**COURSE OUTLINE**
**HYDROLOGY 548**
**"FIELD AND LABORATORY METHODS IN HYDROLOGY"**

**SPRING 2002**

3 Credit Hours Enrollment Limit: 10 Lab Fee: $50.00

INSTRUCTOR: R.S. Bowman (MSEC 250; 835-5992; bowman@nmt.edu)

PREREQUISITES: Hydrology 503 or 403/503L; Hydrology 507; or consent of instructor

COURSE OBJECTIVES:

1. To introduce students to physical and chemical methodologies used in hydrology.
2. To develop student proficiencies in several different methodologies.
3. To develop student awareness of the potential for errors in parameter estimation.
4. To develop student skills in technical record keeping and report writing.

COURSE OUTLINE:

Text

1. There will be no textbook for the class.
2. Experiments performed will be described in lectures and in handouts distributed during the semester.

Approach

1. Lectures will focus on the principles and pitfalls of the measurements being performed.
2. The applicability of the experimental methods to different sorts of hydrological investigations will be emphasized.
3. Laboratory reports will be collected and graded on a regular basis.

Student Responsibilities

1. Attend and participate in all regularly scheduled lectures and laboratories.

2. Maintain a bound laboratory notebook containing all pertinent information relating to the experiments performed.

3. Complete and hand in all laboratory reports. Copies of corresponding notebook pages will be included with each report.

STUDENT EVALUATION:

1. The laboratory reports will be averaged and will account for 90% of the final grade; the bound lab notebook, collected at the end of the semester, will account for 10% of the final grade.

2. The grading scale will be:

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

3. Lab reports will generally be due one or two weeks after completion of an experiment. The report grade will be reduced by 10% of total possible points for each week that report is late.

4. The instructor may raise the final grade based upon meaningful class participation and demonstrated interest.

LECTURE/LABORATORY OUTLINE:

| Topic | Lecture and Begin Experiment | Report Due |
|---|---|---|
| 1. Record keeping supplies and practice | 15 January | N/A |
| 2. Gravimetric water content of soil | 17 January | 29 January (100 pts) |
| 3. Theory and use of atomic absorption spectrophotometry | 22 January | N/A |
| 4. Batch isotherms for solute sorption measurements | 24 January | 26 February (200 pts) |
| 5. Miscible displacement for solute dispersion coefficients and retardation factors | 14 February | 9 April (200 pts) |
| 6. Monitoring well installation and geologic logging | 28 March | N/A |
| 7. Slug and pump testing for hydraulic characterization | 4 April | 30 April (200 pts) |
| 8. Construction, installation, and use of tensiometers | 18 April | 7 May (200 pts) |
| 9. Calibration and use of the neutron moisture meter | 25 April | N/A |