SYLLABUS AND POLICY STATEMENTS

BIOMETRICS – FOR 517.001

SPRING 2015

INSTRUCTOR

Dr. Dean W. Coble, Forestry Building 213, 936-468-2179.
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Office Hours:  Monday & Wednesday, 9 – 11 am
              Monday 1 – 3 pm
              Tuesday & Thursday 1 – 3 pm
              Or by appointment

TIME AND PLACE

Tuesdays and Thursdays, 9:30 – 10:45 am, Forestry Building Room 234

COURSE DESCRIPTION

3 semester hours. Application of statistical methods in natural sciences. Emphasis on techniques for analyzing biological data. No prerequisites are required but an undergraduate class in statistics is desirable.

PROGRAM LEARNING OUTCOMES

Forestry 517 is a required class of all students pursuing a M.S. or Ph.D. in Forestry and thus competency is required. The course is designed to address the following Program Learning Outcomes (PLOs), as stated in the M.S. and Ph.D. Program Matrix:

1) The student will demonstrate proficiency in research design, relative to their field of study,

2) The student will demonstrate proficiency in the process of reviewing scientific literature pertinent to their field of study,

3) The student will demonstrate proficiency in basic statistical analysis, relative to their field of study,

4) The student will demonstrate preparation to pursue a professional career and/or Ph.D. degree in subject, and

5) The student will demonstrate competency in oral and written communication skills.
M.S. and Ph.D. Forestry Program Learning Outcomes

Proficiency Levels

<table>
<thead>
<tr>
<th>Course</th>
<th>PLO 1 Research Design</th>
<th>PLO2 Scientific Literature</th>
<th>PLO3 Statistical Analysis</th>
<th>PLO4 Professional Career and/or Ph.D.</th>
<th>PLO5 Oral &amp; Written Communication Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOR 517</td>
<td>A</td>
<td>A</td>
<td>M</td>
<td>A</td>
<td>N/A</td>
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</tbody>
</table>

N/A – Not Applicable – course does not support the Program Learning Outcome.

I – Intermediate – FOR 517 supports Program Learning Outcome by providing students with topic-specific information, concepts, applications, and lab activities that increase the students’ skills in making tactical implementation decisions relative to the expected outcomes.

A – Advanced – FOR 517 supports Program Learning Outcome by providing students with transitional, high level topic-specific information, activities, and opportunities that enable the students to apply their critical thinking and tactical skills to resolve increasingly challenging strategic situations.

M – Mastery – FOR 517 supports Program Learning Outcome by providing students with opportunities to independently apply tactical and strategic planning skills to successfully accomplish real-world, non-academic management objectives. Completes students’ preparedness for entry-level professional activity accomplishment.

STUDENT LEARNING OUTCOMES

Upon successful completion of this course, the student will:

1) Understand how to use statistics to analyze biological data (PLO #1 and 3),

2) Understand to concept of statistical inference and hypothesis testing in the context of experimental design (PLO #1 and 4),

3) Be able to interpret statistical results in a meaningful context for application by practitioners in the field (PLO #4 and 5), and

4) Understand how statistical analysis fits in the larger context of the scientific literature (PLO #2).

Ph.D. STUDENTS: If necessary, Ph.D. students should schedule a meeting with the instructor to discuss special course content deemed required to support their research.
COURSE GOALS AND OBJECTIVES

This course is designed to provide natural resource management graduate students an exposure to applied statistics. The focus will be to learn which statistical tests are appropriate for different types of data in an applied context (i.e., no derivation of theorems, interpreting results, etc.) The class includes a lecture component plus assignments using statistical software like SAS.

REQUIRED TEXT


COURSE REQUIREMENTS AND GRADING SYSTEM

Grades will be based on the number of points earned in exams and homework assignments. A total of 460 points are possible. On a percentage basis, final grades will be computed as: 90+ = A, 80 – 89 = B, 70 – 79 = C, 60 – 69 = D.

Homework Assignments: There will be 8 graded homework assignments, each worth 20 points, for a total of 160 points. Homework assignments are due one week following the assignment date. Failure to turn in a homework assignment by the due date will result in a ZERO for that assignment. You must show all your work on each problem; failure to do so will result in no credit for a problem. You can work together on the homework assignments.

Exams: There will be three in-class exams: two mid-term exams and a final exam, each worth 100 points. Exams will total to 300 points. You must show all your work on each problem; failure to do so will result in no credit for a problem. You must work alone on the exams.

ATTENDANCE POLICY

I expect every person to attend class. It is the best way to learn the material. I will keep attendance records, which I will use to decide “borderline” grades. For instance, if you regularly attend class and your final grade is “89”, I will be highly inclined to give you an “A” for the class.

ACADEMIC INTEGRITY (SFA Policy A-9.1)

Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

Definition of Academic Dishonesty: Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized
materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism are (1) submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from an Internet source or another source; and (3) incorporating the words or ideas of an author into one's paper without giving the author due credit. Please read the complete policy at: http://www.sfasu.edu/policies/academic_integrity.asp

In this class, you can work together on the homework projects. However, you must work ALONE on the exams. Anyone caught cheating will receive a “zero” for the exam. I realize that homework assignments and exams are available from previous semesters, and I encourage you to use them to help you understand the material. However, do not plagiarize other people’s work and turn it in as your own. You are only hurting yourself and it will not give you an understanding of the material. Though the assignments are from the textbook and therefore do not change from semester to semester, the exams do change. Each semester, I prepare new problems for each exam, so you will need to know how to work the homework problems to pass the exam. Each student is also encouraged to protect his or her individual work. You should avoid keeping computer files or paperwork in any location that is accessible by others (note: this includes throwing material in trash cans!). Your efforts to protect yourself will avoid any plagiarism of your work.

WITHHELD GRADES (Semester Grades Policy A-54)

A grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances and is done at the discretion of the instructor of record with the approval of the academic chair/director. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average.

STUDENTS WITH DISABILITIES

To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to http://www.sfasu.edu/disabilityservices/.
SOCIAL JUSTICE STATEMENT

The Arthur Temple College of Forestry and Agriculture at SFASU is committed to social justice. I concur with that commitment and expect to maintain a positive learning environment based upon open communication, mutual respect, and non-discrimination. Our University does not discriminate on the basis of race, sex, age, disability, veteran status, religion, sexual orientation, color or national origin. Any suggestions as to how to further such a positive and open environment in this class will be appreciated and given serious consideration.

COURSE CONTENT AND TENTATIVE SCHEDULE

Week 1: Normal Distribution (chapter 6) [Review (chapters 1 – 5)].

Week 2: One-sample Hypotheses (chapter 7).

Week 3: Two-Sample Hypotheses (chapter 8).

Week 4: Paired-Sample Hypotheses (chapter 9).

Week 5: One-way Analysis of Variance (chapter 10) [Exam 1].

Week 6: Multiple Comparisons (chapter 11).

Week 7: Two-Way Analysis of Variance (chapter 12).

Week 8: Data Transformations (chapter 13).

Week 9: SPRING BREAK

Week 10: N-way Factorial Analysis of Variance (chapter 14).

Week 11: Repeated Measures Experimental Design (chapters 12.4 and 14.4) [Exam 2].

Week 12: Nested (Hierarchical) Analysis of Variance (chapter 15).

Week 13: Goodness of Fits tests (chapter 22).

Week 14: Contingency Tables (chapter 23).

Week 15: Binary Variables (chapter 24).

Week 16: Randomness Tests (chapter 25) – Dead Week.

Week 17: Final Exam, Thursday, May 14, 8 – 10 am.