

# **NRM 380 - SOILS AND THE ENVIRONMENT**

## **SYLLABUS AND GRADING POLICY**

**Fall - 1999**

Objective: NRM 380 introduces the fundamentals of soil science. Most examples and applications will be targeted toward agricultural areas, but natural systems also will be outlined in the text and in lecture.

Lecture: Monday & Wednesday 8 - 9 AM, Gruening Room 409

Lab: Wednesday 2:00-5:00 PM (O'Neill Room 301)

Text: Brady, N.C. and R.R. Weil. 1999. The Nature and Properties of Soils, 12th edition. New Jersey: Prentice Hall. An expensive text, but an excellent reference now and into the future.

Lab Manual: Van Veldhuizen, R., C.W. Knight and D. Valentine. 1998. Soils and the Environment: NRM-380 Laboratory Handbook.

Prerequisite: Chemistry 105

Instructor: Dr. Charles W. Knight

Office: O'Neill Room 323

Telephone: 474-6926

E-mail: [ffcwk@uaf.edu](mailto:ffcwk@uaf.edu)

Office Hrs: Mon. 10:30-11:30 AM, Wed. 10:30-2:00 PM, other times by appointment

Lab Asst.: Mr. Bob Van Veldhuizen

Office: O'Neill Room 327

Telephone: 474-5222

Students are expected to read, understand, and adhere to the Student Code of Conduct detailed on pp78-79 on the UAF Class Schedule for Fall 1999. The University of Alaska is committed to providing equal access for students with disabilities. If you have a disability requiring special accommodations, please notify me during the first two weeks of class.

Lecture notes will be handed out during class. If you miss a class or wish to preview notes prior to class, similar notes from last semester are available on Dr. Valentine's web page at <http://www.lter.alaska.edu/~davev>. If you cannot access these notes, please let me know.

## NRM-380 SOILS GRADING POLICY

This is a "writing-intensive" course, meaning that a majority of the 800 total points available is based on written assignments and questions. One third of the grade for weekly lab reports and 20% of the final project grade will be determined by the student's ability to write in a clear, concise and correct manner. Each student will be responsible for scheduling at least one personal conference with the instructor concerning his/her writing ability and whether he/she should seek help from the Writing Center. Individual conferences should be scheduled following the first hour exam.

### Points      Basis

- 300** Hour Exams (3 @ 100 points). Questions will include true-false, multiple choice, problems, and short answer essay. Hour exams generally will not be graded for writing proficiency unless otherwise indicated.
- 30** Pop quizzes (3 @ 10 points). These unannounced quizzes are to provide an extra incentive to keep up with reading (text and lab) and class participation. Quizzes will not be graded for writing proficiency unless otherwise indicated.
- 72** Problem sets (6 @ 12 points). These are to give you familiarity with certain kinds of calculations.
- 198** Lab Reports (11 @ 18 points). Of the 14 labs, 11 will require written reports. Each will be due at the beginning of the next lab, and will be graded 67% on content and 33% on writing. After lab reports have been graded and returned, students will have one week in which they may correct errors in content and/or writing to earn credit for up to 50% of the lost points.
- 200** Final Problem (8-10 page written report in lieu of exam). The paper will be assigned and discussed in lab #9, and will be graded 80% on content and 20% on writing proficiency. See lab materials for details.

### Course grade assignments

Percentage	Total points	Grade
90-100%	720-800	A
80-89%	640-719	B
70-79%	560-639	C
60-69%	480-559	D
0-59%	0-479	F

# **NRM-380 Soils Lecture Schedule**

## **SEP 8 Lect. 1:**

Read Brady & Weil Ch. 1 "The Soils Around Us"

## **SEP 13 Lect. 2:**

Read Brady & Weil Ch. 2 "Formation of Soils From Parent Materials"

## **SEP 15 Lect. 3:**

Read Brady & Weil Ch. 4 "Soil Architecture and Physical Properties"

## **SEP 20 Lect. 4:**

Read Brady & Weil Ch. 5 "Soil Water: Characteristics and Behavior"

