

LABORATORY SYLLABUS

Soil Fertility and Plant Nutrition Laboratory CRSS (HORT)(ECOL) 4590L/6590L

This course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary

INSTRUCTOR: Miguel L. Cabrera; Room 4119 Plant Sci. Bldg., 542-1242; mcabrera@uga.edu

OFFICE HOURS: T, Th 11:30am -1:30 pm

DESCRIPTION: Soil conditions affecting availability of plant nutrients, software packages for managing soil fertility, fertilizers and environmental quality.

PREREQUISITES: CHEM 1211-1211L and CRSS 3050-3050L or CRSS(FORS) 3060-3060L or permission of major

COURSE OBJECTIVES: The objective of this course is to emphasize concepts covered in lecture so that students can understand:

- 1) How to establish soil fertility plots
- 2) Methods of measuring cation exchange capacity and soil pH
- 3) Reactions of aluminum, nitrogen, and phosphorus in soil
- 4) Software packages for soil fertility and environmental protection

LOCATION: 3406 Miller Plant Sciences Building, Monday 3:35 - 5:30 pm

REQUIRED TEXTBOOK: Soil Fertility and Fertilizers by John L. Havlin et al. 7th edition.

REFERENCES: The following books can aid in writing the weekly report:

Alexander, M. Introduction to soil microbiology.
Brady, N. The nature and properties of soils, 10th ed.

PROCEDURE: Laboratory sessions will be 115 minutes in length and will require the full and active participation of each student. The students in each lab session will work in groups of two or three persons. At the beginning of the laboratory period, students will discuss that day's lab, hand in the previous week's report, and take the weekly quiz. Laboratory handouts containing the procedures to be used in each laboratory practice will be available at the WebCT site at least one week before the lab. ***Students should print the handouts and study them before lab to be able to answer quiz questions. The lab report will be due the following lab period, and will be graded and returned as soon as possible. These reports should be submitted on 8 1/2 x 11 3/4 paper. A late report without a valid excuse will result in lost points.*** Missed labs (with a valid excuse) can be made up at the discretion of the instructor. Excuses must be submitted to and approved by the instructor.

GRADING: Each lab report and each lab quiz will be worth a maximum of 100 points. Lab reports will account for 65% of the overall lab grade, with quizzes accounting for the remaining 35%.

ETIQUETTE: After each lab, all glassware used will be washed, rinsed with tap water, rinsed in an acid bath, rinsed in deionized water, and placed on racks to dry. If any equipment is damaged or broken, please report it to the instructor. All soil used in the experiments will be discarded into the soil traps in the sinks in the front of the classroom (plastic buckets). All other equipment should be returned to the instructor by the end of the lab. Please tidy up your work area before leaving the lab.

ACADEMIC: All academic work must meet the standards contained in "A Culture of Honesty." Students
HONESTY: are responsible for informing themselves about those standards before performing any
academic work. Please see <http://www.uga.edu/honesty/>

LABORATORY REPORT

A written report will be required of each student and should be turned in on the following lab period unless otherwise indicated by the instructor. This report will consist of four sections, unless a different format is specified in the lab handout.

- 1) INTRODUCTION - A brief statement about the purpose of the lab exercise.
- 2) MATERIALS and METHODS - A detailed description of the methods and materials used in the lab (formatted in a narrative way).
- 3) RESULTS AND DISCUSSION -The tabulated results from the laboratory using the format suggested in the lab or one of your own. This section may include graphs, charts, etc, and should explain the results by addressing the questions provided in the handout with lab results.
- 4) CONCLUSIONS - State the main points that you learned from the lab, both from the data and additional information.

NOTE: *Students are encouraged to work cooperatively in the calculation of laboratory results, BUT each laboratory report should be written individually. Reports that are not prepared individually will receive 0 points.*

TENTATIVE LABORATORY SCHEDULE

Aug 24:	Lab 1: Soil Fertility Research/Demonstration plots.
Aug 31:	Lab 2: Estimating Optimum Economic N Rates
Sep 7:	Lab 3: Exchangeable Cations and Cation Exchange Capacity.
Sep. 14:	Lab 4: pH and Buffering in Soils.
Sep 21:	Lab 5: Aluminum Reactions in Soils.
Sep 28, Oct 5:	Lab 6: Nitrogen reactions in soil.
Oct 12:	Lab 7: Ammonia Volatilization from Urea
Oct 19, 26:	Lab 8: Phosphorus reactions in soil
Nov. 2:	NO LAB
Nov 9:	Lab 9: Loss of Nutrients in Surface Runoff
Nov 16:	Lab 10: Software Packages for Soil Fertility/Nutrient Management
Nov 30:	Lab 11: Visit to Soil Testing Laboratory