

Salisbury University Department of Mathematical Sciences

MATH 411/511 : Design and Analysis of Experiments
Syllabus (Tentative)

Description: Introduction to ideas of planning and designing statistical experiments involving data collection. Study of various statistical analyses for these designs. Discussion of optimal allocation of sampling units to treatments in order to provide the highest accuracy and lowest cost. Use standard statistical software packages such as Minitab and SPSS. 4 Hours Credit: Meets four hours per week.

Prerequisites: C or better in MATH 155 or MATH 213 or MATH 216, or permission of department.

Intended Audience: Students considering employment in areas of statistics. Students pursuing a concentration or minor in statistics. Graduate students in Social Science and Natural Science who are conducting statistical research in their area of interest.

Objective: To gain knowledge for designing experiments and to learn the appropriate methods for analyzing the data collected from such experiments.

Textbooks: *Design and Analysis of Experiments*, by Douglas C. Montgomery, 10th Edition.

Technology: R will be used throughout the course.

Topic	Weeks
Chapters 1 & 2: Introduction & Simple Comparative Experiments	1
Chapter 3: Single Factor Designs & ANOVA	3.5
Chapter 4: Randomized Blocks & Latin Squares	1.5
Chapters 5 & 6: Factorial Designs	3
Chapter 14: Nested and Split-Plot Designs	1.5
Chapter 13: Experiments with Random Factors	1
Optional Topics	1
Fractional Factorial Designs, Response Surface Methods	
Tests	1.5
Total	14

Evaluation

Homework, Quizzes	20%
Tests	30%
Projects	25%
Final	25%

- Graduate students will be assigned special homework/test problems or projects.
- Clear descriptions of thought processes, evidence of critical thinking, and effective communication must be demonstrated in written work.
- **Writing Across the Curriculum:** Students will be expected to communicate mathematics and mathematical ideas effectively in speech and writing. At the University Writing Center, trained consultants are ready to help you at any stage of the writing process. In addition to the important writing instruction that occurs in the classroom and during professors' office hours, the Center offers another site for learning about writing. **All students are encouraged to make use of these important services.**
- **NOTE:** Once a student has received credit, including transfer credit, for a course, credit may not be received for any course with material that is equivalent to it or is a prerequisite for it.