## **SEP 22 Lect. 5:**

Read Brady & Weil Ch. 6 "Soil and the Hydrologic Cycle"

## **SEP 27 Lect. 6:**

Read Brady & Weil Ch. 7 "Soil Aeration and Temperature"

## **SEP 29 Catch up and review**

## **OCT 4 EXAM #1**

Covers lectures 1-6, Brady & Weil Chapters 1,2 & 4-7

## **OCT 6 Review Exam, Review Chemistry**

Schedule individual conferences concerning writing skills

## **OCT 11 Lect. 7:**

Read Brady & Weil Ch. 3, "Soil Classification"

## **OCT 13 Lect. 8:**

Read Brady & Weil Ch. 8 "Soil Colloids: Their Nature and Practical Significance"

## **OCT 18 Lect. 9:**

Read Brady & Weil Ch. 9 "Soil Reaction: Acidity & Alkalinity"

## **OCT 20 Finish Soil Acidity**

## **OCT 25 Lect 10:**

Read Brady & Weil Ch. 10. "Alkaline and Salt-Affected Soils and Their Management"

## **OCT 27 Lect. 11:**

Read Brady & Weil Ch. 11 "Organisms and Ecology of the Soil"

## **NOV 1 Catch up and review**

## **NOV 3 EXAM #2**

Covers lectures 7-11, Chapters 3, 8-11



**NOV 8 Lect. 12:**

Read Brady & Weil Ch. 12 "Soil Organic Matter"

**NOV 10 Lect. 13:**

Read Brady & Weil Ch. 13 "Nitrogen and Sulfur Economy of Soils"

**NOV 15 Lect. 14:**

Read Brady & Weil Ch. 14 "Phosphorus and Potassium"

**NOV 17 Lect. 15:**

Read Brady & Weil Ch. 15 "Micronutrient Elements"

**NOV 22 Lect. 16:**

Read Brady & Weil Ch. 16 "Practical Nutrient Management"

**NOV 24 continue with Lect 16**

**NOV 29 Lect. 17:**

Read Brady & Weil Ch. 17 "Soil Erosion and Its Control"

**DEC 1 Lect. 18:**

Read Brady & Weil Ch. 18 "Soils and Chemical Pollution"

**DEC 6: Catch up and review, evaluate course**

**DEC 8 EXAM #3**

Lectures 11-19

Brady & Weil Chapters 12-18

**DEC 13**

Review Exam and evaluate course

## NRM 380 - SOILS AND THE ENVIRONMENT

FALL 1999

### LABORATORY GRADING POLICY & SCHEDULE

Lab Instructor - Bob Van Veldhuizen,  
phone - 474-5222 (voice mail) , e-mail - fnrv@uaf.edu  
Office Hours - 8:00 AM - 5:00 PM Monday - Friday; 327 O'Neill  
Lab Period - 2:00 PM - 5:00 PM Wednesday

The laboratory portion of this course utilizes a handbook that consists of fourteen lab exercises, conversion formulas and references. Each exercise is a standard soils laboratory procedure that can be used for any soil test anywhere. Any modifications to the procedure, such as shortening the time frame due to the length of the lab period, will be noted. As such, it is a valuable resource for all future resource managers. However, due to budget constraints, the department needs to recoup the costs of copying the lab handbooks. Therefore, they are for sale this semester at the price of **\$5.50 per handbook**. Cash or check (made out to UAF) will need to be given to the lab instructor or taken over to the School of Agriculture and Land Resources Management business office in room 116 of the Arctic Health Research Build. When you bring your receipt back you will be issued a lab handbook. They can be picked up from the lab instructor at any time during normal office hours or during the lab period. A copy will be on hand for your use in the lab instructors office.

