21

Model Calibration	8
Problem, Chapter 8	
Holiday (Nov. 23)	

November 28

Sensitivity Analysis	8
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December 5

Other Models

December 12

Capture Zones	11
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FINAL EXAM: Monday, December 18, 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. You will need a math co-processor, Windows-DOS machine or an Apple that can run DOS programs. **Please do not tie up my Hydro Lab Computers for homework!** All programs 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

Problems: 3.1
3.3
3.5
4.1**
4.2**
4.3**
4.4
4.6**
5.4**
5.1**
6.1
6.3
6.4
7.3**
8.5***

**Lengthy problem, plan accordingly

***Very long problem, plan accordingly

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