

# FOREST BIOMETRICS 3323

SPRING 2019

(3 Credit Hours)

## Semester Syllabus

This syllabus provides a tentative schedule and the best summarizations of course policies to date. This schedule and policies may require further clarification or it may be necessary to change them. If there is to be a change, it will be announced in lecture and you will be notified by email.

### Course Instructors:

**Dr. H. Alexis Londo**

Director for the Applied Geospatial Analysis and Remote Sensing Outreach Program

[Londo.4@osu.edu](mailto:Londo.4@osu.edu)

375C Kottman Hall (614)247-6099, (614)495-6738

Webpage: <http://senr.osu.edu/our-people/alexis-londo>

**OBJECTIVES:** To familiarize the student with: 1) the concepts, principles, and methodologies of forest inventories; 2) equipment usage and technology to accomplish forest inventories; 3) methods of quantifying forest inventory data into meaningful information for management purposes

**Location and Time:** Lec: W,F. 10:20-11:15, KH 245 / Lab: M. 1:00-5:00. KH 460

**Textbook:** Optional but very helpful: Avery, Thomas Eugene and Harold E. Burkhardt. 2002. 5<sup>th</sup> ed. *Forest Measurements*. McGraw-Hill, Inc. 456pp. ISBN: 0073661767

**Course Supplies:** Warm field clothes; calculator; other equipment will be provided. **You must dress appropriate for each and every lab – I reserve the right to refuse your participation if your attire presents a danger.** We will be working in the field no matter the temperature. You should dress warmly and come prepared. You are responsible for making sure you are dressed for appropriate conditions.

**Grading:**

Attendance	5%
Exam 1	15%
Exam 2	20%
Lab reports/homework	30%
Final Exam	30%
Total	100%

The grading scale is 93 - 100 (A) 90 - 92.9 (A-) 87 - 89.9 (B+) 83 - 86.9 (B) 80 - 82.9 (B-) 77 - 79.9 (C+) 73 - 76.9 (C) 70 - 72.9 (C-) 67 - 69.9 (D+) 60 - 66.9 (D) Below 60 (E)

**Attendance:** Attendance is required and is regarded as a privilege. Attendance will be recorded for each class meeting. LAB IS MANDATORY. Any unexcused absence from lab will result in a zero for that lab assignment. Lab Report due dates- one week following completion of the lab, except when noted by instructor.

### Homework/Course Policy:

1) You will not be allowed to take missed exams unless arrangements are made prior to the exam date by email with me. This is my official policy. Any deviation from this policy is at the discretion of the instructor.

2) Homework assignments are due at the beginning of class on the date they are due. Late homework assignments will be penalized 10% per day in the absence of a valid medical excuse. If assignments are not received within 7 days of the due date, you will receive a 0 for that assignment. Please see me if there are special circumstances.

- 3) Attendance is expected in all classes and is mandatory for labs. Please avoid the use of cell phones, smart phones, and laptops during class.
- 4) If you find a grading mistake or error, please give the original and an explanation in writing of the mistake to Dr. Londo within 48 hours of receiving the assignment/exam.

**Academic Misconduct:** Academic misconduct (plagiarism, cheating, and other forms of misconduct as defined by the university) will not be tolerated. According to Faculty Rule 3335-31-02, academic misconduct is defined as any activity that tends to compromise the academic integrity of the institution or subvert the education process. Please see the Student Resource Guide or instructor if you have further questions.

**Special Needs:** If you have a disability that requires accommodations please make an appointment with me as soon as possible (preferably the first week of the semester) to make arrangements as necessary. Please also coordinate with the OSU Office of Disability Services (<http://www.ods.ohio-state.edu>, 614-292-3307).