The lab grade will be worth 198 points total. Points can be earned by handing in a completed lab report at the beginning of the next lab period. There will be eleven lab exercises during the semester that require written reports. Each lab exercise will consist of a Data Sheet for recording results and calculations followed by six questions. Each correct question on every lab report is worth three points for a total of 18 points/lab. This is a writing intensive course so each question will be graded 2/3 (67%) on content and 1/3 (33%) on writing. Sometimes there will be supplemental problems or questions to be used for your review and understanding of the material. These questions will not be graded, but they will be discussed at the beginning of the following lab period. (Note: You may find these questions or ones similar to them on lecture exams)

Submitted lab reports will be graded with comments, if any, and may be picked up at the beginning of the lab period one week after they are submitted. You may resubmit a corrected lab report to improve your grade one time only. For each corrected lab report, you will receive in addition to your original score, half (50%) of the total corrected points. Corrected lab reports will only be accepted up until the beginning of the next lab period. You can come and discuss any questions/ corrections with me in my office between 8:00 AM and 5:00 PM Monday - Friday. Please make an effort to do it sometime other than during the lab in which the corrected labs were



handed back as there isn't always enough time to cover everything in lab in addition to correcting old labs.

(EXAMPLE: Completed lab reports for Lab Exercise # 2 should be handed in at the beginning of lab # 3. They will then be graded and may be picked up at the beginning of lab # 4 during which time you should also be handing in a completed report for lab # 3. Any corrections you may wish to make to lab # 2 to improve your grade can then be turned in at any time between lab # 4 and the next lab period, lab # 5.)

There will be no makeup labs for unexcused absences. If you have a university related activity such as athletics, field trips, etc., then see me well in advance to set up a time that will fit both our schedules. Otherwise, if you miss all or part of a lab, you are responsible for obtaining any information from your lab partner. Unexcused late lab reports or late corrected labs will not be accepted and will receive 0 points.

Please leave your work area and equipment clean. There are other classes that use this lab area. If any of your equipment or glassware is lost or broken, notify your lab instructor immediately. We will not charge anyone for broken equipment, but we must follow special safety procedures for disposal of broken glassware, and we will need to replace broken equipment.

#### LABORATORY SCHEDULE

Date	Lab Exercise	Content	# of Points
September 8	Lab # 1	Soil Texture by the Feel Method	*
September 15	Lab # 2	Determining Soil Texture by the Bouyoucos Hydrometer Method	18
September 22	Lab # 3	Soil Bulk Density, Particle Density & Percent Pore Space	18
September 29	Lab # 4	Field Capacity, Wilting Point & Permeability	18
October 6	Lab # 5	Determining Available Soil Moisture	18
October 14	Lab # 6	Cation Exchange Capacity	18
October 20	Lab # 7	Soil pH, Lime Requirements & Conductivity	18
October 27	Lab # 8	Soil Organic Matter & Color	18
November 3	Lab # 9	Information Retrieval from Soil Survey Reports & Soil Taxonomy <b>(Final Projects Handed Out)</b>	*
November 10	Lab # 10	Nutrient Modeling (Soil Microbiology - week 1)	18
November 17	Lab # 11	Soil Microbiology - week 2 <b>(1st Rough Draft Due)</b>	18
November 24	Lab # 12	Soil Fertility Tests - Phosphorus Fixation	18
December 1	Lab # 13	Soil Fertility Tests - Available Nitrogen	18
December 8	Lab # 14	Soil Sampling <b>(Final Project Due)</b>	*
Total Number of Points for Lab =			198 pts

(\* - Lab Report not required for grade)

## NRM 380 - SOILS AND THE ENVIRONMENT

FALL 1999

### LABORATORY GRADING POLICY & SCHEDULE

Lab Instructor - Bob Van Veldhuizen,  
phone - 474-5222 (voice mail) , e-mail - fnrv@uaf.edu  
Office Hours - 8:00 AM - 5:00 PM Monday - Friday; 327 O'Neill  
Lab Period - 2:00 PM - 5:00 PM Wednesday

The laboratory portion of this course utilizes a handbook that consists of fourteen lab exercises, conversion formulas and references. Each exercise is a standard soils laboratory procedure that can be used for any soil test anywhere. Any modifications to the procedure, such as shortening the time frame due to the length of the lab period, will be noted. As such, it is a valuable resource for all future resource managers. However, due to budget constraints, the department needs to recoup the costs of copying the lab handbooks. Therefore, they are for sale this semester at the price of **\$5.50 per handbook**. Cash or check (made out to UAF) will need to be given to the lab instructor or taken over to the School of Agriculture and Land Resources Management business office in room 116 of the Arctic Health Research Build. When you bring your receipt back you will be issued a lab handbook. They can be picked up from the lab instructor at any time during normal office hours or during the lab period. A copy will be on hand for your use in the lab instructors office.

