Experimental Design  
STAT 403/ Spring 2010

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Office Hours: 10:50AM-11:50AM, Monday, Wednesday Friday,  
9:00AM-11:00AM, Thursday,  
and by appointment.

Meeting Time: 9:40AM-10:40AM

Meeting Place: 363 Trexler Hall

Required Text: *Experimental Design Using ANOVA*, by Tabachnick and Fidell

Course Objective: The objective of this course is to investigate techniques for designing effective and informative experiments. We will discuss statistical methods for analyzing data from various types of designs and determine in which circumstances each design is appropriate. In our discussion, we will encounter the analysis of variance, completely randomized designs, randomized block designs, factorial designs, fixed-effects designs, and Latin-square designs.

Intended Learning Outcomes: By the end of this course, students will be able to ….

… use statistical software to organize, describe, and screen data.

… understand how to select an appropriate experimental design for a given set of constraints and goals.

… articulate the importance and limitations of using data and statistical methods in decision making.

… advise scientists how to interpret their findings using statistical methods.

… express themselves clearly and effectively in writing the concepts and language of statistics.

Tests: There will be two tests during the semester.

Assignments: Homework will be assigned daily and graded for both completeness and correctness.

Final Exam: The final exam will be cumulative and will be given on Wednesday, April 21st, 2:00PM-5:00PM.

Grading: Grades will be assigned based on written assignments, tests, and a final exam.

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<th>Points</th>
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<tr>
<td>Tests</td>
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<tr>
<td>Assignments</td>
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<td>Final Exam</td>
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A tentative guideline for determination of grade will then be:

A   > 93
A-  90 – 93
B   83 – 86.9
B-  80 – 82.9
C   73 – 76.9
C-  70 – 72.9
D   63 – 66.9
D-  60 – 62.9
B+  87 – 89.9
C+  77 – 79.9
D+  67 – 69.9
F   < 60
MCSP Conversation Series: Attending at least three MCSP conversation series event is required. Within one week of the lecture, a one page reflection paper will be due and will count as a quiz grade.

Make-up Work: No make-up work will be accepted. Any excused work will be replaced by the final exam.

Attendance: Attendance is required and acquiring more than two unexcused absences will result in a penalty. An absence is unexcused if it has not been discussed and approved by the instructor before class.

Technology: Scientific calculators, Mathematica, SPSS, and Minitab will be used throughout the semester in the classroom and on assignments. Cell phones are expected to be turned off before entering the class and computers will be used in the classroom exclusively for academic purposes.

Academic Integrity System: The Roanoke College Academic Integrity System applies to all graded work in this course. Students are responsible for understanding and adhering to the Academic Integrity System. Among other things the Academic Integrity System prohibits giving or receiving unauthorized aid, assistance, or unfair advantage on academic work.

The Office of Special Services: The Office of Special Services provides reasonable accommodations to students with identified disabilities. Although Roanoke College does not have special programs for students with disabilities; reasonable accommodations are provided based on the diagnosed disability and the recommendations of the professional evaluator. In order to be considered for special services, students must identify themselves to the Office of Special Services. Students are required to provide specific current documentation of their disability. Reasonable accommodations may include but are not limited to the following: extended time for test and examinations, testing in a semi-private testing area, proctoring of examinations, use of interpreters, assistive technology, audio recording of lectures, and/or student note-takers. For additional information please contact Pam Vickers, Special Services Coordinator, at 540-375-2247 or email vickers@roanoke.edu.