NREM 3063 NATURAL RESOURCE BIOMETRICS
COURSE SYLLABUS, FALL 2016

I. INTRODUCTORY

This course deals with the application of statistical methods to natural resource problems such as estimation of forest, habitat and rangeland parameters, and estimation of relationships between natural resource parameters.

Most laboratories during the initial 2/3rd classes will be conducted in the Ag Hall 019 using Departmental laptop computers. During the last 1/3rd of classes, students in section 2 will meet in Ag Hall 009 for lecture and Ag Hall 019 for lab (after an introductory talk lab will finish in the NREM Computer Lab). Lab exercises will introduce students to applications of computing including statistical analysis of natural resource data.

<table>
<thead>
<tr>
<th>LECTURE</th>
<th>LAB</th>
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<tbody>
<tr>
<td>Classtime:</td>
<td>Range section: Last 1/3rd class:</td>
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<tr>
<td>Mon., Wed. 9:30-10:20 a.m.</td>
<td>009 Ag Hall 474 Ag Hall</td>
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<tr>
<td>8:30 a.m.-10:20 p.m. 019 Ag Hall</td>
<td>474 Ag Hall</td>
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FINAL EXAM TIME: Friday, December 9, 8:00-9:50am

Prerequisites: STAT 2013 and an introductory course in computer applications or consent of instructor.

II. INSTRUCTORS

Dr. Thomas B. Lynch
Office: 017 Ag Hall, Tel.: 744-5447, EMAIL tom.lynch@okstate.edu

Although I'm not setting specific office hours, I'm frequently available in my office during working hours. I encourage you to feel free to consult me in my office whenever you have questions or problems relating to this course.

Dr. Karen R. Hickman
Office: 476 Ag Hall, Tel.: 744-9579, EMAIL karen.hickman@okstate.edu
Office hours: By appointment!
III. TEXTS AND CLASS MATERIALS

Useful for reference (not required to buy):
Elementary Forest Sampling and Elementary Statistical Methods for Foresters by Frank Freese

Each student should obtain a flash drive for use in lab.

IV. COURSE OUTLINE

A. STATISTICAL COMPUTING IN NATURAL RESOURCES

Spreadsheets with applications including use of statistical functions in analysis of inventory data, regression analysis, charting trends and relationships.

B. NATURAL RESOURCE SAMPLING METHODS

1. Review of statistical concepts and simple random sampling
2. Stratified sampling
3. Ratio and regression estimation
4. Double sampling with regression estimators

C. QUANTITATIVE ANALYSIS OF TRENDS AND RELATIONSHIPS

1. Simple linear regression analysis
2. Multiple linear regression analysis
3. Use of transformations, hypothesis testing and confidence intervals, model evaluation in regression analysis

D. RANGE MAJORS (last 1/3 class): The range students will have the opportunity to learn how to conduct appropriate vegetation sampling procedures for use in determining proper grazing management and stocking rate practices, and in evaluating habitat characteristics. Students will learn basic vegetation sampling practices in the field and apply statistical analysis techniques learned in the first 2/3’s of the class.

E. FORESTRY MAJORS (last 1/3 class): Forestry majors will study 3P sampling, site index, and forest growth and yield.
V. GRADING CRITERIA

Labs ........................................ 15%
Class assignments and quizzes ...... 10%
Three hour exams (@ 15% each) .... 45%
Final exam.................................. 30%

LABS: Labs will be graded as satisfactory (1 point) or unsatisfactory (0 points). Unsatisfactory labs must be resubmitted until they are satisfactory. Many of the lab assignments are designed for completion during the lab period. Unexcused absence during lab will result in loss of the point value associated with the lab exercise. ADDITIONAL PENALTY FOR UNEXCUSED ABSENCE FROM LABS: REDUCTION OF FINAL LETTER GRADE BY ONE GRADE FOR EACH FOUR UNEXCUSED ABSENCES FROM LAB. For example, a final grade of “C” will be reduced to a “D” if the student has unexcused absences from 4 labs, and to an “F” if the student has unexcused absences from 8 labs. This is in addition to points already lost by missing lab.

CLASS ASSIGNMENTS: There will be approximately 6-8 class assignments which will be graded on a 0-100 percent scale by the instructor. Students should note that performance on class assignments can easily make the difference in a "letter grade".

LATE ASSIGNMENT POLICY: Late assignments will lose 50% of their value on the first day late and another 10% on each additional day thereafter.

QUIZZES: Unannounced quizzes may be given periodically.

CLASS ATTENDANCE: Students are expected to attend every class meeting.

VI. UNIVERSITY DROP POLICY

A. SECOND WEEK: If a student drops a course during the first two weeks of class, the student's academic record does not contain a record of the class.

B. THIRD WEEK TO END OF 12th WEEK: If a student drops a class during this period, a grade of "W" (withdraw or dropped) appears on the student's academic record (transcript).

C. 12th WEEK TO BEGINNING OF “PRE-FINALS” WEEK: Students cannot drop a course during this period. Exceptions to this can be made due to petition based on extraordinary circumstances. The petition must be signed by the student's instructor, advisor, and dean. If the petition is accepted the student receives a grade of "W" (withdraw passing) if they have a current passing grade in the course or "F" (withdraw failing), if they have a current failing grade in the course, as assigned by the instructor. The grade is retained in the student's academic record, appears on the transcript, and "F" grades are included in grade point calculations.

D. BEGINNING OF PRE-FINALS WEEK TO END OF SEMESTER: Students cannot drop courses during this period and will receive only grades of A, B, C, D, F, I, NP, P, OR X.
NREM 3063 SCHEDULE FALL 2016

08/19  Fri.  Lab #1  Tables from formulas in EXCEL
08/26  Fri.  Lab #2  Statistical computations in EXCEL
09/2   Fri.  Lab #3  Confidence intervals and sample size

09/5   Mon.  No class, Labor Day

09/9   Fri.  Lab#4  Stratified sampling

09/16  Fri.  TEST #1  Room 019

09/23  Fri.  Lab #5  Regression

9/30   Fri.  Lab #6  Multitiple regression

10/7   Fri.  TEST #2  Room 019

10/14  Fri.  FALL BREAK

10/21  Fri.  Lab #7  Section 1: 3P sampling
        Section 2: Density Sampling
10/28  Fri.  Lab #8  sec. 1: volume equations
        sec. 2: Frequency sampling
11/4   Fri.  Lab #9  sec. 1: site index, growth and yield
        sec. 2: Cover sampling
11/11  Fri.  Lab #10 sec. 1: growth/yield models I
       sec. 2: Biomass sampling

11/18  Fri.  TEST #3  Room 019

11/23-25  THANKSGIVING BREAK

12/2   Fri.  Lab #11 sec. 1: growth/yield models II
       sec. 2: Species richness and diversity

12/09  Fri.  FINAL EXAM 8:00-9:50am