The lab grade will be worth 198 points total. Points can be earned by handing in a completed lab report at the beginning of the next lab period. There will be eleven lab exercises during the semester that require written reports. Each lab exercise will consist of a Data Sheet for recording results and calculations followed by six questions. Each correct question on every lab report is worth three points for a total of 18 points/lab. This is a writing intensive course so each question will be graded 2/3 (67%) on content and 1/3 (33%) on writing. Sometimes there will be supplemental problems or questions to be used for your review and understanding of the material. These questions will not be graded, but they will be discussed at the beginning of the following lab period. (Note: You may find these questions or ones similar to them on lecture exams)

Submitted lab reports will be graded with comments, if any, and may be picked up at the beginning of the lab period one week after they are submitted. You may resubmit a corrected lab report to improve your grade one time only. For each corrected lab report, you will receive in addition to your original score, half (50%) of the total corrected points. Corrected lab reports will only be accepted up until the beginning of the next lab period. You can come and discuss any questions/ corrections with me in my office between 8:00 AM and 5:00 PM Monday - Friday. Please make an effort to do it sometime other than during the lab in which the corrected labs were



handed back as there isn't always enough time to cover everything in lab in addition to correcting old labs.

(EXAMPLE: Completed lab reports for Lab Exercise # 2 should be handed in at the beginning of lab # 3. They will then be graded and may be picked up at the beginning of lab # 4 during which time you should also be handing in a completed report for lab # 3. Any corrections you may wish to make to lab # 2 to improve your grade can then be turned in at any time between lab # 4 and the next lab period, lab # 5.)

There will be no makeup labs for unexcused absences. If you have a university related activity such as athletics, field trips, etc., then see me well in advance to set up a time that will fit both our schedules. Otherwise, if you miss all or part of a lab, you are responsible for obtaining any information from your lab partner. Unexcused late lab reports or late corrected labs will not be accepted and will receive 0 points.

Please leave your work area and equipment clean. There are other classes that use this lab area. If any of your equipment or glassware is lost or broken, notify your lab instructor immediately. We will not charge anyone for broken equipment, but we must follow special safety procedures for disposal of broken glassware, and we will need to replace broken equipment.

### LABORATORY SCHEDULE

Date	Lab Exercise	Content	# of Points
September 8	Lab # 1	Soil Texture by the Feel Method	*
September 15	Lab # 2	Determining Soil Texture by the Bouyoucos Hydrometer Method	18
September 22	Lab # 3	Soil Bulk Density, Particle Density & Percent Pore Space	18
September 29	Lab # 4	Field Capacity, Wilting Point & Permeability	18
October 6	Lab # 5	Determining Available Soil Moisture	18
October 14	Lab # 6	Cation Exchange Capacity	18
October 20	Lab # 7	Soil pH, Lime Requirements & Conductivity	18
October 27	Lab # 8	Soil Organic Matter & Color	18
November 3	Lab # 9	Information Retrieval from Soil Survey Reports & Soil Taxonomy <b>(Final Projects Handed Out)</b>	*
November 10	Lab # 10	Nutrient Modeling (Soil Microbiology - week 1)	18
November 17	Lab # 11	Soil Microbiology - week 2 <b>(1st Rough Draft Due)</b>	18
November 24	Lab # 12	Soil Fertility Tests - Phosphorus Fixation	18
December 1	Lab # 13	Soil Fertility Tests - Available Nitrogen	18
December 8	Lab # 14	Soil Sampling <b>(Final Project Due)</b>	*
Total Number of Points for Lab =			198 pts

(\* - Lab Report not required for grade)