**Take Care of Yourself:** A recent American College Health Survey found stress, sleep problems, anxiety, depression, interpersonal concerns, death of a significant other, and alcohol use among the top ten health impediments to academic performance. Students experiencing personal problems or situation crises during the semester are encouraged to contact the OSU Counseling and Consultation Service (<http://www.ccs.osu.edu>; 614-292- 5766) for assistance, support, and advocacy. This service is free and confidential.

**Evaluation Policies:** Final averages will be rounded upward to the next highest whole number for assigning letter grades, and letter grades are assigned as indicated on the previous page. All concerns about grades must be presented to me in writing within 5 days after you are informed of the grade.

All lab reports must be typewritten, and proofread to correct grammar and spelling errors. Where graphs are to be a part of the report, these should be created with the use of computer software

Written proof (e.g., doctor's excuse) must be presented to acquire excused absences, or if known ahead of time, please consult with the instructor concerning your planned absence. Let me know as soon as you do that you will not be able to attend. Once discussed, you will need email confirmation from me to seal the agreement.

Academic misconduct of any type will not be tolerated, as required by the university policy (Faculty Rule 3335-5-54) on academic misconduct: "Each instructor shall report to the Committee on Academic Misconduct all instances of what he or she believes may be academic misconduct."

**Course Outline (subject to change by instructor):**

- I. Introduction (Chp. 1)
- II. Sampling Designs and Statistical Methods (Chps 2&3)
  - A. Mode, mean, median
  - B. Measures of variation and confidence
  - C. Statistical Computations and applications
  - D. Simple random sample
  - E. Sample intensity and variability
  - F. Systematic and random sampling
  - G. Stratified sample
  - H. Allocation of field plots
- III. Land Measurements (Chp. 4)
  - A. Distance measurement
  - B. Compass use
  - C. Survey systems
  - D. Area definitions and determinations
  - E. GPS systems and their use

- IV. Measuring Standing Trees (Chp. 7)
  - A. Tree diameters and basal area
  - B. Tree heights
  - C. Tree form
  - D. Tree crowns
  - E. Tree age
  
- V. Cubic Volume, Cord Volume, and Weight Scaling (Chp. 5)
  - A. Cubic volume equations and scaling
  - B. Measuring cord and pulpwood volume
  
- VI. Log Rules, Scaling Practices, and Other Product Measures (Chp. 6)
  - A. Derivation of log rules
  - B. Board-foot scaling
  - C. Log grading at the mill and on the stump
  - D. Weight scaling
  - E. Other wood products
  
- VII. Volumes and Weights of Standing Trees (Chp. 8)
  - A. Multiple-entry and taper volume tables
  - B. Single-entry and tariff tables
  - C. Tree weight tables and equations
  
- VIII. Forest Inventory Considerations (Chp 9)
  - A. Types of inventory
  - B. Summarizing inventory data- stand and stock tables
  - C. Timber sales- stumpage, methods, contracts
  
- IX. Strip and Fixed-Plot Sampling (Chp. 10)
  - A. Strip-cruise system
  - B. Line-plot system
  - C. Permanent sample plots
  - D. Regeneration surveys
  
- X. Point-sample Inventory (Chp. 11)
  - A. Concepts and principles of point sampling
  - B. Inventory data calculations
  - C. Point sample cruise intensity
  
- XI. Geographic Information Systems (GIS) (Chp. 14)
  - A. Concepts
  - B. GIS data systems and structure
  - C. GIS use and analysis
  
- XII. Concepts of Site, Stocking, and Stand Density (Chp. 15)
  
- XIII. Tree Growth and Stand Table Projections (Chp. 16)
  
- XIV. Growth and Yield Models (Chp. 17)
  - A. Whole stand models
  - B. Individual tree models
  - C. Size-class distribution models

**Laboratory Exercises  
and Topics:**

Laboratory exercises will coordinate with weekly lecture topics.

**Important Dates:**

EXAM #1	Friday, February 8
EXAM #2	Friday, March 8
FINAL EXAM	Monday April 22 1:00 – 4:00 Kottman Hall 460 – tentative