ST 524 Statistics in Plant Science 3(3-1-0) FALL 2008

Class Wolfware site: http://courses.ncsu.edu/st524
Course webpage: http://www.stat.ncsu.edu/people/arellano/courses/st524/Fall08/

✧ Hours: T, H 1:30 pm - 2:45 pm
✧ Room: HA 320
✧ Instructor: Consuelo Arellano, PhD arellano@stat.ncsu.edu
✧ Office: 4A Patterson Hall Phone: (919) 515-1923
✧ Office hours: MW 2:00 pm - 3:00 pm; TH 10:00 am-12 noon; or by appointment.
✧ Teaching Assistant: Pedro A. Torres, patorres@ncsu.edu
✧ Pre requisite: ST512 or equivalent
✧ Computer Lab Hours: T. 3:00 pm - 4:15 pm - G100 HA – Statistics Instructional Computing Lab (SICL)
✧ Grading System:
  • 2 Mid-terms 40%
  • Homework Assignments 30%
  • Final Exam 30%
✧ Text: None.

Dr. Cavell Brownie’s notes available at the NCSU Library Electric Reserves.
NCSU Electronic Reserves: http://www.lib.ncsu.edu/reserves/

✧ References
  o Quick Start to Data Analysis with SAS. F. Dilorio and K. A. Hardy. 1\textsuperscript{st} ed. Duxbury Press. (1996) QA276.4 D548 1996

**ST 524 Statistics In Plant Science** 3(3-1-0) F Preq: ST 512 Principles and techniques of planning, establishing and executing field and greenhouse experiments. Size, shape and orientation of plots; border effects; estimation of size of experiments for specified accuracy; subsampling plots and yields for laboratory analysis; combining data from a series of years and/or locations; rotation experiments; repeated measures data; multiple comparisons in variety trial results; selection of predictors in multiple regression; introduction to interspecies and intraspecies plant competition experiments and models. Course Offerings: fall

**Course Outline**

1. **Introduction**

2. **Field Experimentation: principles and practice**
   a. Field plot technique
   b. Block and plot shape and orientation
   c. Uniformity trials
   d. (optimum plot size, Smith’s b)

3. **Factorial treatment designs**
   a. Partitioning main and interaction effects
   b. Orthogonal contrasts, planned comparisons
   c. Orthogonal polynomial contrasts

4. **Multiple comparisons procedures**
   a. Misuses
   b. Comparison of procedures

5. **Split-plot and related designs**
   a. Split-split plot designs
   b. Advantages and disadvantages of split plot designs
   c. Split block or stripped split plot designs

6. **Repeated Measures data**
   a. Measurement over time and space
   b. Methods of analysis, repeated measures ANOVA

7. **Experiments in greenhouses and growth chambers**
a. Replication over time  
b. Replication of between and within-chamber treatments

8. Experiments in several years and/or locations  
a. Combined ANOVA  
b. Expected Mean Squares  
c. Test for Treatment effects

9. Designs for trials with large number of treatments  
a. Confounding in factorial designs  
b. Incomplete Block Design. Lattice designs for variety trials.

10. Nonlinear regression

11. Analysis of covariance

12. Spatial analysis techniques

End-of-semester class evaluations  
Schedule: Online class evaluations will be available for students to complete during the last week of class the following dates and time:

Fall Session 8 a.m. November 21 through 8 a.m. December 8

Students will receive an email message directing them to a website where they can login using their Unity ID and complete evaluations. All evaluations are confidential; instructors will never know how any one student responded to any question, and students will never know the ratings for any particular instructors.

Evaluation website: https://classeval.ncsu.edu  
Student help desk: classeval@ncsu.edu  
More information about ClassEval: http://www2.acs.ncsu.edu/UPA/classeval/

Important Dates: http://www.ncsu.edu/registrar/calendars/academicfall.html

Fall Break : October 9-10
Last day to drop a course with tuition adjustment : September 3
Last day to drop a course without a grade : October 17
Thanksgiving Vacation (no classes) : November 26 - 28
Thanksgiving Holiday (university closed) : November 27 - 28
Dead Week : December 1 - 5
Last Day of Classes : December 5.
First Exam : October 2, 2008
Second Exam : November 20, 2008
Final Examination : Tuesday, Dec 9, 2008, 1:00 - 4:00 p.m.  
(http://www.ncsu.edu/registrar/calendars/examfall.html)