

**ANSC/NRM/BIOL 5313/5317 - Biostatistical Analysis II**  
**Course Syllabus - Spring 2015**

**Instructor**

Dr. Ryan O'Shaughnessy

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Office Hours: Anytime (?)

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**Course Description**

An advanced class in statistical concepts and models applied to agricultural and biological systems. The course addresses experimental designs, paired-sample hypotheses, multi-sample hypotheses (ANOVA), multiple comparisons, factorial and nested ANOVA, data transformations, linear regression, correlation, multiple regression and correlation, polynomial regression, the binomial distribution, and information theoretic approaches. Emphasis will be placed on data analysis and interpretation using computer statistical applications.

**Course Objectives**

Student objectives include the following:

1. Assess and review experimental designs, paired-sample hypotheses, multi-sample hypotheses, multiple comparisons, factorial and nested ANOVA, data transformations, linear regression, correlation, multiple regression and correlation, polynomial regression, and the binomial distribution.
2. Understand and interpret advanced statistical analyses in published research literature.
3. Interpretation and application of analytical results to research projects.
4. Application and interpretation of statistical data analysis using SPSS software.

**Class Meeting Time/Place**

Lecture/Lab: Monday, Wednesday 10:00-11:50

Lecture: NRM 129; Lab: NRM 126

**Required Books and Supplies**

- Zar, J. H. 2009. Biostatistical Analysis. Fifth edition. Prentice Hall, Inc. Upper Saddle River, NJ.
- Norusis, M. J. 2012. SPSS Statistics 19.0: Guide to Data Analysis. Upper Saddle River, NJ.
- Burnham, K. P., & Anderson, D. R. 2002. Model selection and multimodel inference: a practical information-theoretic approach. Springer.
- Calculator (?)

**Course Outline**

CH. 10. Multisample Hypotheses and the Analysis of Variance

CH. 11. Multiple Comparisons

CH. 12. Two Factor Analysis of Variance

CH. 13 - Data Transformations

CH. 14 - Multi-way Factorial Analysis of Variance

CH. 15 - Nested Analysis of Variance

CH. 16 - Multivariate Analysis of Variance

CH. 17 - Simple Linear Regression

CH. 19 - Simple Linear Correlation

CH. 20 - Multiple Regression and Correlation

## Course Grade

Exam I	20%
Exam II	20%
Exam III	20%
Homework	20%
Final Project	20%

## Grade Assignment

<60 = F, 60-69 = D, 70-79 = C, 80-89 = B, 90-100 = A.

## Class Organization and Policy

Lecture and Lab are consecutive and attendance in both is essential. Lecture may run into lab if it is necessary to cover material, but in general the lab is set up for individual instruction. Please use this time wisely to work through examples, work on homework, and ask questions. It is unfair to other students to skip the individual lab instruction and then expect help during my office hours. I will be happy to help you during office hours if you are using lab time wisely. I will not be amenable to you skipping lab and then expecting personal instruction during my office hours.

Roll will be taken in each class meeting. The SRSU catalog states “The Instructor will drop a student from a course when the student has a total of nine absences.” An absence is defined as nonattendance to 50 minutes of class. One lecture/lab day is equal to 2 absences.

Missed lecture notes may be obtained from a classmate. See me or Blackboard for handouts and assignments that may have been missed.

No make up exams will be given for an unexcused absence. You must notify me of an excused absence **PRIOR** to the class you will miss and arrangements for make up exams must be made **BEFORE** the exam is given.

Late assignments will be accepted at the discretion of the instructor, with a **10% penalty for each day** that it is late. Late assignments will not be accepted once a full week has passed.

Academic dishonesty includes copying, sharing, or obtaining information from an unauthorized source, attempting to take credit for the intellectual work of another person, falsifying information, and giving or receiving information about a test, quiz, or assignment to other students. Any student involved in academic dishonesty will receive no credit (0) for work done and/or may be penalized in accordance with published University Rules.

*It is Sul Ross State University Policy to provide reasonable accommodation to students with disabilities. If you would like to request such accommodations because of physical, mental, or learning disability, please contact the ADA Coordinator for Program Accessibility in Briscoe Administration Building in Room 206 or call 432-837-8203.*

## **Additional Outcome Objectives as Required by the Southern Association of Colleges and Schools:**

### ***Program Learning Outcomes for the M.Agr. in Range and Wildlife Management***

The graduating student will demonstrate that he/she is able to:

1. Apply statistical concepts and procedures to natural resource data
2. Evaluate literature and references as they apply to the natural resource field
3. Demonstrate their knowledge of the fundamentals and advanced concepts of range and wildlife management.

### ***Program Learning Outcomes for the M.S. in Range and Wildlife Management***

The graduating student will demonstrate that he/she is able to:

1. Apply statistical concepts and procedures to natural resource data
2. Evaluate literature and references to substantiate an applied research project.
3. Examine, select, and utilize appropriate resources, materials, and data collection instruments to implement research projects.
4. Justify and defend the research questions and design.

## **Course Schedule**

Week 1	ANOVA
Week 2	Post hoc – multiple comparison tests
Week 3	Experimental Design
Week 4	2-way ANOVA
Week 5	Exam I
Week 6	Data transformations/Multiway factorial ANOVA
Week 7	SPSS GLM univariate/MANOVA
Week 8	Spring Break
Week 9	Exam II
Week 10	Linear regression
Week 11	Linear regression & correlation
Week 12	Multiple regression
Week 13	Project
Week 14	Project
Week 15	Exam III

## **Tentative Exam Schedule**

Exam 1 – Feb 17 (tentative)

Exam 2 – March 19 (tentative)

Exam 3 – April 28

Project due date – April 30

Homework is due next class period unless otherwise specified.